



## Fate and Transport of Petroleum Hydrocarbons in the Subsurface Near Cass Lake, Minnesota: Usgs Scientific Investigations Report 2010-5085

By Suzanne Scallion, Dina M Drennan, Barbara a Bekins

Bibliogov, United States, 2011. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*. The U.S. Geological Survey (USGS) investigated the natural attenuation of subsurface petroleum hydrocarbons leaked over an unknown number of years from an oil pipeline under the Enbridge Energy Limited Partnership South Cass Lake Pumping Station, in Cass Lake, Minnesota. Three weeks of field work conducted between May 2007 and July 2008 delineated a dissolved plume of aromatic hydrocarbons and characterized the biodegradation processes of the petroleum. Field activities included installing monitoring wells, collecting sediment cores, sampling water from wells, and measuring water-table elevations. Geochemical measurements included concentrations of constituents in both spilled and pipeline oil, dissolved alkylbenzenes and redox constituents, sediment bioavailable iron, and aquifer microbial populations. Groundwater in this area flows east-southeast at approximately 26 meters per year. Results from the oil analyses indicate a high degree of biodegradation, characterized by nearly complete absence of n-alkanes. Cass Lake oil samples were more degraded than two oil samples collected in 2008 from the similarly contaminated USGS Bemidji, Minnesota, research site 40 kilometers away. Based on 19 ratios developed for comparing oil sources, the conclusion is that the...



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