

# Use of Narrow-Diameter, Direct-Push Wells to Characterize and Remediate Carbon Tetrachloride in the 200 West Area, Hanford Site, Washington

Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy  
under Contract DE-AC06-08RL14788



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Date Published  
April 2009

To Be Presented at  
7th Washington Hydrogeology Symposium

Washington Department of Ecology and U.S. Geological Survey  
Tacoma, WA

April 28-30, 2009

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4/23/2009  
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# Use of Narrow-Diameter, Direct-Push Wells to Characterize and Remediate Carbon Tetrachloride in the 200 West Area, Hanford Site, Washington

Ken Moser, Wes Bratton, and Virginia Rohay

The Hydraulic Hammer Rig (HHR) direct-push technology (Fig. 1) has been successfully used to characterize carbon tetrachloride in the vadose zone at the 216-Z-9 Trench (Figs. 2 and 3). Three of the HHR holes were completed as 3/4-in. ID SVE wells (Fig. 3).

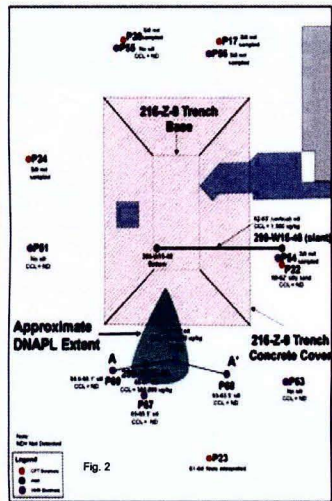


Fig. 2

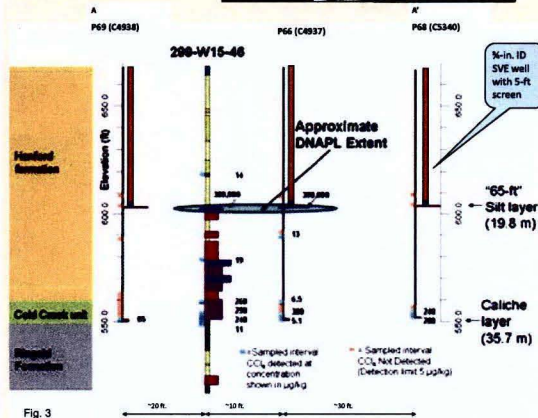




Fig. 3

Compared to traditional drilled wells, the HHR wells have several advantages (Table 1). The main HHR limitations are penetration depth (~120 ft to Cold Creek Unit) and the need to pre-select soil sample depths based on adjacent wells or geophysical logs.

Table 1: SVE Well Comparison

	HHR	Drilling
Installation Method		
Speed	~2 days	Weeks or more
Well diameter	3/4-in.	2- to 8-in. typical
Cuttings/DW	Minimal	Significant
SVE radius of influence	30 ft	120 ft
Cost	<\$10,000	\$200,000 or more
Depth limits	~120 ft (to Cold Creek Unit)	Your DOOs or project budget!

Monitoring results from the three narrow diameter wells (Fig. 4) led to incorporating the wells into the SVE system at the 216-Z-9 Trench in 2007 (Figs. 5, 6, and 7).

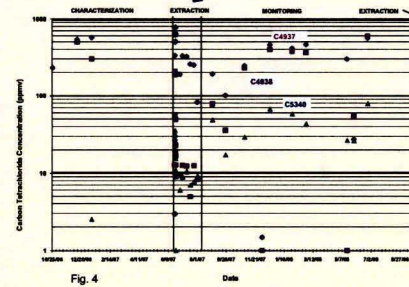


Fig. 4

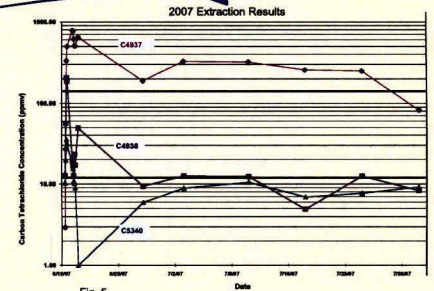


Fig. 5

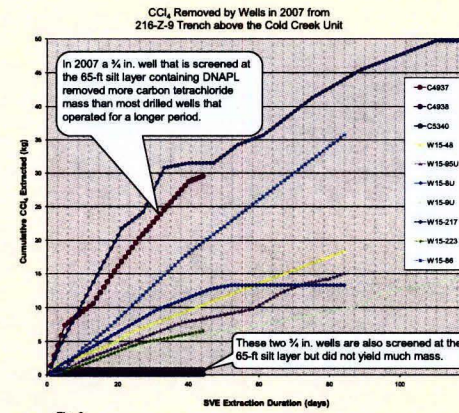


Fig. 6

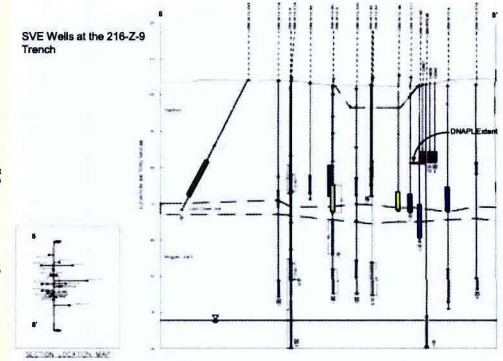


Fig. 7

In 2008, a vacuum test of these narrow diameter wells (Fig. 8) indicated that they have a radius of influence of about 30 ft.

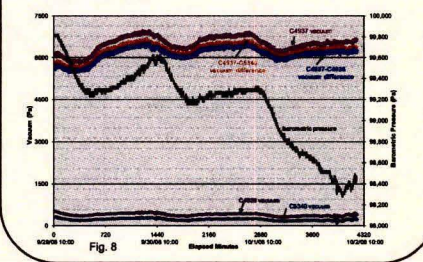
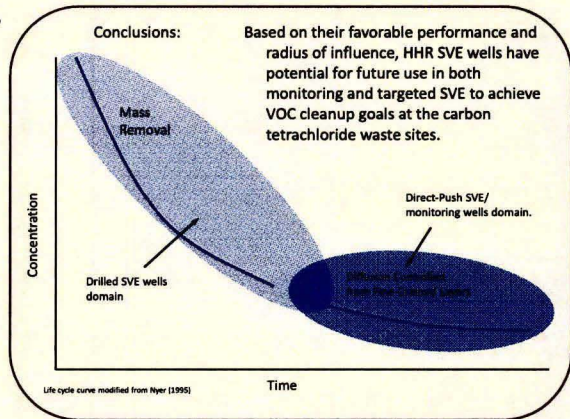


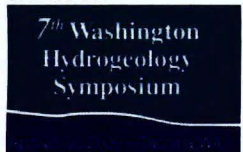
Fig. 8



Conclusions:

Based on their favorable performance and radius of influence, HHR SVE wells have potential for future use in both monitoring and targeted SVE to achieve VOC cleanup goals at the carbon tetrachloride waste sites.

Presented at:



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