Monitored Natural Attenuation (MNA) versus Natural Source Zone Depletion (NSZD)

- Mostly focused on plume ("how far")
- For hydrocarbon plumes, key focus on:
  - Electron Acceptors
    - Dissolved Oxygen
    - Nitrate
    - Ferrous Iron (solid)
  - Electron Donors
    - Benzene
    - Toluene
    - Ethylbenzene
    - Xylenes
    - Methanogenesis

Groundwater Mass Flux vs. Vapor Phase Mass Flux

Original NSZD Conceptual Model

Lundegard and Johnson, 2006; ITRC, 2009