



Case Study 8

Closed Refinery in Hooven, Ohio Case Study	
Name and Location	<p>Site Name: Former Gulf Refinery Site</p> <p>Site Location: Hooven, Ohio. About 20 miles west of Cincinnati.</p>
Site Description	<p>The site is on the Great Miami River, along with several other former and active refineries. The Great Miami River joins the Ohio River a few miles downstream of the site. Besides the industrial development along the river, the area is rural, with suburban development moving closer in the last few years. (Insert a picture, aerial photograph, If sending this via e-mail you may want to send the picture separately.)</p> <p>1931 to 1985 Gulf Oil Corporation constructed and operated a fuels and asphalt petroleum refinery on the site. Chevron acquired the facility in 1985. Refining at the site stopped in 1986. 1986 to present ChevronTexaco has dismantled the refinery and is cleaning the site for return and use by the local community.</p> <p>Tank bottoms and soil from spill sites were trucked to a bermed area near the refinery. This Land Treatment Unit (LTU) was fertilized and tilled from the end of receiving waste in 1988 until the phytoremediation planting in 1999.</p> <p>The former refinery area is 250 acres. The LTU/ phytoremediation area is 5.5 acres; the constructed wetland is 8 acres.</p>
Site Reuse Description	<p>LTU The LTU has been planted with trees and grasses. The vegetation serves as cover to prevent dust, erosion and physical contact as well as continuing to degrade organic materials in the soil.</p> <p>Wetlands BTEX contaminated groundwater is pumped and biologically treated in a fluidized bed reactor (FBR). The treated groundwater from the FBR goes to a small settling lagoon to remove suspended solids, prior to discharge to the Great Miami River.</p> <p>Construction of a Corrective Action Management Unit (CAMU) required the settling lagoon be removed. A surface flow wetland consisting of a</p>



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	<p>small flow equalization lagoon and two wetland cells was constructed to replace the lagoon. The wetland was designed to provide removal of suspended solids, effluent polishing to remove any residual organics, and to provide wetland habitat.</p> <p>The community is involved in the end use decision making process. ChevronTexaco has held numerous public forums on the possible future use of the land.</p>
<p>Stakeholder Involvement</p>	<p>ChevronTexaco, the University of Cincinnati, and USEPA Office of Research and Development partnered to assess the efficacy of plants to enhance the degradation of the organics in the soil at the LTU. The US EPA Region 5 and Ohio EPA share regulatory jurisdiction over the site.</p> <p>Neighbors were slightly concerned about contamination at the site, though many of them had worked on the site during operations and felt it was mostly safe. There is a community desire to see the land returned to some function that provides employment or community benefit.</p> <p>The regulatory agencies want to ensure that water supplies are not impacted, and that applicable regulations are followed.</p> <p>Chevron Research and USEPA ORD funded the research project at the LTU, including assessing the site, planting, and monitoring. ChevronTexaco funded the construction of the wetland.</p>
<p>Site Assessment Approach and Cleanup</p>	<p>The site clean up is managed under RCRA. As part of the Consent Order, ChevronTexaco has identified the contamination on site in the Description of Current Conditions report, which consists primarily of refinery wastes deposited in several Solid Waste Management Units and Areas of Concern.</p> <p>LTU</p> <p>Under what specific legal authority(ies) is the cleanup being performed (CERCLA/RCRA/OUST or other)? The US EPA Region 5, Ohio EPA, and US EPA Research Technology Development Forum (RTDF).</p> <p>The LTU contains a mixture of highly weathered petroleum hydrocarbons, including polyaromatic hydrocarbons (PAHs). In 1999 the site was sampled for hydrocarbon analysis then planted with grasses and trees as part of the RTDF Phytoremediation project. The project is in its final year of sampling and it will continue to act as a “green” vegetative cap, providing control of rain water run off and downward migration of water.</p>



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	<p>Implementing the RTDF Phytoremediation project required a complex of meetings, letters, and negotiation between ChevronTexaco, University of Cincinnati, USEPA Office of Research and Development, USEPA Region 5, and OHIO EPA. Once the project goals and work plan were agreed to by all parties and the CRADA was finally signed the work proceeded fairly smoothly,</p> <p>Wetland Describe any long term controls (e.g., institutional controls) associated with the site.</p> <p>What problems did you encounter during the corrective action? What was the nature of the problems encountered (e.g., regulatory, community perception, etc.) and how did you overcome these problems?</p> <p>Was a closure letter obtained for the site? If so what was issued and when? If not, are you currently seeking a closure letter?</p>
Reuse	<p>Describe the end use of the site. What are the benefits of the end use of the site (for the community, regulatory agency, etc.)?</p> <p>LTU: The end use of the former land treatment unit is to provide upgrade the site to usable habitat, consistent with the overall plan to restore the old refinery site useable land for multiple land uses by the community as park, recreational area, and natural habitat for local wildlife. The green vegetative cap and trees control erosion, rain water migration, and natural vegetation cover to the formerly bare land.</p> <p>Wetland: The end use of the wetland is to provide habitat with birds and wildlife and to extend the park planned for the adjacent area by providing community access to the wetland.</p> <p>The wetland has upgraded the land from a former industrial site to natural wetlands.</p>
Costs and Funding	<p>How was this project funded, i.e., were there any redevelopment funds or other resources used?</p> <p>What was the total cost of the project? LTU ~ \$50,000 in cash and work in kind Wetland ~ \$500,000</p>



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	<p>If an ecological enhancement was used in the remediation, were there cost savings associated with the selection of this remedy.</p> <p>LTU – The purpose of the phytoremediation was to provide a vegetative cap and provide biodegradation of remaining degradable hydrocarbons of the old LTU. There is the cost savings of not having to construct a tradition RCRA cap to close the site.</p> <p>Wetlands – The primary purpose of the wetland was to provide polishing of the FBR effluent. The ecological enhancement was a positive selection factor for doing wetlands over a tradition lagoon or clarifier for solids removal.</p>
Time	It is estimated that both the LTU and the wetland are long term features of the site.
Other	List any other information that may be of value for this case study. This can be used to insert a “lessons learned” section, or highlight other information of interest.
Contact Information	<p>LTU – Lucinda Jackson, 510-242-1047 and John Tiffany, 513-353-1323</p> <p>Wetland - Jim Myers, 713-432-6689 and John Tiffany</p>