

Title: Groundwater Remediation of Total Petroleum Hydrocarbons at 1160 Montgomery Drive, Santa Rosa, CA

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This study focuses on the remediation of Total Petroleum Hydrocarbons (TPH) in groundwater at a former gravel pit site located at 1160 Montgomery Drive, Santa Rosa, CA. Historically impacted by TPH due to illegal dumping, the site required an innovative remediation strategy. Our approach combines vacuum-enhanced two-phase extraction (TPE) and permeable reactive barriers (PRBs) to address the contamination effectively. TPE is employed to efficiently remove both liquid and vapor contaminants from the source area, while PRBs, composed of reactive materials, passively treat migrating contaminants in the medial zone. Monitoring wells have been installed to evaluate the effectiveness of these methods, with results showing a significant reduction in TPH concentrations: TPE has achieved a reduction of up to 48% in the source area. This integrated strategy successfully meets regulatory standards, demonstrating its efficacy in managing groundwater contamination.

The study underscores the potential of combining TPE and PRBs as a sustainable solution for TPH remediation, offering insights into addressing similar environmental challenges. The findings highlight the importance of tailored remediation approaches in achieving effective groundwater management while minimizing environmental impact. A full-scale system is being designed to optimize treatment parameters and conduct a long-term assessment of groundwater quality impacts.