

Green Remediation Focus

Minimizing the environmental footprint of site cleanup

A Profile in Using Green Remediation Strategies

Additional profiles available at www.clu-in.org/greenremediation

Former Ferdula Landfill
Frankfurt, NY

RCRA

Cleanup Objectives: Remove volatile organic compounds (VOCs) from soil serving as a contaminant source within a 2-acre landfill

Green Remediation Strategy: Rely on wind-driven vacuum process rather than electrically powered air blowers for soil vapor extraction (SVE)

- Delineated an unsaturated area with VOC contamination that remained after conventional capping and upgradient ground-water diversion
- Installed a single windmill (with 12-foot blades) to extract VOCs for aboveground carbon treatment
- Constructed a vacuum system enabling windmill blade rotation to reciprocate a single 10-inch air cylinder fitted with check valves
- Connected the cylinder intake piping to a network of nine gas vents on the landfill cap

Results:

- Avoids air emissions associated with consumption of grid electricity during soil treatment
- Generates 85 ft³/hr of vacuum capacity per mph of wind
- Capitalizes on wind intermittency to provide the pulsed effect that is typically effective in venting operations
- Reduced VOC concentrations in soil gas more than 90% over five years
- Removed 1,500 pounds of total VOC mass over the same period
- Recovered \$14,000 in capital costs for the wind system within one year due to avoided electricity
- Accrues annual O&M costs below \$500, in contrast to potential \$75,000 for a conventional SVE system

Property End Use: Long-term landfill containment

More detail is available about this site in the May 2008 issue of EPA's [Technology News and Trends](#) newsletter.

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Landfill gas extracted by the windgenerated vacuum system is treated inside an adjacent 150-ft² building.



A subsurface valve box at each gas vent is used to control vacuum throughout the landfill and for sampling purposes.



Check valves were installed on each side of the air cylinder so a vacuum could be generated during both the up and down strokes of the windmill.



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http://www.cluin.org/greenremediation/Profiles/subtab_d21.cfm



United States Environmental Protection Agency
Office of Solid Waste and Emergency Response (5202P)

For more information:
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