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Industrial Decline and the Opportunities and Challenges of Brownfield Redevelopment

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Introduction

October 2007 marked a milestone in the transformation of the United States economy. The Bureau of Labor Statistics reported that the number of manufacturing jobs fell below 14 million, a loss of 6 million from a high of almost 20 million in 1979. The last time the number was below 14 million was 1950. For context, during the 57 year period, the population of the United States doubled and gross domestic product increased by over 500 percent in real dollars.

The hemorrhaging of manufacturing has been a national reality, especially since the early 1990s. It is not our purpose here to try to explain the deindustrialization of the United States, as the literature about this issue is both rich and controversial. Rather, our intent is to focus on the legacy of hundreds of thousands of abandoned or underutilized factories, marshalling yards, transport, waste management and other orphaned sites from the era when the United States was the world's industrial powerhouse. More specifically, we focus on brownfield sites, defined by the United States Environmental Protection Agency as properties where expansion, redevelopment, or reuse "may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

Intersections between Brownfield and Community Development Issues

There are good reasons why community developers should focus their attention on brownfields. With regard to local concerns, some brownfields are public health and environmental hazards. Even if they are not direct threats, property values of neighborhoods can be depressed because of the perception of health and environmental threats. These hazardous or perceived hazardous brownfields are disproportionately in areas where the population is relatively poor, African American and/or Latino. Hence, uncontrolled brownfield sites often represent environmental justice concerns. When a brownfield site is controlled and then remediated, health and environmental risks are eliminated or reduced to negligible levels, the stressed local neighborhood can be reinvigorated with new jobs, housing, community and other desirable land uses and activities, tax payments emanating from redevelopment, and overall quality of life can markedly improve.

At regional and state scales, brownfield redevelopment has the benefit of reducing pressure on undeveloped open space. This means avoiding the need to build new roads, schools, water, sewer, and other infrastructure in greenfield areas. Government and not-for profit organizations can set aside more open space for future generations. City mayors can avoid closing fire and police stations and schools in their jurisdictions because the population has moved to the suburbs. Redeveloping brownfields implies more concentration of activities and hence shorter commutes, less automobile and more mass transit use. Politically, brownfield redevelopment can help suburban mayors who want to preserve their communities, and for urban mayors it can mean gaining federal and state resources, and private investment that can help close the gap between growing affluent suburbs and declining poor cities/older suburbs.

Understanding Brownfield Sites

Inexpensive and accessible land has become a scarce resource in large metropolises in New Jersey, New York, Massachusetts, Florida, California, and some other states. Where will expected population and job growth be accommodated? Where will large-scale projects, such as prisons, oil terminals, bus depots, airports, arenas, schools, and so on be located? Planners and developers in these environs have turned to brownfields and greyfields (See Box 2.1).

Each brownfield site must be judged on its own merits and demerits, but to understand the opportunities and challenges presented by various land parcels, it is useful to categorize sites into three types. The first, which we will call Tier I, are the best sites–they are relatively inexpensive to acquire, have minimal contamination or other physical constraints, already have infrastructure, and are located in desirable areas. These are "low hanging fruit" among the hundreds of thousands of brownfields and can be returned to economic use in a variety of ways. Consider, for example, a developer

Brownfield vs. Superfund and Greyfield Sites

Box 2.1

Brownfields are to be distinguished from Superfund and Greyfield sites. Superfund sites are defined by federal law (Comprehensive Environmental Response, Compensation, and Liability Act of 1980) as posing sufficient danger to public health and/or the environment to demand in-depth site investigation, remediation, restoration and inclusion in a list of "national priority" sites (NPL). Initially 400 NPL sites were designated. In time, the list reached over 1,200. The aggregate costs of cleanup have been tens of billions of dollars, and some life cycle cost estimates are over $200 billion. Remediation dollars come from responsible parties and the federal budget. Some Superfund sites are off-limits for redevelopment because the chosen protective remedy would be vulnerable to damage by construction, structures, and even deeply rooted vegetation. At best, the plurality of NPL sites can be used for recreation that does not require digging, blasting, or otherwise disturbing the site. At worst, contamination has spread off-site into surfaces and through aquifers, or gases have spread through the soil, and hence development of the surrounding neighborhood is not permitted and has scared investors. In our experience, the environs of Superfund sites are developed only if their location is extraordinarily valuable, and then only when developers and government work together to fashion land uses that are appropriate for stigmatized sites.[1] In comparison to NPL sites, brownfields are much less encumbered by regulatory, environmental, perceptual, financial and other constraints.

Greyfields are abandoned or underutilized shopping malls and retail hubs. During the 1950s, the first suburban malls began to replace the old downtown and adjacent ribbon shopping areas. Now the super-sized malls are replacing the older post- 1950s malls. The vast majority of these obsolete commercial facilities can be reused. But before acquiring a greyfield, one must conduct a due diligence review of contamination, structural, other physical and legal constraints. In the worst cases, a seemingly attractive greyfield site can be a more challenging property than a brownfield site.

who obtained an abandoned multi-purpose manufacturing complex located on the west side of the Hudson River in New Jersey, directly across from the west side of Manhattan with an unobstructed view of the famous skyline. The developer has spent millions to decontaminate the site and has installed an engineered barrier to prevent exposure to residual contaminants. But by selling or renting extremely expensive condominiums and apartments on the site, the developer will earn a high return even after expenditures on the environmental elements of the project.

Tier II sites have many of the same attributes as their Tier I counterparts but may have less intrinsic site location value, and likely there are one or two problems that complicate redevelopment. The constraint could be inadequate infrastructure, limited road access, relatively high remediation costs, and other problems that make the project economically less attractive than a Tier I site. The Tier II sites will wait until economic conditions change, regulations are modified, or intervention by a party with investment capital makes them developable.

Tier III sites sometimes have some spatial attributes and infrastructure. But they are handicapped by real and perceived problems. The most obvious is contamination levels that are high enough to make locations too expensive to redevelop without a large government or private subsidy. Some brownfield properties are so contaminated that their owners will not release them for development because their remediation costs are too high. Accordingly, they keep these properties active with a skeleton workforce. After negotiations with city officials and developers, clean parts of some sites have been released for redevelopment. However, many obsolescent manufacturing properties have been "mothballed to avoid cleanup costs."[2]

High pollution cleanup costs may not be the only constraint. Sometimes a brownfield site is located in a flood hazard area, the site may have insufficient sewage or water capacity, and lack road capacity or even access. When a site has multiple serious constraints, it is hard to envision it as anything other than open space. Surveys show that parks and other forms of open space often are the highest priority of local residents. Yet paying for the remediation of open space is a challenge. Indeed, an even bigger challenge is maintenance of small park space[3] and some cities prefer to give the land away to someone who will maintain it.

Overall, without a large influx of capital, Tier III sites are not going to be redeveloped anytime soon. This cohort of Tier III sites creates the greatest opportunity to engage the surrounding community in remediation and redevelopment efforts, and yet these sites are all too often left unattended, exacerbating the neglect and disinvestment associated with brownfield impacted areas.

Challenges

Potential developers face a number of major challenges, including finding sites, assessing contamination and remediation, estimating costs and benefits, and gauging and engaging community groups.

Finding Sites

Finding sites should be easy, but is not. One reason is that the responsibility for finding brownfield locations has fallen to state and local governments. Some have compiled comprehensive and trustworthy inventories. Others have compiled a list of identified "contaminated" sites, which may not be brownfield sites. The most accurate site inventories are prepared by local governments that have received funds from the federal EPA as part of a Brownfield pilot program. Over 400 local governments received funds; many used some of the funds to prepare accurate site inventories. Other local governments in these same states have no data, or data that they have is not reliable. The only foolproof site identification method is to start with whatever list is available and explore every site. There is no shortcut based on GIS tools or other methods, although large sites can be identified from aerial photography. In essence, finding brownfield sites involves detective work.

Assessing Contamination and Remediation

This stage begins with a review of historical maps, title searches, fire insurance records, zoning files, site inspection reports, United States Geological Survey maps and files, topographic maps, and other records, and conversations with knowledgeable people, including retired workers, fire, police and city engineers, and chamber of commerce representatives.[4] If this first phase suggests contamination, then samples need to be taken at the site to pinpoint areas in need of remediation. Typically, this means samples of building materials, air quality, and core drillings both on the site and off site. Site investigators must look for discoloration of soil, depressions in the ground, evidence of buried materials and groundwater contamination, as well as send soil samples to a lab for analysis.

While contamination is always a primary concern at brownfield sites, investigators must look for other problematic conditions, such as evidence of floods, poor soils, and a host of others that must be explored at any potential development location. In other words, due diligence is essential in order to assure financial institutions and local political officials that the redevelopment plan is worthy of their support.

Estimating Costs and Benefits

Every project faces land purchase, planning, site preparation, construction, marketing, insurance and legal costs. Brownfield sites, like other projects, also may require permits for encroachment on wetlands; developers may incur high costs for demolition, construction of infrastructure and other site–specific shortcomings. In addition to these expenses, brownfields sites face remediation costs. These costs can be minimal, but at worst can be excessive. These costs could include digging out contamination and moving it to a legal dumpsite. If contamination remains, impervious rocks and a plastic liner may be required to prevent migration of the contaminants.

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Developers and owners of brownfield sites may face additional operation and maintenance costs. If all the waste has been removed, then ongoing stewardship should be no greater than a normal development. But many brownfields leave low levels of contamination in place. Engineered barriers, pump and treatment systems, and other devices will need inspection; and energy and other stewardship costs may be higher to support engineered systems. If the deed comes with institutional constraints–such as restrictions on the use of basements for living space or on the planting of food crops–then these restrictions will need to be enforced. Sometimes third party claims are filed after redevelopment, and new environmental regulations can exert pressure on owners to further remediate sites.

Because of these environmental conditions, brownfield property values may be discounted, so that tax benefits and other inducements are likely to be offered to developers. Will the economic benefits, as well as social and political benefits of brownfield redevelopment exceed the costs? This calculation requires consideration of a litany of conditions, such as stigma, that can lower property value. After redevelopment will the site still be undervalued because of its history? In short, the economics of brownfield reuse require the highest degree of due diligence.

Gauging and Engaging Community Groups

Public participation is a challenge and an opportunity. Often, there is some level of uncertainty regarding the degree to which community members will engage on issues relating to brownfields. In our experience, the majority have little or no interest in a given project and the community. Another group will read materials, possibly attend a meeting, and then disengage. They may re-engage at some later stage.

A third group wants to be engaged as individuals or as part of an organization, but might not know how to deal with brownfield sites. In order to build the capacity of these and other community groups, we at the National Center for Neighborhood Brownfield Redevelopment have formulated a U.S. EPA funded assistance program that teaches groups about all aspects and steps of brownfield redevelopment. First, we begin by introducing the basic elements of city planning, land use mapping and visioning. Our goal is for community groups to recognize the importance of seeing the potential of a redeveloped brownfield site as part of their

surrounding community rather than as eyesore. A second module focuses on how the community can market its neighborhood, including creating an identity and engaging the broader community in revitalization.

Next, we have two modules that focus on site assessment reports and basic brownfield regulatory requirements. In them, we review Phase I site investigations and how residents can help to identify and research background information about sites. Then, we review how to interpret both Phase I and II reports, offering help to community groups on when to hire consultants and the impacts of various past site uses and contaminants on potential reuse decisions. Finally, we offer a module with useful information about how to access financial resources, how to obtain grants and insurance products that are available to protect groups from liability. Additional topics and follow-up with community groups are part of the planned expansion of the program. During these technical assistance sessions, community groups raise many issues and concerns with our expert staff, such as their views of gentrification, open space, reindustrialization, and others. The assistance is customized to respond to their particular local issues and to help them to address specific sites in their neighborhoods.

Conclusion

Brownfield redevelopment may parallel greenfield and greyfield development in terms of process, but it clearly presents additional challenges. The major differences are the increased need for due diligence about pre-existing site conditions, and the impact of these on cost, regulatory constraints, stigma and potential marketing. At worst, a brownfield site may have a chilling effect on the surrounding area; we know of some where the tax assessor indicated that negative economic impacts reached a mile or more from brownfield sites. The combination of actual contamination and media hype about brownfields is another challenge. Yet many reputable sources–including the National Governor's Association[5], the U.S. Conferences of Mayors[6], the Urban Land Institute[7] and other independent sources[8]–have noted that while there are limitations, the benefits of revitalizing brownfields can be well worth the challenges. For those wishing to invest in these projects, careful analysis is critical, as is the development of both financial and social coalitions supporting the chosen remediation and redevelopment product.

The Northeast-Midwest Institute (www.nemw.org) and the U.S. EPA (www.epa.gov) are the best sources for keeping track of brownfield redevelopment in the United States. CI

The physical legacies of its industrial past loom over Allegheny West, a neighborhood in North Philadelphia.