



## Public/Private Partnerships for Brownfield Redevelopment

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The migration of industry and light manufacturing from urban centers to suburban and exurban areas have left U.S. cities strewn with environmentally contaminated sites commonly referred to as "brownfields." This contamination lowers the market value of properties on which the contaminants remain, and in many cases the value of nearby properties as well. At the same time, however, environmental remediation can be hindered by potentially high and uncertain cleanup costs as well as liability concerns.

This issue of the *NC State Economist* describes the size of the problem posed by brownfields, the contribution to local redevelopment efforts that can result from brownfield cleanup, and a promising mechanism for financing such cleanup efforts.

### The Size and Nature of the Problem

Many contaminated sites have been identified by authorities as such and are documented in state or federal lists of hazardous waste sites. The U.S. Environmental Protection Agency (USEPA) maintains an inventory of severely hazardous sites, the most problematic of which are placed on the National Priority List (NPL). There are 215 hazardous sites listed by the USEPA in North Carolina, of which 31 are severe enough to be listed on the NPL. The Research Triangle region alone contains 27 of the hazardous sites, of which 6 are listed on the NPL. The North Carolina Department of Environment and Natural Resources (DENR) also maintains a list of sites which have had reportable releases of contamination, but for which there are generally no cleanup activities ongoing. As of October 1, 2007 DENR listed 697 such sites throughout the state.

The desire to clean up hazardous waste sites is motivated by more than just environmental concerns. Contaminated properties are thought to suffer reduced economic potential as cleanup costs and liability concerns keep these properties from being redeveloped and placed in their highest and best use. Perhaps more importantly, in addition to having reduced economic potential themselves, hazardous waste sites are likely to have negative effects on their surrounding community. Proximity to a contaminated property may decrease a non-contaminated property's economic opportunities for a number of possible reasons. Potential investors may have concerns that contamination has migrated, or that there may be increases in health risks of employees and visitors to the property as a result of being located near a contaminated site.

Thus, the cleanup and redevelopment of hazardous waste sites is often seen as an important component of local redevelopment efforts. Redevelopment can lead to increases in jobs and the local tax base as the sites and their surrounding properties contribute more fully to the local economy. In addition, to the degree underutilized downtown properties can be redeveloped, the pressure to develop "green fields" at the urban fringe is lessened.

The universe of properties which may have negative impacts on their communities due to environmental contamination is much broader than just properties listed on state and federal lists. Many properties suffer reduced economic potential because of suspected contamination even though they have not been formally assessed by local

authorities. Far more properties are considered brownfields because of suspected contamination than are considered such because the properties have been formally tested by state or federal agencies. Brownfields are found in every U.S. city. In a 2006 U.S. Conference of Mayors report, mayors from 172 cities estimated that they had over 23,810 brownfields sites comprising over 96,000 acres of land. According to a city of Raleigh brownfields assessment project funded by a USEPA grant in 2004, there are 1,600 potential brownfield sites in the city of Raleigh's downtown development zone alone.

### **Financing Brownfield Redevelopment**

An important complicating factor for brownfield redevelopment is that the cleanup activities may be costly enough that private developers would not find redevelopment profitable, especially since the additional costs of remediation are borne upfront and are not known with certainty until cleanup begins. In cities like Raleigh and Charlotte, with no natural barriers for expansion at the urban edge, brownfields are not likely to be attractive relative to greenfield counterparts in the suburbs given these additional costs. A strategy for approaching this aspect of brownfields redevelopment is to employ creative finance mechanisms for cleanup programs which incorporate public sector involvement. One such mechanism is *tax-increment financing* (TIF).

To finance a public improvement project with TIF, a local government would issue bonds to finance a project and then rely on increased property tax revenues that result from the project to repay the debt. The additional tax revenues result from the increased property values in the area surrounding the project. The tax rate does not change, nor does the current allocation of tax revenues to finance local government operations. Only the additional tax revenues associated with the increased property values (from some pre-project baseline) are used to repay the debt.

Once the debt is completely serviced, the additional revenues generated for the local municipality can go toward schools and other public services.

In November 2004, North Carolina approved an amendment to the state constitution to allow TIF programs to be implemented. While not without controversy, TIF programs when used correctly can help redevelop blighted areas that would not otherwise be addressed by the private sector – and in the case of brownfields, reduce the post-industrial environmental contamination legacy blighting many poor inner-city neighborhoods. To implement a TIF program for brownfield cleanup, a local jurisdiction would develop an "impact district" surrounding the brownfield. The properties in the impact district are areas thought to suffer reduced property values at least in part from their proximity to the environmentally contaminated site. As such, it would be expected that cleanup of the brownfield would lead to a rebound of property values within the impact district. Any increases in tax revenues resulting from post-cleanup increases in property values within the impact district would be directed to a fund to repay the bonds financing cleanup. It is important to note that the additional tax revenues used to repay the bonds do not represent new taxes – rather they represent increases in revenues due to the existing tax rates being applied to properties that now have higher market values.

A recent example of a major TIF program is the Beltline Tax Allocation District approved by the city of Atlanta, Georgia, covering 8% of the land contained within the city limits. This TIF district was established to fund \$1.7 billion of the estimated total \$2.8 billion cost of the beltline. The beltline will add light rail transit, new green space, and urban trails to Atlanta's urban core along 22 miles of historic rail segments. Part of the TIF funds are being used specifically for supporting the cleanup of contaminated properties within the improvement district resulting from the industrial uses associated with the historic rail corridor. Michigan, Wisconsin, Connecticut and Pennsylvania have all adopted measures specifically aimed at TIF mechanisms to help fund brownfield redevelopment efforts.

## Implementing a TIF Program

A potential issue with TIF programs, and one that was used to argue against the amendment of the North Carolina state constitution to allow such programs, is that without sufficient recovery in the tax-base post project, the additional revenues from property value growth in the impact district may not be sufficient to cover the debt obligation. Redirection of funds from other sources would then be necessary to service the debt. However, careful planning and analysis can avoid such outcomes.

To determine the feasibility of TIF programs for financing cleanup of brownfields, the potential for property value increases in the TIF impact district post brownfield remediation must be estimated *ex-ante*. This can be accomplished with property value models that are commonly used by economists, real estate researchers, and tax assessors to quantify the factors that contribute to a property's market value. Over 30 studies have used property value models to estimate the impacts of environmentally contaminated sites on neighboring property values. This method can identify the reduction of a property's market value attributable to proximity to the brownfield, as well as helping to identify the relevant impact district.

A recent study by Ihlanfeldt and Taylor (2004) illustrates the potential of this method. The authors estimated the property value impacts of environmentally contaminated properties on commercial and industrial property values in Atlanta, Georgia. The importance of this study is that it focused on commercial properties, while most other studies had focused on residential properties. Environmentally contaminated properties are more likely to be located near other commercial and industrial properties, and it is through the gain in value of these types of properties that the tax base is most likely to increase sufficiently to repay TIF program debt.

Ihlanfeldt and Taylor examined the impacts on surrounding commercial and industrial property values of 44 sites with known contamination. Hazardous waste sites were estimated to significantly reduce property values of commercial and industrial properties surrounding them – by as much as 20 percent for some commercial land uses (offices). The total property value losses

within 1.5 miles of each of the 44 sites studied was estimated to be approximately \$1 billion, or about 10% of the base value of properties within a mile of these sites, collectively.

Ihlanfeldt and Taylor used their study results to determine the feasibility of TIF programs to finance cleanup of one, or more, of the sites they studied. They estimated that if the cost of cleanup was \$1 million per site or less, 81 percent of the 44 contaminated sites would be candidates for a TIF program financing remediation (assuming bonds mature in 15 years). The number of sites that could be candidates is reduced to as few as 10 sites if the cost of cleanup is \$5 million.

Of course, the results of Ihlanfeldt and Taylor are specific to the market and the type of sites they studied. Notably, the authors studied only sites placed on the state or federal lists of sites with known contamination severe enough to warrant regulator involvement. In addition, many of the sites were located in close proximity to downtown Atlanta with high commercial real estate values. However, the methods they used are possible to implement in most major metropolitan areas. Property value models only require access to property value data (public information in most states, including North Carolina, and usually available from local tax assessor's offices) in combination with geospatial information that allows the analyst to develop spatial relationships between properties and brownfields. Using standard analytical tools, property value analysis can be used to help focus efforts seeking to define good candidates for TIF programs, and help avoid the pitfall of leaving local jurisdictions "holding the bag."

### Resources and additional information:

Ihlanfeldt, Keith and Laura Taylor. 2004. "Estimating the Economic Impacts of Environmentally Contaminated Properties in an Urban Area," *Journal of Environmental Economics and Management*, 47:117-139.

U.S. Conference of Mayors. May 2006. *Recycling America's Land: A National Report on Brownfields Redevelopment*, available at [www.usmayors.org/74thAnnualMeeting/brownfieldsreport\\_060506.pdf](http://www.usmayors.org/74thAnnualMeeting/brownfieldsreport_060506.pdf)

*Tax Increment Financing and Economic Development: Uses, Structures and Impact*, edited by Craig Johnson and Joyce Mann. Albany, NY: SUNY Press. 2001.

North Carolina Department of Environment and Natural Resources, Division of Waste Management: <http://www.wastenotnc.org/sfhome/ihsbrnch.htm>

U.S. Environmental Protection Agency's Brownfields and Land Revitalization: <http://www.epa.gov/brownfields/>

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