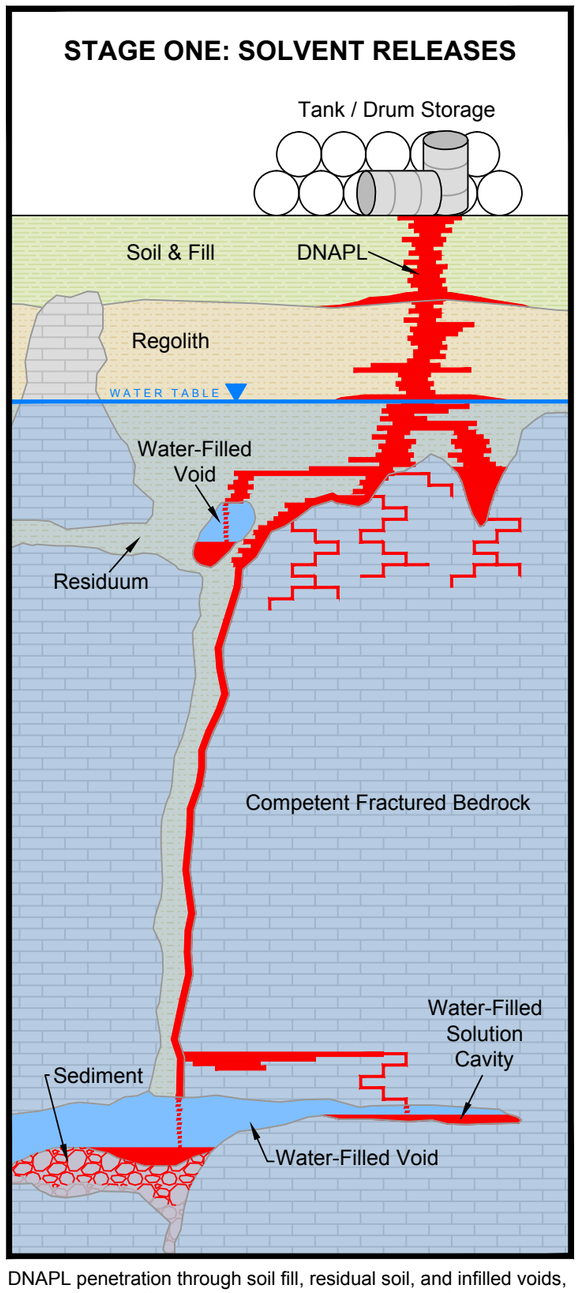
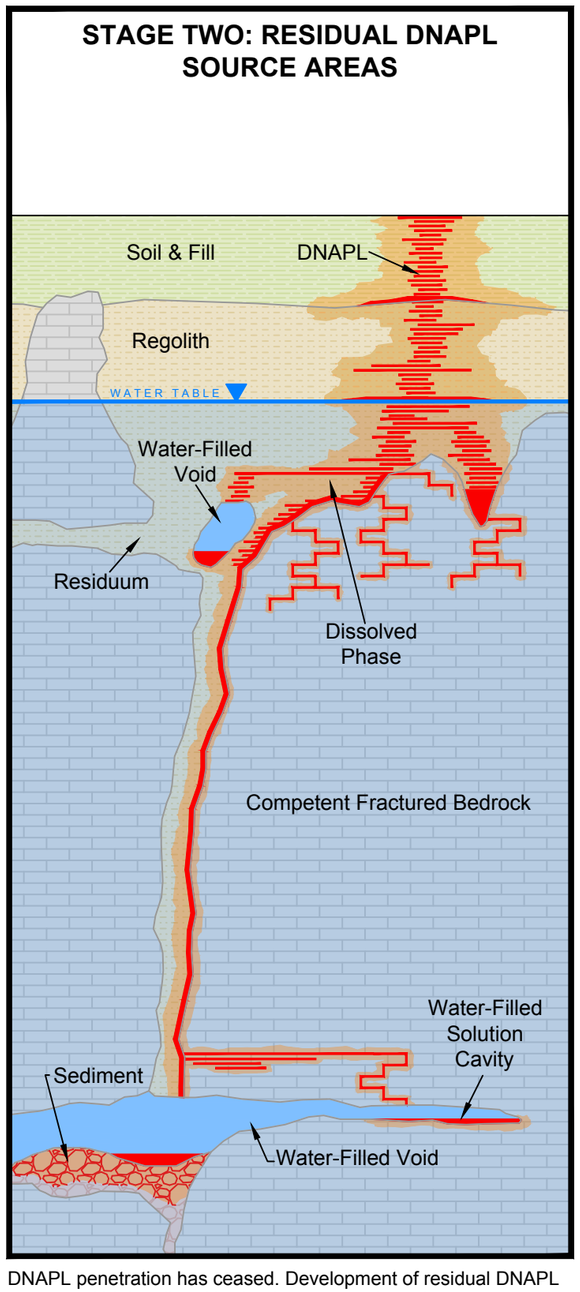
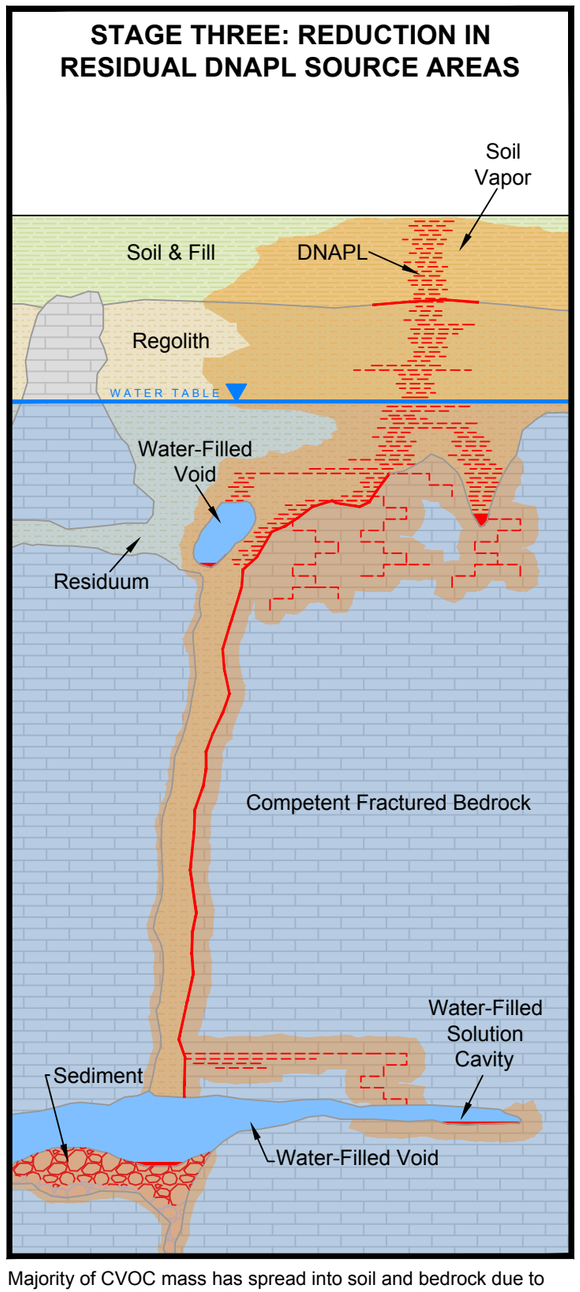
Figure 1.3-8 Conceptual Model of DNAPL Fate and Transport in a Karst Aquifer



DNAPL penetration through soil fill, residual soil, and infilled voids, caverns, and cutters within epikarst layer in carbonate bedrock. DNAPL accumulation zones form at top of residual soil within the capillary fringe above the historical water table at the top of cutters infilled with fine-grained soils, and near the base of cutters, caverns, and voids within the carbonate bedrock.



DNAPL penetration has ceased. Development of residual DNAPL zones and high soil and bedrock concentrations due to processes of diffusion and sorption of CVOC mass from DNAPL pathways and accumulation zones. DNAPL may be transported from accumulation zones and suspended sediment during medium to high turbulent flow in water-filled solution cavities. DNAPL also dissolves and migrates with groundwater.



Majority of CVOC mass has spread into soil and bedrock due to diffusion. Localized DNAPL presence in areas of greatest initial accumulation. Reversed diffusion from the soil and bedrock into groundwater provides a continuing source of CVOCs to the groundwater.