



Case Study 6

Former Ford Michigan Casting Center Landfill	
Name and Location	<p>Site Name: Former Ford Michigan Casting Center Landfill</p> <p>Site Location: Flat Rock, MI</p>
Ecological Enhancement	Wooded phytoremediation area providing increased biodiversity via creation of wildlife habitat for various birds and small mammals.
Site Description	The Site consists of approximately 90 acres of land located in the outskirts of the City of Flat Rock in southeast Michigan. Adjacent properties are a mix of manufacturing and commercial uses in a rural setting. The site was historically used as a permitted landfill for the disposal of foundry sand and cupola dust generated at the adjacent Ford Michigan Casting Center (MCC). Landfill operations terminated in 1981, after the MCC was closed, and a two-foot clay cap was used as a final cover system resulting in a wide expanse of grass covered fields. Following closure, no ongoing activities were maintained at the site.
Site Reuse Description	In addition to performing its intended function, the use of the Ecolotree® cap system provides an increased level of biodiversity and habitat that did not exist prior. By providing additional woodlands, the pervasive grassy fields are now complemented by additional protective structure for various birds and small mammals. Where the traditional grassy fields still exist, a rotational mowing schedule has been implemented to minimize disruption to ground-nesting birds on the landfill cap. Implementing phytoremediation at this site was intended to incorporate sustainable and wildlife habitat as a component of environmental remediation where specific circumstances allow for such an approach.
Stakeholder Involvement	In addition to Ford Motor Company, the Michigan Department of Environmental Quality, and Wayne County Department of Environment also had a vested interest in the performance of the new cap system as responsible regulatory authorities. Because the proposed approach was not consistent with currently accepted theory regarding cap design, a one-day training and dialogue session was scheduled by Ford Motor Company with interested regulatory groups during which the concept in general, and the application at the landfill specifically, was discussed. No dissenting positions were expressed on the part of any agencies and Ford Motor Company proceeded independently, and at Ford Motor Company expense, with the installation of the new cap system.
Site Assessment Approach and Cleanup	Evaluation of existing conditions in the landfill in the mid 1990s indicated a need to reduce existing levels of perched leachate in the landfill to preclude the potential for off-site migration. The existence of high levels of perched leachate was attributable to the unique geology of the area (i.e., thick, homogenous clay deposits and artesian groundwater conditions) that resulted in effective containment of leachate (generated through artesian and rainfall infiltration) and the absence of a leachate collection system.



	<p>In 1995 a traditional active leachate collection/management system was installed in a high priority portion of the landfill measuring 45 acres. Active management of leachate in this area continues today.</p> <p>In 1998, an innovative passive leachate management system (by Ecolotree®, Inc.) was installed in a five-acre disposal cell on the same site. The system consists of a combination of hybrid poplar and willow trees selected to provide leachate mound reduction and infiltration control. The system was chosen so as to provide a more sustainable and natural phytoremediation approach to the needs of the site.</p> <p>All work performed at the sight was performed without oversight of any regulatory authority since the closed landfill had satisfied it's post-closure care obligations and the applicable state required restrictive covenant had expired. In the spirit of cooperation, and with an interest in expanding acceptance of this phytoremediation technique, Ford Motor Company maintained dialogue with both state and county authorities during the implementation of this remedy.</p>
Reuse	<p>Although there is currently no identified reuse for the site, as an industrial zoned property it is potentially available for limited brownfield redevelopment based on industrial land use with engineering controls. The property remains a restricted access area and public use is not anticipated. The use of the Ecolotree® cap has negated the ongoing O&M costs of a traditional leachate collection/management system as well as the one time investment in infrastructure.</p>
Obstacles	<p>The project received little resistance from local or state agencies. The proactive dialogue initiated by Ford Motor Company prior to implementation of the project allowed concerns and issues to be raised early and dealt with in an appropriate manner</p>
Costs and Funding	<p>The project was funded entirely by Ford Motor Company at a cost of approximately \$200,000.</p>
Economic and Other Incentives	<p>In addition to long term cost reductions verses a traditional leachate collection/management system, use of phytoremediation to promote increased biodiversity on corporate properties is consistent with the company's corporate citizenship objectives.</p>
Time	<p>The project was completed during the 1998 construction season. Inspections are occurring on a regular basis to document the continued performance of the Ecolotree® cap system.</p>
Other	<p>The success of the Ecolotree® cap application at this site provides a demonstration that, given an appropriate set of circumstances, this type of cap systems may prove to be just as effective as a traditional clay and/or FML liner but have the added benefit of promoting increased biodiversity and habitat improvements.</p>
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