



# Stormwater Infiltration Considerations at Contaminated Sites

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## Why Infiltrate?

- Preferred treatment mechanism of Tier 1 Practices of 2017 Storm VT DEC Stormwater Management Manual
- Required by many municipal bylaws
- Smaller system footprint
- Protect existing downstream infrastructure currently under stress

## Why Not Infiltrate?

- Impact to existing contaminant plumes – 3<sup>rd</sup> party issues
- Could mobilize contaminants
- May impact efficiency of existing remediation systems (i.e.: SVE soil vapor extraction)

# Regulatory Requirements

- VT DEC Stormwater Management Manual
  - 2002 Manual
    - No infiltration through fill soils, no Infiltration from Hotspots
    - Hotspot associated with pollutants in runoff
  - 2017 Manual
    - Definition of Hotspots now includes “subsurface contaminants from prior land use”
    - Infiltration not located in contaminated soils unless removed or remediated or as approved on a case by case basis
- Municipal Standards Vary
- VT DEC Groundwater Protection Rule ( EPR’s Chapter 12 )

# Exploratory Phase

- Sites with Contamination Often Don't Have Native Soil Profile
  - Greater density of borings/ test pits/ infiltration tests warranted for characterization
  - Redox features may not be reliable for GWT estimation  
monitoring wells may be required
- Ways to Minimize Exploratory Costs
  - Coordinate with soil scientist for monitoring / boring locations
- Nearby contaminated sites
- Plan for construction services



# It's Always Site Specific

- What type of contaminants? Are they mobilized by stormwater ?
  - Non-soluble contaminants - PAH's, metals, PCB's, - **lower mobilization risk**
  - Soluble contaminants - Petrol compounds, solvents, phenols, herbicides – **higher mobilization risk**
  - Biodegradable materials –leachate and gas production increased by presence of water
- SPLP test may be a useful tool
  - Originally developed as leaching test for receiving site
  - Synthetic Precipitation Leaching Procedure – empirical results



# Design Phase

- Non soluble :
  - May be able to site systems near contaminated areas
  - Careful with groundwater and offsite migration
- Soluble :
  - may not be able to infiltrate on entire site
- Cover contaminated areas with impervious surfaces



## Implementing Stormwater Infiltration Practices at Vacant Parcels and Brownfield Sites

U.S. Environmental Protection Agency  
Office of Water  
Office of Solid Waste and Emergency Response

# Costs Example

- 1 acre of impervious surface during 1 – year storm, (2.1" in 24-hours)
- Runoff volume = 6,800 CF ~volume of material to be removed
- 6,800 CF @ \$100/ yard = **\$25,000** to remove, haul, and dispose.



# Summary

- Site specific
- More involved up front investigation required
- Coordinate early with soil scientist
- Infiltration valuable where feasible