

**Table A-1.A. Excavation**

Technology	Excavation/large- diameter borings	The targeted LNAPL area is removed from the surface or subsurface via excavation or large diameter boring.	
Remediation process	Physical mass recovery	Yes	Residual LNAPL physically removed.
	Phase change	No	Not the intended remedial process, but enhanced volatilization can occur as LNAPL is exposed to atmosphere. Excavation is an excellent opportunity to install a combined remedy such as piping for AS/SVE.
	In situ destruction	No	Excavation is an excellent opportunity to install a combined remedy such as piping for later oxidant or electron acceptor solutions.
	Stabilization/ binding	No	Excavation is an excellent opportunity to install a combined remedy such as activated carbon.
Objective applicability	LNAPL saturation	Yes	Residual LNAPL physically removed.
		Example performance metrics	Maximum soil concentration reduced to cleanup criteria, reduced LNAPL transmissivity, direct analysis of soil to measure changes in LNAPL saturation profile. Reduction in mass contributing to dissolved or vapor phase issues.
	LNAPL composition	No	N/A
		Example performance metrics	N/A
Applicable LNAPL type	All LNAPL types		
Geologic factors	Unsaturated zone	Permeability	Not typically a factor.
		Grain size	Granular material may require low sidewall slopes, shoring or benching, adding to cost and excavation size.
		Heterogeneity	Not typically a factor.
	Saturated zone	Consolidation	Unconsolidated easier to excavate; loosely consolidated may collapse; bedrock excavation has limited practicability.
		Permeability	High permeability can maximize water inflow to excavation. Some soils require shoring, or “flowing sand” may destabilize side walls. Wet soil adds to transportation weight, and it may be too wet for acceptance at landfill or treatment facility.
		Grain size	Not typically a factor.
		Heterogeneity	Not typically a factor.
	Consolidation	Unconsolidated easier to excavate; loosely consolidated may collapse; bedrock excavation has limited practicability.	