WILDLIFE HABITAT COUNCIL

Case Study 14

College Park Landfill Compost and Vegetative Cap Pilot Study	
Name and Location	**Site Name:** College Park Landfill **Site Location:** Beltsville, Maryland
Site Description	This site was used as a municipal landfill from approximately 1955 until 1978. It accepted household trash, as well as commercial, industrial and some agricultural/research waste. The site is located just outside the Washington, DC beltway in a suburban area. However, the immediate vicinity of the site is agricultural, with some nearby housing. A wetland of special state concern containing some threatened and endangered species bounds the southern edge of the landfill. The landfill is approximately 30 acres in areal extent, and ranging from 20 to 30 feet deep.
Ecological Enhancement	This project intends to provide 30 acres of diverse plantings which will be highly attractive as habitat, whereas the standard landfill cap would provide 30 acres of mowed grass, providing little habitat.
Site Reuse Description	The ecological enhancements intended for the site are mixed plantings for ecological habitat and educational demonstration. The ecological restoration will consist of trees, shrubs, grasses and groundcovers, both evergreen and deciduous, with an emphasis on native species where possible. Ecological enhancements are being actively pursued for this site because of its proximity to sensitive wetlands; because of habitat creation; because of greenhouse gas reduction; because of cost savings; because of sustainability concerns; because of research opportunities; and to provide educational opportunities. The community will be involved in the end use decision through the CERCLA process, which requires a public hearing and regular outreach activities.
Stakeholder Involvement	The partners in the pilot study are USDA/ARS Beltsville Safety Office, USDA/ARS Beltsville researchers, EPA/OSWER, and private consultants. The stakeholders include USDA/ARS; EPA Region III; Maryland Department of the Environment; and the Prince George's County Health Department.

	The stakeholders were concerned about whether or not the vegetation would be killed by methane from the landfill, and if the vegetation would be able to adequately prevent leachate generation. The intent of the pilot study is to show that the compost layer will sequester the methane, and the mix of evergreen and deciduous plants plus the storage capacity of the compost will adequately prevent leachate generation. USDA/ARS Safety Office is primarily funding the study, while USDA/ARS researchers are providing expertise and manpower. EPA Region III is providing a summer intern for the project, and EPA/OSWER (as well as EPA ACAP) is providing consultation and advice. All funding to date has been federal.
Site Assessment Approach and Cleanup	The site assessment found a 30-acre landfill, which required closure to RCRA standards, groundwater and surface water impacts, and methane gas emissions. The presumptive remedy for the landfill is a clay and/or membrane cap with gas venting. The site was never capped or closed in accordance with RCRA, so rainwater was able to enter the waste and create leachate, which contaminated groundwater. The groundwater there exhibits vinyl chloride, benzene, arsenic, cadmium, iron, lead, manganese, and nickel at levels above maximum contaminant levels (MCLs). The cleanup will be performed under CERCLA to RCRA standards. The corrective action planned for the site is a 4-foot deep layer of compost/soil over the surface of the cap to utilize methane, and a mixed planting of trees, shrubs, grasses, and groundcovers to utilize precipitation and prevent erosion. Assuming the pilot study shows this system to be as environmentally protective as a standard cap, the remedy will be selected because of environmental benefits, community benefits, and cost effectiveness. It is expected that the site will have to be maintained in its vegetated state, with controls to prevent future development. Once the remedy is implemented, a closure letter will be sought.
Reuse	The end use of the site will be maintained habitat, with possible harvesting of potential resources as part of the maintenance program. The end use of the site will prevent the use of nonrenewable (clay and plastic) resources; use renewable compost and vegetation; recycle waste materials by using fly ash, animal waste and plant waste for the compost; reduce greenhouse gas emissions both by preventing methane emissions and by using atmospheric carbon dioxide; provide habitat; prevent erosion; further the study of sustainable capping technologies; prevent further groundwater

	degradation; and provide an educational opportunity. This end use will transform this site from an underutilized area of scrub and weeds to a thriving sustainable remedial system.
Obstacles	The main problem thus far has been the reluctance of the regulatory community to embrace vegetative capping, despite demonstrated successes elsewhere.
Costs and Funding	This action is being funded by federal Hazardous Waste Cleanup funds and Beltsville Agricultural Research Center facility funds. Research grants are also being sought. The pilot study is expected to cost approximately $650,000. The entire cap system is expected to cost $3-4M. A standard landfill cap is estimated to cost approximately $10M for the 30-acre landfill. The ecologically enhanced remedy is expected to show a cost savings of over $5M.
Economic and Other Incentives	The major direct economic incentive is the implementation cost savings of the ecologically enhanced remedy over the presumptive remedy. There are other, less quantifiable, economic benefits of improved air quality, reuse of waste products, conservation of resources, and protection of threatened/endangered species. There are numerous public relations incentives to be gained from this effort. Furthering the science of sustainable landfill capping has far-reaching implications to municipalities around the world. The vegetative cap proposed for this landfill is expected to provide a net environmental benefit greater than a standard landfill cap, given the air quality, habitat, groundwater quality, and surface water quality improvements to be gained.
Time	It is estimated the pilot study will have a 3-year duration, with design and implementation requiring an additional 2 years, for an estimated completion date of 2008.
Other	
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