

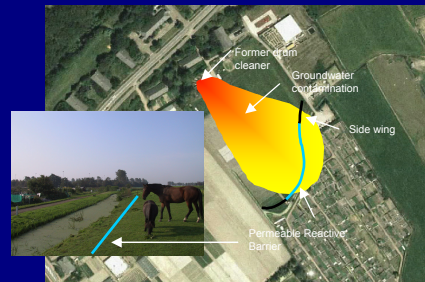
Demonstration of a Permeable Reactive Barrier at Katwijk the Netherlands

Introduction

A Dutch consortium is introducing a permeable reactive barrier (PRB) in the Netherlands for the treatment of groundwater contaminations with chlorinated solvents. The project is for Dutch practices innovative because it will be the first continuous PRB in the Netherlands, which is filled with zero valent iron. The parties who join the Dutch consortium are Grontmij the Netherlands, the province of Zuid-Holland, contractor NTP Milieu, institute TNO and ETI from Canada. The demonstration project will be carried out with subsidy of the Netherlands Centre for Soil Quality Management and Knowledge Transfer (SKB).

Katwijk Site

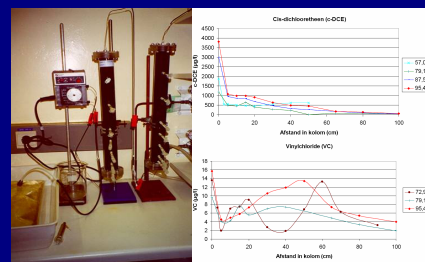
At the site of a former drum cleaner in Katwijk a contamination with chlorinated solvents is present in the shallow groundwater. The groundwater contamination plume forms a threat for a public garden complex that is situated about 100 m down streams of the location. From a feasibility study the application of a PRB turned out to have a good protection for the public garden complex.



Location for the PRB in Katwijk

Column test

A column test with granular iron has been carried out with groundwater from the site by Vito to estimate the half-life and residence time for degradation. The average half-life for the decisive component c-DCE is 10.4 hours from the column test. The average residence time for the PRB has been calculated at 67 hours.



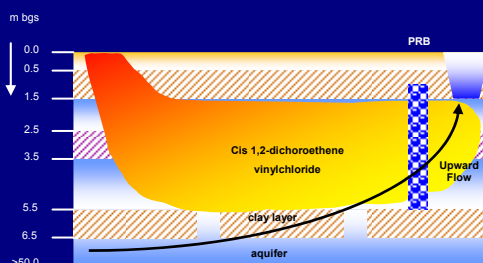
Column test

Concentration profiles

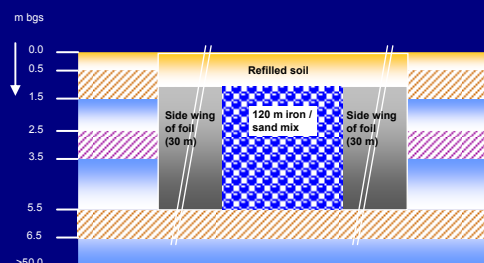


PRB construction

The PRB will be constructed at the site over a length of 180 m by a chain-saw trencher till a depth of 5.5 m bgs. The soil structure is perfect for a PRB because there is a clay layer present at the bottom of the PRB. Simultaneously with the excavation, the trench is immediately refilled with iron. The zero valent iron is produced by Gotthart Maier (Germany) and is estimated to perform for more than 15 years. The PRB will be filled at least with 20% iron and 80% sand. In the design side wings of foil are provided to reduce the amount of iron.



Cross-section PRB



Trans-section PRB



provincie
ZUID HOLLAND

