Table A-3.B. Evaluation factors for vacuum-enhanced skimming

Remedial time frame	Concern	High to very high
	Discussion	Long to very long. Depends on soil type, LNAPL type, release size, footprint, and end point (e.g., LNAPL thickness, sheen, or transmissivity goal) and aggressiveness of pumping. Low-permeability soils and heavier LNAPL will require more time to remediate.
Safety	Concern	Low
	Discussion	Vapor releases and potential of volatilization due to vacuum operations.
Waste management	Concern	Moderate
	Discussion	Recovered LNAPL requires storage, treatment, disposal, and/or recycling. Emissions may require treatment (e.g. carbon).
Community concerns	Concern	Low to medium
	Discussion	Concern with noise of treatment equipment and vapor odors.
Carbon footprint/energy requirements	Concern	Low to moderate
	Discussion	Carbon footprint depends on time frame, duration, frequency of events, and the amount of volatiles generated. Energy source needed for vacuum.
Site restrictions	Concern	Low to moderate
	Discussion	Vacuum-enhanced skimming can usually be implemented in wells located around site restrictions or in wells under obstructions through the use of directional drilling equipment.
LNAPL body size	Concern	Moderate to high
	Discussion	The size of the LNAPL body directly affects the cost and extent of the well network. ROI affects the number of wells required to address the LNAPL body. Lower-permeability soils require closer well spacing. Intermittent operation may enhance overall recovery after initial saturation asymptote is reached.
Other regulations	Concern	Low
	Discussion	Proper storage of flammable/combustible liquids. Air quality emission permits.
Cost	Concern	Low to moderate
	Discussion	Overall, low for capital costs and low to medium for operation and maintenance, depending on life span of the project. In general, vacuum-enhanced skimming is more cost-effective than skimming only. Longer time frames may, however, not be cost-effective compared to other technologies.
Other	Concern	
	Discussion	