

Risk Reduction BTEX Remediation Using Existing Wells in California

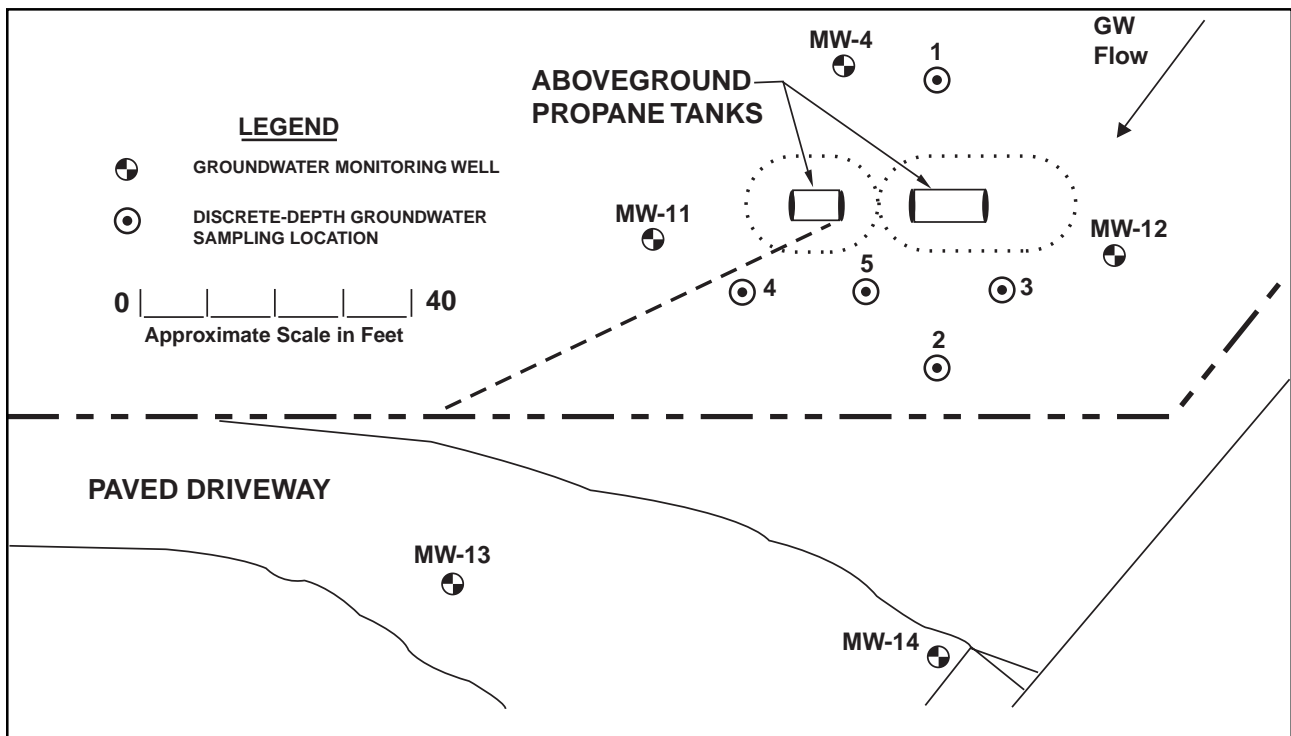
Contaminants	Application Method	Soil Type	Groundwater Velocity
BTEX	Risk Reduction	Sand/Silt/Clay	1.25 ft/day

Site Description and Remedial Design

A limited field study involving two ORC treatment wells was carried out at an active service station owned by a major oil company. The site is characterized by a heterogeneous aquifer composed of poor to well sorted fine sand interbedded with silts and clays. The water table is 27 feet below ground surface and is about 18 feet thick. Groundwater velocity is 1.25 feet per day.

Seventeen feet of 3 3/8” diameter ORC socks were installed in each of two wells (MW-11 and MW-12). Results at a downgradient point (MW -14) between the source wells were monitored and contrasted with results at an upgradient point (MW - 4). In this limited application, DO increased enough to support bioremediation 57 feet downgradient at MW-14. A map detailing the site and monitoring well locations is shown in Figure 1.

Figure 1



Results

Measurements in the source wells (MW-11 and MW-12) showed that DO rose dramatically, to above air saturation (8 to 10 ppm), and BTEX levels were sharply reduced. Average background DO in the source wells is represented in Figure 2. Even in the presence of active demand, in both the ORC source wells and in the formation, there was still an increase in DO from 0 to 1 ppm in MW-14 located 57 feet downgradient. In the source wells, DO returned to background after 36 weeks in the presence of demand. BTEX levels in MW-11 dropped from 5,000 ppb to 60 ppb and in MW-12 dropped from 55 ppb to 5 ppb.

During the course of the experiment large increases in background TPH and BTEX were noted in upgradient well MW-4; however, decreases in these contaminants and risk still occurred as presented in Figures 3 through 5.

Figure 2

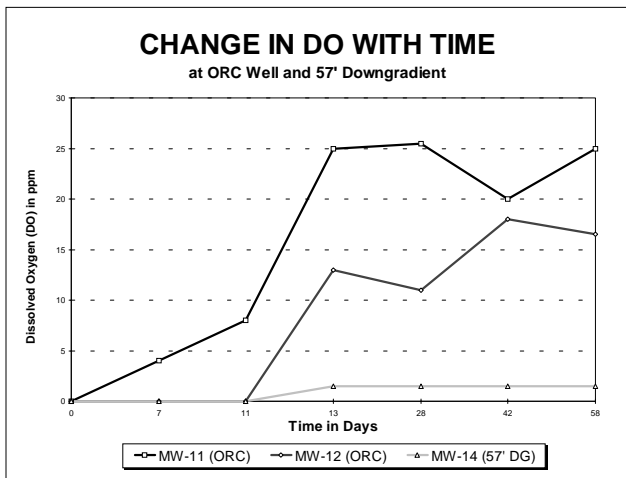


Figure 3

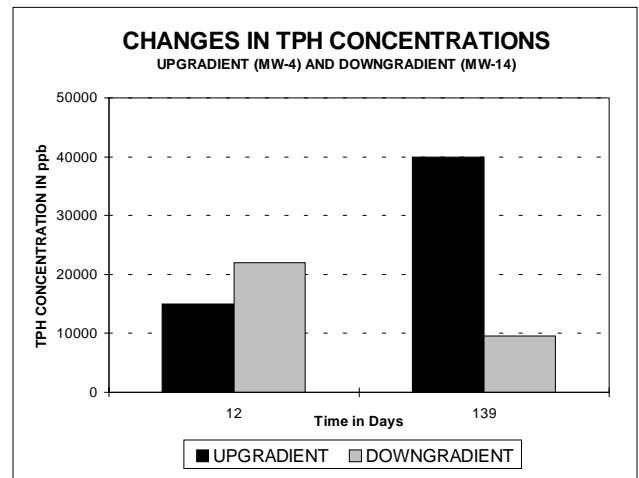


Figure 4

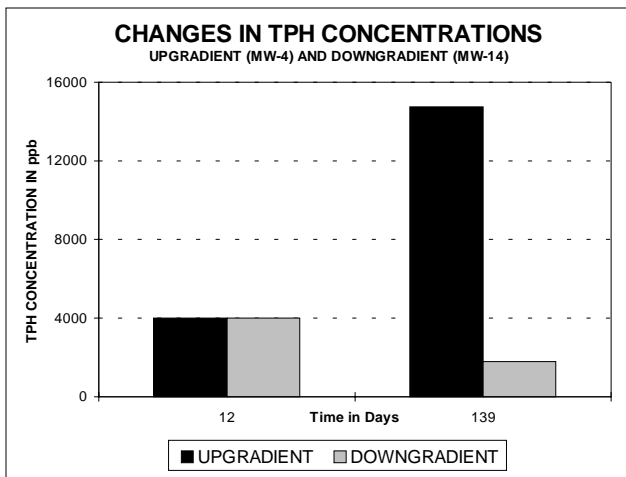


Figure 5

