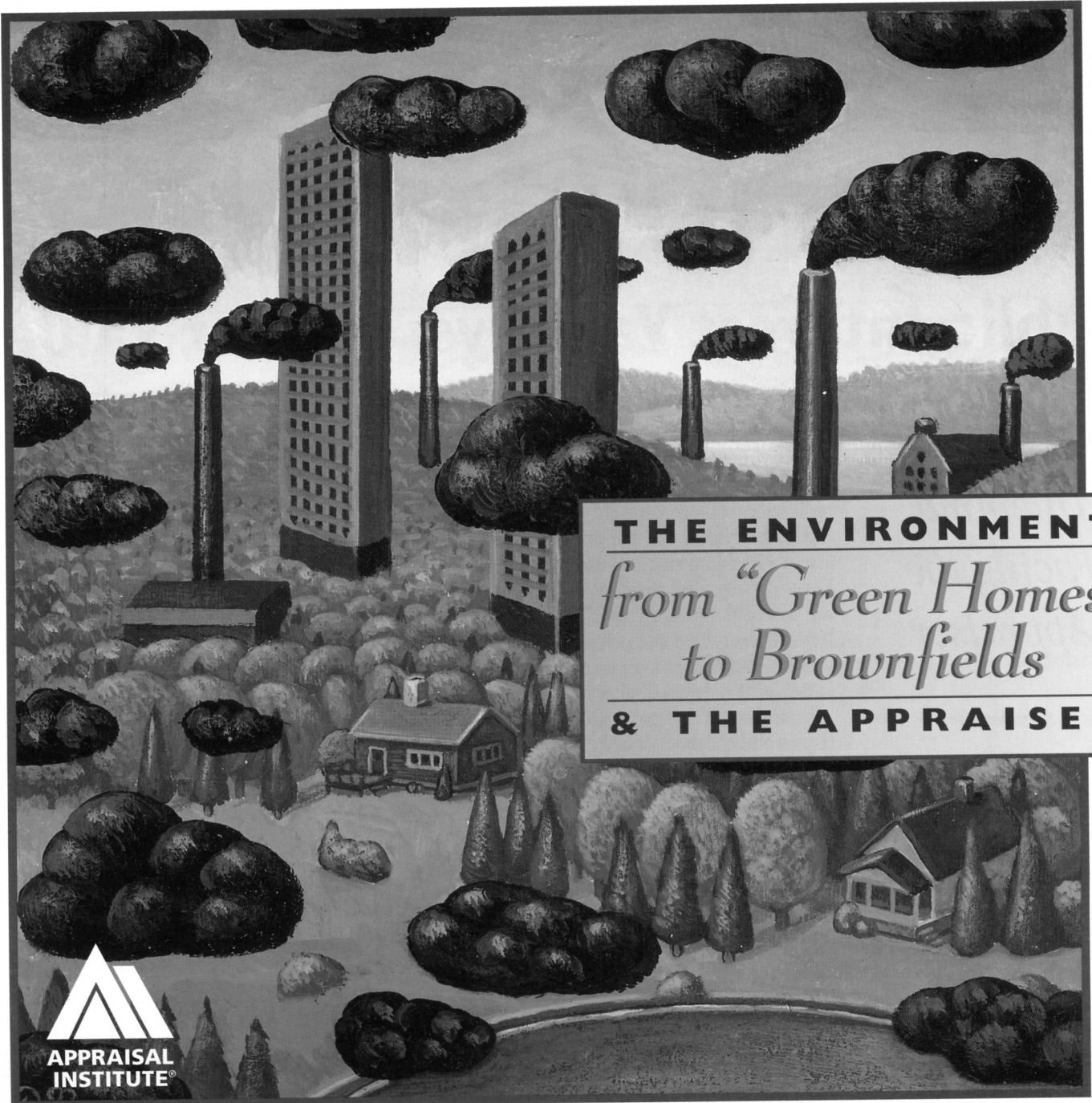


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VALUATION

INSIGHTS & PERSPECTIVES



THE ENVIRONMENT
*from "Green Homes"
to Brownfields*
& THE APPRAISER



The Brownfield Challenge

Even after measuring a contaminated site's cost-to-cure, lender and tenant concerns, and stigma can all contribute to diminished values

The appraisal profession is in near complete agreement on several points concerning brownfield valuation, but for the practicing appraiser in the trenches, many questions still remain. So much of the value estimate in any appraisal situation is based on the appraiser's judgment, particularly in determining the reasonableness of the many adjustments determined by various methods. Yet few guidelines exist to aid the appraiser in making these judgment calls. When the appraiser begins looking at impaired versus comparable yet unimpaired properties, the magnitude of discounts can often be unsettling.

In reviewing the upper and lower bounds of these potential adjustments and examining some of the valuation problems found in brownfield appraisals, a number of important answers and insights begin to emerge.

Most appraisers can agree on four key points about valuing brownfields:

- Contamination poses an issue that must be considered in the appraisal process.¹
- Proximate contamination significantly impairs property values.²
- Multiple impairment mechanisms are at work, including actual cost-to-cure, increased ongoing maintenance costs and stigma.³
- The valuation process is a complex, often requiring advanced valuation approaches such as perceived diminution, contingent valuation and conjoint analysis to complement traditional approaches.⁴

Defining Brownfields & Stigma

The U.S. Environmental Protection Agency (EPA) defines brownfields as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination that can add cost, time or uncertainty to a redevelopment project. In *Brownfields: A Comprehensive Guide to Redeveloping Contaminated Property*, Todd S. Davis and Kevin D. Margolis write that brownfield sites typically fall into four categories: Those that remain economically viable, despite the need for contaminant remediation; those with some development potential, provided that there are sufficient economic incentives or financial assistance; those with extremely limited market potential, even after remediation; and those currently in use but in danger of becoming brownfields because contamination will discourage new investment.

The U.S. General Accounting Office estimates there are as many as 450,000 brownfields in the country. A recent survey



1. This is covered under Appraisal Institute Guide Note 8. A discussion of the appraiser's responsibility can also be found in J.D. Eaton's *Real Estate Valuation in Litigation*, published by the Appraisal Institute.
2. For one of the better papers on this topic, see Karl L. Gunterman's "Sanitary Landfills, Stigma, and Industrial Land Values." It can be found in the *Journal of Real Estate Research*, vol. 10, 1995, pp. 531-542.
3. For more information see Mundy's article "Stigma and Values," in *The Appraisal Journal*, January 1992, pp. 7-13.
4. From Mundy and McLean's article "Using the Contingent Value Approach for Natural Resource and Environmental Damage Applications," in *The Appraisal Journal*, July 1998, pp. 290-297.

The Brownfield Breakdown

No one ever plans a brownfield, nor do they just happen. The best-known causes are usually abandoned underground storage tanks, particularly from petroleum storage facilities. However, manufacturing sites, chemical storage facilities, distribution warehouses and even food processing plants can turn otherwise clean sites into brownfields.

In our analysis of major brownfield transactions nationwide several common themes have emerged.

The principal source of contamination is a chemical spill, either from storage or as a by-product of manufacturing processes. The spill typically permeates soil and groundwater and then can contaminate surrounding properties. Brownfields are usually sold in an unremediated state and are commonly small sites of less than 10 acres. Value loss is typically over 25 percent and may reach over 90 percent in some cases.


PROXIMATE CONTAMINATION

It is also helpful to look at impacts of proximate contamination, which is the impact a contaminant source may have on surrounding properties, particularly residential tracts. While the rigid definition of a brownfield typically limits it to a commercial or industrial site, the definition recognizes that proximate contamination can be every bit as damaging to value as on-site contamination.

The general phrase for the impact of proximate contamination of damage—coined by Davis and Margolis—is called brownfield stigma. Brownfield stigma may result even when there is no threat of on-site contamination. Also, a specific brownfield under review can impact surrounding properties, creating a serious liability for current and future owners. Proximate sites impacted by brownfield stigma can also have some levels of contamination themselves, which can complicate the valuation problem further. The appraiser ends up looking at a variety of properties in a neighborhood, with varying levels and causes of contamination, and in turn varying degrees of economic impact.

VARYING IMPACT ON RESIDENTIAL PROPERTY

A review of residential properties affected by proximate contamination finds value diminution ranging from eight to 100 percent. An example of the lower end of the range involved a residential subdivision of more than 300 homes that were impacted by groundwater contamination from a nearby landfill. Even after the installation of a water purification system (at the expense, of course, of the brownfield



by Bill Mundy, MAI
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in one major city found that environmental issues were involved in 62 percent of the commercial and industrial real estate transactions.

While cost-to-cure and increased ongoing maintenance may be easy terms for the lay person to understand, the concept of stigma is even difficult for many professional appraisers to grasp. It is a handy shortcut (but by no means a complete definition) to understand that brownfields contain either quantifiable or perceived risks. The former category includes out-of-pocket items such as cost-to-cure. The latter includes non-quantifiable, but nonetheless, real impacts.

How do we know these risks are real?

These perceived impacts are manifest in reductions in actual arm's-length transaction sales prices realized in the marketplace. The level of perceived risk can vary with the characteristics of the contamination, such as whether it is catastrophic, unfamiliar or involuntary. Perceived risk also varies with the level of media exposure, with the nature of the party at fault and the degree of innocence of the victim. All of these factors result in a real diminution of value, even in the absence of a quantifiable risk. This diminution is called stigma.⁵

5. Mundy's "Stigma and Value," op. cit.

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Brownfield Challenge

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owner), the local property values diminished by about eight percent as a result of stigma.

In a high-end case where a subdivision was located near a refinery, the brownfield owners were forced to

buy some of the residences. From the brownfield owner's perspective, many of the homes had a diminution in value of 100 percent.

The EPA finally ordered that a water purification system be installed. But even after a severe housing shortage in the surrounding market, property prices were still diminished by as much as 40 percent. In general, proximity to a brownfield appears to diminish residential property prices by 20 to 50 percent in nationwide case studies.

TAKING A CAUTIOUS APPROACH

National case studies are useful in indicating the boundaries of value diminution resulting from localized or proximate contamination. However, more detailed analysis is needed

Environmental book useful guide for appraisers

How do appraisers deal with the many technical and legal issues that arise in the appraisal of environmentally impaired property? How should they respond when their clients ask them to complete environmental checklists or surveys? Can they provide services that meet their clients' needs without exposing themselves to misrepresentation and liability?

To answer these questions and perform their work competently, appraisers must tap into a number of resources. One such resource, *Environmental Site Assessments and Their Impact on Property Value: The Appraiser's Role*, by Robert V. Colangelo, CPG and Ronald D. Miller, Esq., published by the Appraisal Institute in 1995, promises to give appraisers a better understanding of the documentation that exists in the field and how it can be used to augment and support the valuation process.

The text provides a historical perspective on environmental issues and insights into government regulatory requirements and industry standards for evaluating environmental hazards. Included are extensive discussions of ASTM standard practices and the Appraisal Institute's Property Observation Checklist, which appraisers can use to define both the limited scope of their analyses and their role in the inspection process. The Property Observation Checklist is also available online and can be downloaded from the Appraisal Institute's Web site at www.appraisalinstitute.org.

to begin developing measures that are useful in specific cases. Our firm, for example, has surveyed various groups, including lenders, brokers, tenants and buyers.

LENDERS

Based on our firm's biannual, nationwide interviews with lending institutions, lenders appear to be generally concerned about being drawn into remediation problems and costs. They are also concerned about the impact of brownfield contamination on the value of their collateral. It appears that when lenders are faced with financing a contaminated site, they sometimes establish what is often called a "brownfield hurdle" for the borrower to cross.

The height of the hurdle varies depending on the nature of the borrower and the specific contamination problem. For example, funding can generally be obtained if a "no further action" letter is issued by the appropriate state or federal agency. While some lenders may require additional due diligence, such as independent soil testing or groundwater monitoring, the borrower is generally able to get market-rate financing once the "brownfield hurdle" is crossed.

Without a "no further action" letter, brownfield funding can still be arranged but usually at altered terms. While lenders will generally still charge market rates, they will frequently lean toward making recourse rather than nonrecourse loans. Lenders will want solid indemnification from significant credit-worthy indemnifiers and loan-to-value ratios will often be significantly lower. Also, the lender may attach other collateral of the borrower such as unimpaired real estate, stock or bonds or a letter of credit.

BROKERS

Generally the purpose of an appraisal is to estimate market value. This assumes a transaction occurring involves a prudent, knowledgeable buyer. The broker is an important intermediary in that process who can have a significant impact on the marketability of a property. A survey our firm conducted with members of the Society of Industrial and Office Realtors® indicates brokers are becoming more concerned with disclosure laws and rulings. Many brokers indicate that they are conducting independent due-diligence before listing or selling brownfields.

TENANTS

Not unexpectedly, prospective tenants are quite concerned about both on-site and proximate contamination. The level of concern seems to vary according to the tenant type and

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Tips On Valuing Brownfields

Hedonic Modeling and Survey Techniques

First generation appraisal approaches (cost, income capitalization, sales comparison) often come up short when attempting to value brownfields and surrounding properties. Implicit in these approaches is the premise that underlying comparable transactions are fair market and are consummated by knowledgeable parties. Studies, however, indicate that buyers are often not fully knowledgeable about the extent, severity or ramifications of contamination.

Both state and federal disclosure laws are supposed to level the knowledge playing field. Unfortunately, the federal lead-hazard disclosure law effectively exempts dwellings built after 1977. The EPA handbook, "Protect Your Family from Lead in Your Home" which is required as part of the lead disclosure process, clearly states that proximity to lead smelters and other industries can be a source of lead contamination. However, the federal disclosure requirements are silent on disclosure of proximity to a lead smelter or soil contamination.

Also, many state disclosure requirements have an easy-out for sellers, who can state "I don't know" to many of the questions and waffle on the disclosure of any information about known contaminants. Again, studies indicate a widespread, yet understandable, tendency for sellers to disclaim knowledge about contamination. When it comes to comparables, matched pairs may be difficult or impossible to locate, particularly in class-action suits, where every comparable property is impacted by a similar level of economic depreciation.

Fortunately, appraisal methodology has moved well beyond the first generation models. USPAP makes adequate provision for inclusion of second generation approaches in the appraisal process. These advanced approaches include

hedonic modeling (multiple regression) and survey techniques.

Hedonic models are variations on Automated Valuation Models (AVMs). USPAP Advisory Opinion 18, dated July 8, 1997, outlines the use of AVMs. Hedonic regression models have been a mainstay of appraisal literature for decades. Kelly Pace, a professor at Louisiana State University, writing in a recent article in the *Journal of Real Estate Finance and Economics*, shows that hedonic models are subject to considerably less variation than matched-pairs. *The Journal of Real Estate Research* devoted two volumes in 1998 to advanced methods like hedonic modeling. The overwhelming conclusions, summarized in a piece by Professor Hans Isakson of the University of Northern Iowa, support the use of hedonic models in the appraisal process.

Survey methods for estimating contamination are built on a generation of research and practice in consumer marketing. The U.S. Government, acting through the Department of the Interior and the National Oceanic and Atmospheric Administration, subjected survey methods to detailed scrutiny in the early 1990s. The government wanted to determine the usefulness of surveys in determining damages from oil spills, particularly to coastlines and the Alaskan tundra—areas where comparables were not readily available. A blue-ribbon panel, led by Nobel Laureates Kenneth Arrow and Robert Solow, concluded these approaches were reliable and valid when used properly. The final verdict on survey approaches was published in the *Federal Register* in 1995.

— Bill Mundy, MAI, Dave McLean and John Kilpatrick

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the type of contamination. Potential tenants with people-intensive uses (e.g., offices, retail) are the most concerned, according to interviews conducted with tenants (local, regional and national firms) throughout the United States. Environmental externalities that create the greatest concern are radioactive materials followed by chemicals (e.g., solvents) in the groundwater.

BUYERS

Above and beyond out-of-pocket costs, brownfield owners face value diminution from stigma. In the case of income-producing brownfields, stigma can be best thought of as the increase in cap rate above the cap rate that would otherwise be extracted from the market. Raw land, residences and other non-income-producing properties also suffer from stigma-induced losses that are every bit as real, and in many residences, may be even greater in magnitude. However, they are somewhat more problematic to measure.

Surveys of potential buyers across numerous venues point to a mean cap rate premium of 5.8 percent above the market. For example, in a market with a 10 percent cap rate for unimpaired property, stigma would induce a 15.8 percent cap rate.

Obviously, the value diminution is substantial. An unimpaired parcel with a net operating income of \$100,000 would have a market value of \$1 million, but a stigmatized parcel would only be valued at \$633,000. This represents a loss of over 36 percent even after the site cleanup.

It is interesting to note that approximately 20 percent of potential buyers indicate there is no cap rate high enough to induce them into buying a particular brownfield. This suggests that even with the extra-ordinary cap rate, the market condition's (presumption of a transaction) criteria of an

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Implications for Appraisers

appraisal are seriously violated.

The Uniform Standards of Professional Appraisal Practice (USPAP) provides some important guidance in Advisory Opinion No. 9, Responsibility of Appraisers Concerning Toxic or Hazardous Substance Contamination. The opinion recommends the consideration of three issues when valuing a brownfield or other property that is potentially impacted by contamination:

- Recognition of the contamination
- Estimation of the costs of remediation and compliance⁶
- What interests are impacted?

The first two points deal with the competency provision of USPAP. It reads “An appraiser is a trained and experienced observer of real estate, but recognizing, detecting, or measuring contamination is often beyond the scope of the appraisers expertise.” The appraiser must rely on the opinions of qualified specialists and must take care to limit the scope of the appraisal to the valuation aspects. But can the appraiser simply ignore obvious contamination?

Interestingly, the answer is yes. The

appraiser can hypothetically assume the property to be contamination-free, but only if the resulting appraisal would not be misleading, the client has been advised of the limitations and the ethics provisions of USPAP have been satisfied.

The Appraisal Institute’s Guide Note 8 also offers helpful examples and illustrations of appropriate report language to aid an appraiser’s USPAP compliance in this area. [Editor’s note: Further details on Guide Note 8 can be found in the legal column beginning on page 37.]

Brownfield Review

Brownfield contamination causes a value impact both for the brownfield itself and for the surrounding properties. Even after accounting for the cost-to-cure the contamination, lender and tenant concerns, and stigma can all contribute to a value diminution.

Lenders are concerned with the complications and value losses in their collateral. Tenants will be concerned for their clients and employees. Stigma associated with the property can cause a value loss that is usually manifested through an increase in cap rate. This cap rate increase can cause a significant

value reduction, and recent studies indicate stigma alone accounts for property loss by as much as a third from the otherwise unimpaired value.

Case studies from around the country show value diminution that is commonly 25 percent and reaching more than 90 percent for the brownfield itself. In some rare instances there is total value loss. What’s more, surrounding residential property can also be impacted.

The appraiser faced with valuing a brownfield is challenged both by the complexity of the problem as well as the need to adhere to USPAP and the ethical requirements of the Appraisal Institute. ▲



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6. In cases involving such things as groundwater contamination, frequently this is extremely difficult or impossible for the appraiser to determine.