

Organoclay-filled reactive core mat DNAPL remedial barrier proves successful

This is a case study of an active wood-treatment plant that has operated in southwestern Kentucky since 1913. Historically, creosote dripped from treated rail cross ties following their removal from a pressure cylinder. Drip tracks were reengineering in early 1990s to contain creosote drippings. Historically, released DNAPL had migrated along the fill-soil interface and had impacted the drainage ditch, soil and seep locations.



PROJECT DETAILS

Koppers Wood Treatment Facility

LOCATION

Guthrie, KY

PRODUCTS USED

REACTIVE CORE MAT™

At an active railroad-tie wood-treating facility, creosote is present in gravel comprising the rail bed and surrounding work yard. DNAPL had been observed discharging to a nearby drainage ditch. The DNAPL in the gravel has contributed to nearby ground surface staining associated with periodic surface discharges of groundwater.

CHALLENGE:

A multi-faceted remediation consisted of material removal, as well as, installation of shallow groundwater interceptor trenches and passive DNAPL barrier trenches at the site.

SOLUTION:

The approximate 200-foot long passive DNAPL barrier trench was designed with 4,500 square feet of REACTIVE CORE MAT® (RCM) filled with ORGANOCLAY® along the down-gradient wall. The RCM was added as an added precaution to adsorb DNAPL droplets that may be too small to gravity settle before crossing the trench. The trench therefore uses a combination of gravity separation and sorption to intercept DNAPL. A high-density polyethylene pipe was installed along the bottom of the trench to facilitate removal

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of settled DNAPL. Construction of the remedial activities was performed in the fall of 2004. The trench was excavated by backhoe utilizing open trench technique. The 15' wide panels of RCM were unrolled along the downgradient wall with several feet of extra panel flapped back from the top of the trench. After the trench was filled with the collection pipe and coke, this RCM was then draped over the top of the trench and covered with drainage stone.

RESULT:

Construction of the REACTIVE CORE MAT DNAPL barrier was completed in the Fall of 2004. To date, surface staining has not re-occurred, and DNAPL has not been observed discharging to the site drainage ditch.

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