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BROWNFIELDS: STRATEGIES TO KNOW

According to The Environmental Protection Agency (EPA), a Brownfield is "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." Brownfield is a term frequently used in urban planning to describe land previously used for industrial purposes or some commercial uses. Such land may have been contaminated with hazardous waste or pollution or is feared to be so. Once cleaned up, such an area can become host to a new business or residential development. Land that is more severely contaminated and has high concentrations of hazardous waste or pollution, such as a Superfund site, does not fall under the Brownfield classification. Mothballed Brownfields are properties that the owners are not willing to transfer or put to productive reuse. The term applies more generally to previously used land or to sections of industrial or commercial facilities that are to be upgraded, although this usage is becoming more commonplace.

REDEVELOPMENT STRATEGIES

A number of innovative financial and remediation techniques have been used in recent years to expedite the cleanup of Brownfield sites. For example, some environmental firms have teamed with

insurance companies to underwrite the cleanup of distressed Brownfield properties and provide a guaranteed cleanup cost for a specific Brownfield property, to limit land developers' exposures to environmental remediation costs and pollution lawsuits. The environmental firm first performs an extensive investigation of the Brownfield site to ensure that the guaranteed cleanup cost is reasonable and they will not wind up with any surprises.

Innovative remedial techniques used at distressed Brownfields in recent years include *in situ thermal remediation*, *bioremediation* and *in situ oxidation*.^{*} Often, these strategies are used in conjunction with each other or with other remedial strategies such as soil vapor extraction. In this process, vapor from the soil phase is extracted from soils and treated, which has the effect of removing contaminants from the soils and groundwater beneath a site. Generally, Brownfield sites exist in a city or town's industrial section, on locations with abandoned factories or commercial buildings, or other previously polluting operations. Small Brownfields also may be found in many older residential neighborhoods. For example, many dry cleaning establishments or gas stations produced high levels of subsurface contaminants during prior operations, and



the land they occupy might sit idle for decades as a Brownfield.

Typical contaminants found on contaminated Brownfield land include hydrocarbon spillages, solvents, pesticides, heavy metals such as lead (e.g., paints), tributyltins, and asbestos. Old maps may assist in identifying areas to be tested.

INNOVATIVE APPROACH TO REMEDIATION

Some Brownfields with heavy metal contamination have been cleaned up

through an innovative approach called *phytoremediation*, which uses deep-rooted plants to soak up metals in soils into the plant structure as the plant grows. After they reach maturity, the plants – which now contain the heavy metal contaminants in their tissues – are removed and disposed of as hazardous waste.

Research is underway to see if some Brownfields can be used to grow crops,



▲ **Construction debris encountered on a property in Southeast Michigan during foundation excavations for the construction of a new building. No environmental due diligence was conducted on the property prior to purchase, which may result in increased development cost.**

specifically for the production of biofuels. Michigan State University, in collaboration with NextEnergy, has small plots of soybean, corn, canola, and switchgrass growing in a former industrial dump site in Oakland County, Michigan. The intent is to see if the plants can serve two purposes simultaneously: assist with phytoremediation, and contribute to the economical production of biodiesel and/or ethanol fuel.

The regeneration of Brownfields has gained prominence due to Greenfield land

restrictions as well as their potential to promote the urban renaissance. Development of Brownfield sites also presents an opportunity to reduce the environmental impact on communities, and considerable assessments need to take place in order to evaluate the size of this opportunity.

POST-REDEVELOPMENT USES

Some state governments restrict development of Brownfield sites to particular uses in order to minimize exposure to leftover contaminants on-site after the cleanup is completed; such properties are deed-restricted in their future usage. Some legally require that such areas are reused for housing or for new commercial use in order not to destroy further arable land. The redevelopment of Brownfield sites is a significant part of new urbanism, while some Brownfields are left as green spaces for recreational uses.

For historical reasons, many Brownfield sites are close to important thoroughfares such as highways and rivers; their reclamation can therefore be a major asset to a city. Portland, Oregon has pioneered the use of road and rail infrastructure to support the cleanup and reuse of Brownfield sites. Another

example is the Atlantic Station project in Atlanta, the largest Brownfield redevelopment in the United States. In Seattle, rusted remains of a gasworks were left in place to add character to Gas Works Park. Dayton, like many other cities in the region, is developing Tech Town in order to attract technology-based firms to Dayton and revitalize the downtown area. One of the most well-known areas in the United States for Brownfield redevelopment is Pittsburgh, Pennsylvania, which has successfully converted numerous former

steel mill sites into high-end residential, shopping and offices.

BARRIERS TO REDEVELOPMENT

Many contaminated Brownfield sites sit unused for decades because the cost of cleaning them to safe standards is more than the land would be worth after redevelopment. However, redevelopment has become more common in the first decade of the 21st Century, as developable land grows less available in highly populated areas, and Brownfields contribute to environmental stigma which can delay redevelopment. Also, the methods of studying contaminated land have become more sophisticated and established.

According to Patrick Bell, project manager at Troy-based G2 Consulting Group, "When considering a Brownfield for redevelopment it is highly recommend that you first engage a qualified geotechnical or geo-environmental consultant to help guide your redevelopment strategy. They will perform the geotechnical tests and financial evaluation necessary prior to development."

Sometimes, an inexpensive solution may be to encapsulate Brownfields (as in, 'paved over') to allow for parking lots. "In the process of cleaning contaminated Brownfield sites, surprises are sometimes encountered, such as previously unknown underground storage tanks, buried drums or buried railroad tank cars containing wastes. When unexpected circumstances arise, the cost for clean-up increases, and as a result, the cleanup work may be delayed or stopped entirely. To avoid unexpected contamination and increased costs, many developers insist that a site be thoroughly investigated prior to commencing remedial cleanup activities," offers Patrick Bell. To learn more about Brownsite redevelopment, contact G2 Consulting Group in Troy at (248) 680-0400 or visit www.g2consultinggroup.com. ♡

***Refer to Google or Wikipedia for full definition.**