

# Doing the Deal on a Landfill Redevelopment Project

By Michael W. McLaughlin, P.E.

Through this series of articles, you know that there have been many successful projects constructed on closed landfills throughout the U.S. But getting the deal done for these projects is a unique and challenging process. Purchase price, permitting and liability all play a role, of course, just as they would for any other brownfield development project.

However, for most other brownfield projects, remediation consists of excavation or treatment of soil, installation of a protective cap, and/or mitigation of trace concentrations of toxic chemicals in soil gas. If these systems fail, it might take years for the effects to be noticed, given the low dosages of chemicals involved under typical exposure scenarios.

But if a landfill redevelopment project is built and fails, the failure will be evident in a relatively short period of time. Sharp changes in grade could occur and be visible within a few years, and an explosion could result if explosive concentrations of methane accumulate in the presence of oxygen and a source of ignition. There have been several dozen examples of such damage occurrences in the U.S. over the years.

These damage cases help explain why some believe that closed landfills cannot be developed safely, except perhaps for relatively passive land uses. Interestingly, several of the damage cases were at closed landfills used for recreation and similar, relatively passive land uses.

To do the deal on a landfill redevelopment project, you need a team experienced in successfully designing, constructing and maintaining facilities on closed landfills. There

are several engineering firms with multiple landfill redevelopment successes to their credit. Some of these will design, construct and maintain mitigation systems, providing a single point of responsibility—and liability—for properly completing a project (and in the event the systems fail). Specialized insurance products are available to provide additional protection to the developer, as well as to the seller of the landfill site.

How much more will it cost to build on a closed landfill? Each project is different due to the unique characteristics of each landfill, the type of development, and selected regulatory framework. Some begin with the notion that they will excavate some or all of the buried waste for disposal offsite. This is expensive—it can cost \$20 to \$40 per cubic yard, or more, to dig and haul solid waste to an active landfill. Removing 60 feet of trash beneath a 100,000 square foot retail building will cost on the order of \$7 million.

Often, it is less expensive to design and construct a deep foundation system, such as pilings. Piles and associated foundation improvements will add on the order of \$15 to \$25 per square foot to the building cost. For the same 100,000-square-foot retail building, piles would add about \$2 million in cost.

Assuming at least some buried waste will remain onsite; the building will require protection from decomposition gases containing methane. A methane mitigation system consisting of a passive vent layer and membrane would add between \$2 and \$5 per square foot to the building cost.

In some cases, the incremental costs for enhanced foundations and methane mitigation are more than

the local market for raw land will bear. One approach that has been used to overcome this problem is tax increment financing. Details vary by jurisdiction, but essentially a portion of the future increased tax revenues produced by the development are used to pay for remediation costs (such as deep foundations and methane mitigation for a landfill redevelopment project).

Anything worthwhile is hard. But experience, hard work and a little creativity can help get the deal done on a landfill redevelopment challenge. **BFN**

*Mike McLaughlin is a senior vice president in the Reston, Va., office of SCS Engineers.*

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