



Standard Guide for Brownfields Redevelopment¹

This standard is issued under the fixed designation E 1984; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide covers redevelopment of a Brownfields property for all stakeholders. This guide identifies impediments to Brownfields development and suggests solutions to facilitate redevelopment. The sustainable Brownfields redevelopment process is a voluntary effort that actively engages property owners, developers, government agencies, and the community in conducting corrective action, economic evaluation, and other actions to promote the long-term productive reuse of a Brownfields property.

1.2 It is the intent of this guide to encourage a sustainable Brownfields redevelopment process through responsible private/public investment and redevelopment of Brownfields properties. Brownfields redevelopment is not strictly an environmental issue. In some cases, the environmental issues may be a minor component of the redevelopment project. The interrelated financial, regulatory, and community participation aspects of Brownfields redevelopment should also be addressed. Decisions made in one of these areas may affect responses in other areas. The “quality of life” issue is often a major focus of the community. For example, a community’s goals for the ultimate use of a property may affect corrective action and the cost of potential remedial action that, in turn, may enhance the redevelopment.

1.3 This guide is intended to describe a highly flexible process. This process is not linear, and not every project requires full use of all components of the process for effective implementation. The key to the process is the active engagement of government, developers, and the community to ensure successful sustainable Brownfields redevelopment process.

1.4 *This practice offers a set of instructions for performing one or more specific operations and should be supplemented by education, experience and professional judgment. Not all aspects of this guide may be applicable in all circumstances. The ASTM Standard Guide does not necessarily represent the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied*

without consideration of a project’s unique aspects. The word “standard” in the title means only that the document has been approved through the ASTM consensus process.

2. Referenced Documents

2.1 ASTM Standards:

- E 1527 Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process²
- E 1528 Practice for Environmental Site Assessments: Transaction Screen Process²
- E 1739 Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites²
- E 1912 Guide for Accelerated Site Characterization for Confirmed or Suspected Petroleum Releases²
- E 1943 Guide for Remediation by Ground Water by Natural Attenuation at Petroleum Release Sites²
- E 2081 Guide for Risk-Based Corrective Action for Chemical Releases²
- E 2091 Guide for Activity and Use Limitations, Including Institutional and Engineering Controls²
- E 2137 Guide for Estimating Monetary Costs and Liabilities for Environmental Matters²
- E 2205 Guide for Risk-Based Corrective Action for the Protection of Ecological Resources²

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *activity and use limitation*—legal or physical restrictions or limitations on the use of, or access to the property to eliminate or minimize potential exposures to chemicals of concern.

3.1.2 *Brownfields*—Real properties where expansion or redevelopment is complicated by the potential or confirmed existence of chemical(s) of concern environmental media.

3.1.3 *Brownfields redevelopment coordinator*—a local or regional government official, economic development agency, or nonprofit organization responsible for facilitating Brownfields redevelopment.

¹ This guide is under the jurisdiction of ASTM Committee E50 on Environmental Assessment and is the direct responsibility of Subcommittee E50.02 on Commercial Real Estate Transactions.

Current edition approved May 10, 2003. Published July 2003. Originally approved in 1998. Last previous edition approved in 1998 as E 1984 – 98.

² *Annual Book of ASTM Standards*, Vol. 11.04.

3.1.3.1 *Discussion*—The Brownfields redevelopment coordinator is generally associated with local government. However, the Brownfields redevelopment coordinator can be an official of a regional, state, or federal government agency.

3.1.4 *chemical(s) of concern*—the specific constituents and their breakdown products that are identified for evaluation in the risk-based corrective action process.

3.1.4.1 *Discussion*—Identification can be based on their historical and current use at a property; detected concentrations in environmental media; and their mobility, toxicity, and persistence in the environment. Chemical(s) of concern may include, but not be limited to, petroleum, metals and chemicals related to industrial activities.

3.1.5 *community*—the individuals living or working within the area that may be affected by Brownfields redevelopment.

3.1.5.1 *Discussion*—The community should be defined on a property-specific basis.

3.1.6 *corrective action*—the sequence of actions that include property assessment and investigation, interim remedial action, remedial action, operation and maintenance of equipment, monitoring of progress, and termination of the remedial action.

3.1.7 *developer*—a private or public entity that intends to redevelop a Brownfields property and may provide all, part, or none of the funds.

3.1.7.1 *Discussion*—The developer of a Brownfields property is often an organization or company whose primary business is typically unrelated to redevelopment of Brownfields properties. As an example, a developer may be the owner of a company that wants to purchase an adjacent parcel of property for expansion of the existing business.

3.1.8 *exposure pathway*—the course a chemical(s) of concern takes from the source area(s) to an exposed organism. An exposure pathway describes a mechanism by which an individual or population is exposed to a chemical(s) of concern originating from a property.

3.1.8.1 *Discussion*—Each exposure pathway includes a source of release from a source, a point of exposure, and an exposure route. If the exposure point is not at the source, a transport/exposure medium (for example, air or water) also is included.

3.1.9 *Remedial Action*—Activities conducted to protect human health and the environment by meeting acceptable risk-based site-specific target levels by using any combination of actions such as natural attenuation; institutional controls; source removal; engineering controls; and design, maintenance, and operation of remedial action equipment. Remedial action includes activities that are conducted to reduce sources of exposures to meet corrective action goals, or to sever exposure pathways to meet corrective action goals.

3.1.9.1 *Discussion*—For Brownfields properties the agreed upon remedial action may require a combination of active removal and exposure management methods that are protective of human health while allowing cost-effective property redevelopment.

3.1.10 *risk-based corrective action*—a framework in which exposure and risk assessment practices are integrated with property assessment activities and remedial action selection to

ensure that the chosen action is protective of human health and the environment (a consistent decision-making process for the assessment and response to chemical releases based upon protection of human health and the environment).

3.1.11 *site-specific target level (SSTL)*—Risk-based target levels for chemical(s) of concern for human receptors developed for all applicable media of concern on a Brownfields property

3.1.12 *stakeholders*—individuals, organizations, or other entities that directly affect or are directly affected by the Brownfields property or its redevelopment.

3.1.12.1 *Discussion*—Stakeholders include, but are not limited to, owners, buyers, developers, lenders, insurers, government agencies, and community groups.

3.1.13 *sustainable Brownfields redevelopment process*—a voluntary effort that actively engages property owners, developers, government agencies and the community in conducting corrective action, economic evaluation, and other actions to promote the long-term productive reuse of a Brownfields property.

3.1.14 *transferee*—the buyer, other recipient by deed or lessee of the Brownfields redevelopment property.

3.1.15 *transferor*—the seller or lessor of the Brownfields redevelopment property.

3.1.16 *warranty*—a representation made by one party to a second party of a contract of the existence of a fact upon which the second party may rely (for example, that the property is in compliance with certain laws) thus relieving the second party of establishing that fact.

4. Significance and Use

4.1 Guidance for Brownfields redevelopment can be useful in promoting the acceptability, and, therefore, viability, of such redevelopment.

4.2 Sustainable Brownfields redevelopment can be achieved through the productive reuse of properties that have been abandoned or idled. This reduces the need to develop new land by satisfying the needs of the present without compromising the ability of the future generations to meet their own needs. Both the current environmental conditions and the future use of the property need to be considered in order to ensure sustainability. Following the process and concepts discussed in this guide will provide the user with a sound framework for decision making and assist the user in balancing the needs of both the present and future generations through involvement of all of the stakeholders in the process. However, this guide does not give specific criteria for assessing the sustainability of a Brownfields redevelopment project.

4.3 It is recognized that certain communities have already formulated their own, effective, processes. It is not the purpose of this guide to impose a set of guidelines where successful formula exist. Indeed, elements of successful models from around the country have been integrated within this guide. The audience for this guide is all potential stakeholders.

4.4 Redevelopment of underutilized properties is a key objective of federal, state, and local environmental agencies in environmental policy. The Small Business Liability Relief and

Brownfields Revitalization Act of 2002 provide funding, liability relief, and regulatory authority for brownfields redevelopment. Many states have developed Brownfields legislation to facilitate this redevelopment effort. State voluntary corrective-action programs play an important role in implementing an effective Brownfields regulatory policy. Many states have applied risk-based decision-making concepts to their voluntary corrective action programs. Some of the Brownfields redevelopment projects will involve voluntary corrective action while other corrective actions may be mandated by government order. Risk-based decision making may be a viable option for corrective action at many Brownfields redevelopment properties.

4.5 This guide is intended to provide a framework for the sustainable Brownfields redevelopment process and identify critical functions and impediments that need to be overcome in order to achieve sustainable development. In this respect, this guide can be used by state and local government to establish and operate a viable redevelopment program for their communities.

5. Sustainable Brownfields Redevelopment Process

5.1 There are four main components in the sustainable Brownfields redevelopment process: initiation, evaluation, transaction, and implementation (see Fig. 1). In addition, a sustainable Brownfields redevelopment process requires the involvement of a variety of stakeholders. Some stakeholders remain at the core of the process as one component develops into the next. Other stakeholders will move closer to or further away from the core during the process. Thus, stakeholders will bring a different perspectives or agendas to each component of the process. The sustainable Brownfields redevelopment process is not linear and not every project requires full use of all components of the process for effective implementation. It works best when the interests of all stakeholders are identified early on and the parties work together as a team to satisfy each of the party's interests using an open, non-adversarial approach to negotiations. These components and the stakeholders' goals are described in the following sections and in Fig. 1.

NOTE 1—Stakeholders who have an interest in the Brownfields redevelopment are listed in Table 2. Some stakeholders have notable cash or cash equivalents at risk, while other stakeholders have an interest in promoting sustainable development goals are achieved and maintained.

6. Initiation

6.1 Sustainable Brownfields redevelopment begins with a vision of the redevelopment and reuse of a property or properties. The process is initiated when a stakeholder recognizes a need or a business opportunity. The process can be initiated by a number of different stakeholders either individually or as part of a team effort. It is important to realize that most Brownfield sites are redeveloped based on economic issues. However, stakeholders should realize that the new development will have an impact and may improve the quality of life in the community. One of the critical activities of the initiation component is the identification of the potential stakeholders. The form of initiation will depend upon the stakeholders' goals (see Table 2).

6.1.1 *Initiate Process*—The sustainable Brownfields redevelopment process can be initiated by any one or more of the potential stakeholders.

6.1.1.1 *Owners, Prospective Transferees and Developers*—Owners, prospective transferees or developers or a combination thereof, may initiate the sustainable Brownfields redevelopment process by identifying a property or properties for redevelopment based upon their belief that the project will yield an appropriate return on investment or community benefit, or both.

6.1.1.2 *Not-for-Profit Organization*—A not-for-profit organization may act as a facilitator, investor, or partner in the redevelopment of a particular Brownfields property or properties.

6.1.1.3 *Community*—The community may initiate the process through dialogue with owners, prospective transferees, or government agencies. Community groups often have a vision, plan, and expectations for redevelopment in their place of residence and business. This vision may be based on history and tradition particular to the neighborhood and may include expectations of improved economic opportunities and physical surroundings.

6.1.1.4 *Local Government*—Government may initiate the sustainable Brownfields redevelopment process as a developer, owner, potential transferee, and investor, or otherwise facilitate Brownfields redevelopment by providing technical expertise, financial incentives or community education, or a combination thereof.

6.2 *Identifying the Stakeholders*—It is incumbent upon the Brownfields Redevelopment coordinator or the stakeholder(s) initiating the process, or both, to carefully evaluate the project and identify key stakeholders before proceeding in the redevelopment process. The stakeholders are determined by more than the physical proximity to a Brownfields property slated for redevelopment, the percentage of capital invested in a particular property, or the effect a Brownfields redevelopment may have on them as a particular group or as individuals. It is crucial that the identification of the stakeholders include all parties that have a stake in the outcome of the redevelopment process.

6.2.1 *Owner, Prospective Transferee, or Developer*—The owner, prospective transferee, or developer should typically consider a number of factors in deciding on whether or not to invest in a Brownfields property. These factors may include:

6.2.1.1 *Planned Use of the Property*—It is important for the owner, prospective transferee or developer to understand the limits of local zoning ordinances and the degree to which variances and/or conditional use permits can provide deviations from the zoning. The owner, prospective transferee or developer should contact the local health department or environmental health services department to ascertain if activity and use limitations on the property or adjacent properties constrain potential Brownfields development. The owner, prospective transferee, or developer should avoid overly simplistic paradigms. For example, an area might be zoned "industrial," but the actual use of the property where chemicals of concern are present is "mixed use". In this case, one should avoid using

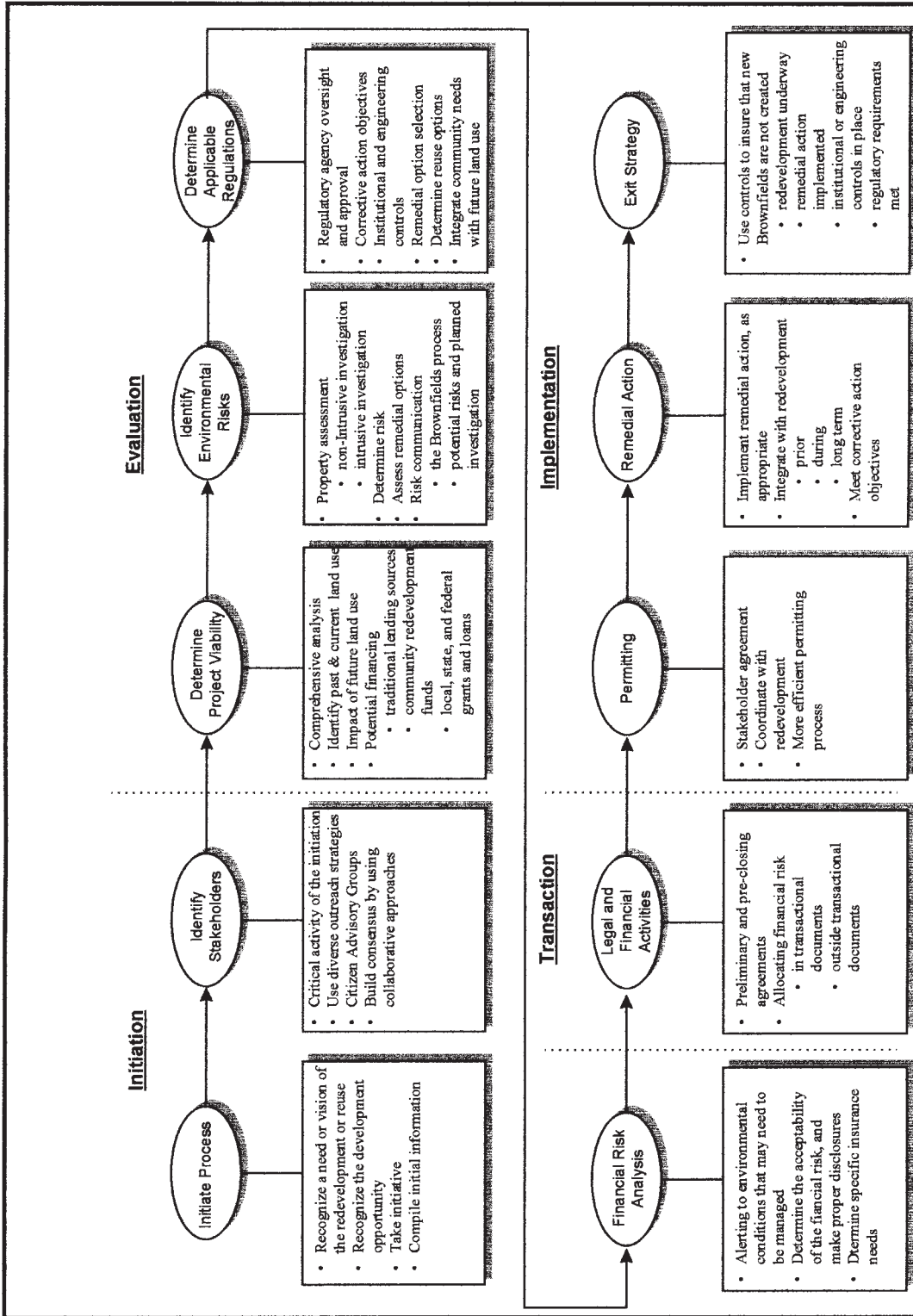


FIG. 1 Brownfields Redevelopment Process

TABLE 1 Example of the Stakeholders that Could Be Associated with the Basic Components in the Sustainable Brownfields Redevelopment Process

Initiation	Evaluation	Transaction	Implementation
Community Government	Community Government	Community Government	Community Government
Owner/Transferor	Owner/Transferor	Owner/Transferor	Owner/Transferor
Prospective Transferee	Prospective Transferee	Prospective Transferee	Developer
Developer	Developer	Developer	Transferee
	Insurers	Insurers	Lenders
		lenders	

TABLE 2 Example of Stakeholder Goals During the Initiation Component

Stakeholder	Goal
Community	Improvement of physical and aesthetic conditions; Community and economic revitalization
Government:	
Redevelopment Agencies	Economic revitalization; Increased tax base
Environmental and Health Agencies	Compliance with environmental, health, and safety requirements; Identification of concerns and potential areas for improvement
Transferor/Transferee	Enhancement of property value and achieved less costly and faster approaches to corrective action; Identify options to reduce and transfer risk and liability
Prospective transferee	Better understanding of the opportunities and barriers; Opportunities to purchase a property with potential return on investment or to achieve a benefit to the community, Manage liability for environmental condition(s) that they did not cause
Developer	Opportunity to add value to the property, Manage liability for environmental condition(s) that they did not cause

simplistic industrial risk assessment scenarios based solely upon zoning designations alone.

6.2.1.2 Cost of corrective action and associated liability,

6.2.1.3 Potential time delays associated with corrective action,

6.2.1.4 Potential return on investment,

6.2.1.5 Surrounding land use and economic viability of surrounding properties including potential long-term changes in land use,

6.2.1.6 *Infrastructure*—Roads, sewers, water availability, public transportation, and utilities,

6.2.1.7 Environmental condition within and adjacent to the Brownfields redevelopment property,

6.2.1.8 Security,

6.2.1.9 Physical surroundings (parks, view, consistency with neighborhood character),

6.2.1.10 Education/training facilities for employees,

6.2.1.11 Commitment of the local government to an area-wide development plan, and/or

6.2.1.12 Property taxes and financial incentives.

6.2.2 *Community*—The community includes local residents, workers, organizations, and institutions. Community involvement is a critical component of the Brownfields process. Even with the best of intentions, what seems to be the best plan may not meet with acceptance and success. Those charged with the responsibility of conducting the community outreach may need to get help in identifying who the relevant community and its

leaders are and in designing a meaningful public participation process. The sustainable Brownfields redevelopment process can only occur through a constructive dialogue that acknowledges the needs and expectations of the community. It is important to consider a variety of public participation techniques for different size projects and avoid a one-size-fits-all approach. In some cases, the project may not be big enough or complex enough to warrant extensive or lengthy public involvement. Other components of community involvement may include:

6.2.2.1 Community education,

6.2.2.2 Community input on the proposed development and potential corrective action,

6.2.2.3 Presentation of the conceptual plan to the community,

6.2.2.4 Recognition of community leadership,

6.2.2.5 Local political realities,

6.2.2.6 Effective community outreach, and/or

6.2.2.7 Other community characteristics, including, status of the infrastructure, alternative or additional properties for redevelopment, and adjacent communities' experience with Brownfields redevelopment.

6.2.3 *Government:*

6.2.3.1 *Local Government*—The local government is key to the sustainable Brownfields redevelopment process. Local government weighs the benefits and concerns of economic development on the community. Local government may be the Brownfields coordinating agency whose functions may include:

(1) Information source on health and environmental conditions at Brownfields properties,

(2) Community outreach,

(3) Planning for area-wide development,

(4) Advocate for both the developer and the community,

(5) Solicitor of developers and financial institutions, and/or

(6) Coordinator assisting all relevant governing and approval agencies work together toward a common goal of redevelopment, and/or

(7) Identifying potential changes in future property uses.

6.2.4 *State Government*—State government can assist with economic development and meeting environmental objectives. The state government may consider:

6.2.4.1 Streamlining in permitting,

6.2.4.2 Flexibility and streamlining in the corrective action process to achieve environmental objectives including use of:

(1) Risk-based decision making for human and ecological receptors,

(2) Property-specific land use and ground water use as a basis for corrective action decisions,

(3) Streamlined assessment processes,

(4) Flexible approach to determining remedial action alternatives including institutional and engineering controls,

(5) Use of specific exposure assumptions when establishing future exposure scenarios,

(6) Mechanisms for release of liabilities or covenants not to sue, and/or

(7) Identifying potential changes in future property uses.

6.2.4.3 Assisting local governments in redevelopment efforts through provision of technical expertise, assessment and remedial action technologies, grants and loans to local government for property assessment, demolition, and remedial action at a Brownfields redevelopment property, and community education on environmental issues,

6.2.4.4 Providing funding or assisting in obtaining funding, grants and loans to local government for Brownfields redevelopment property assessment, demolition, and remedial action,

6.2.4.5 Covenants not to sue or releases from liability or comfort letters under state statutes, and/or

6.2.4.6 Legislative and regulatory changes to facilitate Brownfields redevelopment.

6.2.5 *Federal Government*—The federal government may assist with economic development and meeting environmental objectives by supporting risk-based decisions in corrective action for Brownfields properties and consider:

6.2.5.1 Funding or assisting in obtaining funding, grants and loans for Brownfields redevelopment property assessment, demolition and remedial action,

6.2.5.2 Assessments, revolving loans, and tax incentives,

6.2.5.3 Use of human and ecological risk-based decisions for corrective action tied to reasonably anticipated land and ground water use,

6.2.5.4 Where state voluntary corrective action programs exist, delegation of federal corrective action oversight to the state under the voluntary corrective action program and allowing for release from liability,

6.2.5.5 Prospective purchaser agreements for releases from liability or comfort letters under federal statutes, and/or

6.2.5.6 Legislative and regulatory changes to facilitate Brownfields redevelopment.

6.2.6 *Tribal Government*—Tribal governments may have a strong interest in preserving cultural resources as well as ecological resources. In these cases, the impact of proposed Brownfields redevelopment on archeological sites should be considered. Conservation activities may need to be considered. These could include structural rehabilitation of historic buildings.

6.3 *Lending Institution*—In some cases, lending institutions become involved in Brownfields redevelopment. They may provide part of the necessary funding for development and thus take on a portion of the financial risk associated with a project. Neighborhood economic and social stability are often motivators, since a healthier neighborhood economy is beneficial to lending institutions in the area.

6.4 *Other Interested Parties*—Some parties may not be considered stakeholders at this point due to the limited extent to which that party may be affected by activity at the redevelopment property or the redevelopment process. However, such interested parties often play important roles in the process, and the involvement of these parties will depend on the needs and interests of the various stakeholders. Therefore, other interested parties who are actually involved should be determined by the stakeholders.

7. Evaluation

7.1 The purpose of the evaluation component is to determine the viability of proceeding with the Brownfields redevel-

opment. In addition to traditional real estate issues, a number of environmental and legal issues should be evaluated (see Table 3).

7.2 *Determine Project Viability*—As the project warrants, a comprehensive analysis may be undertaken to determine the viability of the envisioned redevelopment and other alternative uses. Factors that may be considered include:

7.2.1 Current and future land use of the Brownfields property,

7.2.2 Impact of existing and potential future land use in the surrounding area,

7.2.3 Needs of the community including health and quality of life impacts,

7.2.4 Demographics,

7.2.5 Access to markets,

7.2.6 Return on investment, and

7.2.7 Financing including:

7.2.7.1 Traditional lending sources,

7.2.7.2 Community redevelopment fund,

7.2.7.3 Federal, state, and local grant and loan programs, and

7.2.7.4 Insurance products or other risk transfer or risk management funding options.

7.3 *Identifying Risks*—The successful implementation of the sustainable Brownfields redevelopment process is dependent on a clear understanding of the environmental condition and associated economic impact on the property or properties. This is critical to the risk management process.

7.3.1 *Identifying Environmental Risks*—Examples include soil, groundwater, surface water and building contamination issues.

7.3.2 *Identifying Human Health Risks*—The successful long-term implementation of Brownfields redevelopment could also be contingent upon an examination of potential human health risks from exposure to contaminants and identifying a means to manage an unacceptable exposure.

TABLE 3 Example of Stakeholder Goals for the Evaluation Component

STAKEHOLDER	GOAL
Community	Participate in the evaluation process and the development of appropriate options for improvement of the Brownfields property
Government:	
Redevelopment Agencies	Community understanding of the economic considerations planned use
Environmental and Health Agencies	Ensure corrective actions are protective of human health and the environment; ensure community understanding of these objectives, ensure requirements of multiple regulatory programs are satisfied
Transferor/Transferee	Find a solution that enhances the property value; achieves less costly and faster approaches to corrective action; identifies options to reduce and transfer risk and liability.
Prospective transferee	Better understanding of the opportunities and barriers; understand the financial/liability risk management options
Developer	Better understanding of the opportunities and barriers and reducing the uncertainty associated with time to complete and costs of completion
Insurer	Understanding the factors that could influence financial and environmental risk

7.3.3 Property Assessment—The primary objective of the property assessment is to collect information necessary to identify and determine the completeness of both human and ecological exposure pathways and to determine the likely distribution of a chemical(s) of concern. The collection of these data is necessary to make a determination of the potential environmental condition of the property. Normally, the property assessment is composed of two activities, a nonintrusive evaluation and an intrusive evaluation. The community may be an important resource and should be consulted for information for determining historical use and potential exposure pathways. Information available from the community include archives at local historical societies and long-term residents in the project area. Community groups may also be the designated enforcement entity for any activity and use limitations filed on the subject property. Changes in current land use may require modifications to existing AULs. In addition, property assessments conducted in accordance with federal standards may allow parties the ability to obtain federal liability limitations.

7.3.4 Nonintrusive Evaluation—A nonintrusive evaluation of the historical and current uses of the property and area surrounding the property is conducted to identify source areas (that is, areas where chemical(s) of concern is likely to be present) and potential receptors that may come in contact with a release from the property. Practices E 1527 and E 1528 are examples of non-intrusive evaluations. Investigating past health concerns on or near the property might be considered a part of the nonintrusive evaluation. The evaluation may include:

7.3.4.1 Defining the area that will be investigated,

7.3.4.2 Identifying current and reasonable potential future receptors, fate and transport mechanisms, exposure routes, and point(s) of exposure,

7.3.4.3 Identifying potential sources, including a review of the property or property history to determine areas that may require investigation,

7.3.4.4 Identifying chemical(s) of concern,

7.3.4.5 Identifying potential source area(s),

7.3.4.6 Identifying the media to be sampled,

7.3.4.7 Determining current and reasonable potential future land use,

7.3.4.8 Determining current and reasonable potential future ground water use, and/or

7.3.4.9 Examining the potential for infiltration of soil gas into structures. When releases containing volatile organic compounds occur near buildings, volatilization of chemicals of concern from the dissolved or pure phases in the subsurface can result in the intrusion of vapor-phase chemicals of concern into indoor air. Modeling may be used to estimate the risk associated with this exposure pathway.

7.3.5 Intrusive Investigation—An intrusive field investigation is conducted to determine if a release has occurred, to identify the source(s) and source area(s) and to collect sufficient data on the distribution and concentration of chemical(s) of concern in the media. This information is necessary to document the environmental condition of the property and to determine the appropriate remedial action options. Guides

E 1739 and E 2081 are examples of intrusive investigations. The intrusive field investigation may be used to:

7.3.5.1 Determine the presence and concentrations of the chemical(s) of concern in environmental media including:

7.3.5.2 Collect empirical data,

7.3.5.3 Characterize the potential source area(s),

7.3.5.4 Develop and evaluate a site conceptual exposure model,

7.3.5.5 Conduct initial response actions, as appropriate, and/or

7.3.5.6 Identify any interim remedial actions that may be appropriate.

7.3.6 Determining Risk and Assess Remedial Action Alternatives:

7.3.6.1 Risk assessment and any resulting remedial action(s) should be designed and implemented as part of the Brownfields redevelopment of the property. Based on the information and data compiled during the property assessment, the potential risks associated with the chemical(s) of concern and reasonable potential future land use should be evaluated for potential human and relevant ecological receptors. If these assessments reveal potential unacceptable risks, then potential remedial action options should be evaluated to determine those options that can be implemented as part of the Brownfields redevelopment. Remedial action options may include active or passive methods or some combination including source removal, treatment, and containment technologies; natural attenuation; exposure pathway elimination; engineering controls; and institutional controls. The applicability of remedial options to a Brownfields redevelopment property may vary from state to state. The remedial option(s) selected should incorporate features of the proposed Brownfields redevelopment as much as possible to allow for the most cost-effective remedial action.

7.3.6.2 Each potential remedial action option should be evaluated for its effectiveness, implementability, acceptability, and costs. Remedial action options that meet these criteria are then subject to a more rigorous assessment of long-term, financial requirements and liabilities. This financial risk analysis is an integral part of reaching agreement on a protective and cost effective remedial option for redevelopment of the Brownfields property.

7.3.7 Risk Communication:

7.3.7.1 The success of a Brownfields project is often dependent on how effectively current and future risks posed by the property are communicated to the community and other interested parties. It is important to acknowledge that risk communication should take place throughout the redevelopment process. Some general guidelines regarding risk communication are included in Guide E 2081. This guide should also be referred to for a description of a framework for making risk-based decisions for corrective action.

7.3.7.2 It is essential to understand perceptions of risk in order to plan and design communications that foster cooperation rather than confrontation. The objective is to provide the opportunity for all parties involved to have an understanding of the risks and the plans to mitigate them. Trust and credibility are key factors in gaining cooperation, and are fostered by actively engaging the community in the decision making,

thereby providing a greater sense of control over the situation. The burden of risk communication should not rest solely on the shoulders of the developer. The entire stakeholder group should work together to address concerns of the community and other interested parties. Communication methods may include printed information pamphlets (including easy-to-read charts and tables), public forums, news media (both print and TV), trade association meetings, labor unions, and the Internet.

7.3.8 In communicating the risk associated with a Brownfields project, the following issues need to be addressed (See Appendix X2 for additional information):

- 7.3.8.1 Current and reasonable potential future use of the Brownfields redevelopment property,
- 7.3.8.2 Current and reasonable potential future human exposure and ecological concerns at the property,
- 7.3.8.3 Current and reasonable potential future uses of the area near the property,
- 7.3.8.4 Interests and concerns of the stakeholders,
- 7.3.8.5 Corrective action and property management options,
- 7.3.8.6 Health concerns associated with the corrective action and property management options, and/or
- 7.3.8.7 Applicable laws and regulations.

7.4 *Determine Applicable Laws and Regulations*—The successful implementation of the Brownfields redevelopment project is dependent upon a clear understanding of the legislative and regulatory requirements and policy issues critical to the risk management process. Identification and determination of these requirements and policy issues is necessary prior to beginning the process. It should also be recognized that more than one regulatory program may apply to a Brownfields redevelopment property and more than one regulatory agency may need to be involved in addressing the environmental condition(s) at a Brownfields redevelopment property.

7.4.1 The legislative and regulatory requirements and policy issues include, but are not limited to:

- 7.4.1.1 Permitting, regulatory agency approval, and oversight requirements,
- 7.4.1.2 Criteria for selecting point(s) of exposure, point(s) of compliance, and exposure pathway(s),
- 7.4.1.3 Criteria for use of institutional controls and engineering controls, and/or
- 7.4.1.4 Criteria for selecting appropriate remedial actions.

7.4.2 Some of the policy issues reflect political, economic and societal factors and are not always based strictly on scientific principles. The applicability of the following need to be determined:

- 7.4.2.1 Local, state, and federal laws,
- 7.4.2.2 Permits and certifications,
- 7.4.2.3 Pending enforcement actions, and/or
- 7.4.2.4 Pending claims, litigation, and liens.

7.5 *Financial Risk Analysis*—Financial risk analysis is an evaluation of the financial consequences of the project including environmental risk identified by a property assessment and review of applicable laws and regulations (see 7.2 through 7.5). Unlike environmental risk assessments and due diligence, financial risk analyses does not necessarily have to be repeated by different parties.

7.5.1 Such analysis can serve many purposes in the sustainable Brownfields redevelopment process including:

- 7.5.1.1 If a transaction is involved, alerting the transferee or lender to any environmental conditions that may need to be managed or remedied after closing. It can be used to document conditions at closing and allow environmental risks to be managed and allocated as part of a property transaction (see 8.1.3), and
- 7.5.1.2 Allowing investment bankers, underwriters, and others financing the project to make determinations concerning the acceptability of the financial risk and make proper disclosures in offering documents.

8. Transaction

8.1 Ownership often changes during this component. Frequently, permits are transferred and new consent orders for voluntary corrective actions or covenants not to sue are established between the new owner and the regulatory agency. These permits, orders, or actions should provide for unencumbered resolution of disputes. It is sometimes advantageous for the title to a Brownfields property to a local government entity or economic development corporation for purposes of being eligible to receive state or federal grants or loans for property assessment, demolition, or remedial action. The property may then be sold or leased to a developer (see Table 4).

8.2 *Preliminary Issues:*

8.2.1 *Environmental Liability Concerns*—Negotiation of the environmental provisions of any transaction involved in the sustainable Brownfields redevelopment process is driven principally by the real or perceived potential liabilities for corrective action of the property and, to a lesser extent, by concern with liability for bodily injury or property damage. Practices E 1527 and E 1528 provide a discussion of the general potential environmental liability that may arise in real estate transactions.

8.2.2 *Transferee’s Objectives*—Transferees of a property may be concerned with perceived or real liability under state or federal statutes or both, for per-existing environmental liabilities. Transferees may seek:

- 8.2.2.1 Liability protection from potential third-party claims,
- 8.2.2.2 Full disclosure of current environmental conditions related to the property,

TABLE 4 Example of Stakeholder Goals for Transaction Component

STAKEHOLDER	GOAL
Community	The transaction meets the redevelopment goals of the community
Government: Planners	The transaction meets the redevelopment goals of the stakeholders; Approval of the land use
Regulatory Agency	The transaction satisfies the environmental and public health goals
Transferor/Transferee	The transaction meets their financial and liability goals
Prospective transferee (New Owner)	The transaction meets their financial and liability goals; Cost-effective corrective action with limited long-term liability
Developer	The transaction meets their project requirements
Insurers	Configure and price policy
Lenders	Configure and price loan

8.2.2.3 An indemnification or other environmental risk transfer mechanism covering any liabilities arising out of pre-closing operation(s) or condition(s),

8.2.2.4 To get transferor to bear costs of investigation,

8.2.2.5 To ensure property is suitable for contemplated use(s), and/or

8.2.2.6 To obtain control over implementation of the remedial action(s).

8.2.3 *Transferor's Objectives*—Transferors of a property may be concerned with perceived or real liability under state or federal statutes, or both for a release of a chemical(s) of concern on the land while they owned the property or discovery of a chemical(s) of concern on the land during their ownership (even if there was no disposal during that time) where they failed to disclose the environmental condition to a transferee. In addition, the transferor may also be liable to the transferee for failure to disclose a known environmental condition(s). The transferor may seek:

8.2.3.1 To obtain releases and indemnities from prospective transferee,

8.2.3.2 To shift responsibility for identifying risks to transferee (for example, by eliminating or severely restricting representations and warranties),

8.2.3.3 Where transferor retains responsibility for pre-closing environmental liabilities, to:

8.2.3.4 Require notice of or limit subsequent actions by the transferee that may contribute to or complicate the transferor's liability or corrective action requirements and costs for pre-existing conditions,

8.2.3.5 Require the transferee to cooperate (including granting access to the property) as necessary for transferor to successfully address liability for past acts or regulatory violations, and/or

8.2.3.6 Require the transferee to grant transferor rights to mitigate environmental conditions giving rise to retained liability.

8.2.4 *Lenders*—Generally, the lenders may seek, based on the property investigation, to minimize their risk of liability for corrective action, maintain the collateral value of the redevelopment property, and to obtain protection from borrowers defaulting or a weakening of the borrower's financial position due to its environmental liability.

8.2.5 *Common Objective: Protection from Liability*—Both the transferee and the transferor in any transaction seek regulatory protection from environmental liability. Many states offer protection against liability to parties that voluntarily complete corrective action pursuant to voluntary corrective action programs.

8.3 *Preliminary and Pre-Closing Agreements*—A number of preliminary and pre-closing agreements may be appropriate. The number and type of preliminary and pre-closing agreements that are necessary will depend on the transaction. Preliminary agreements are agreements that are reached early in the process of negotiating a transaction that may include agreements on the necessary representations and warranties, indemnities and changes in the transaction structure, or withdrawal from the transaction should the investigation identify unacceptable environmental risks. Pre-closing agreements are

agreements that reached further along in the negotiating process that may include property access agreements and corrective actions agreements.

8.4 *Allocating Financial Risk Through Provisions in Transaction Documents*—In order to make the property marketable, some method(s) should be found to manage or allocate environmental liability. Such method(s) may be found within or outside of the transaction documents.

8.4.1 *Representations and Warranties*—Even if no environmental condition(s) is discovered on the property before closing (or the transaction is still attractive and financially sound in spite of the presence of an environmental condition), potential environmental liabilities may be minimized by securing appropriate representations and warranties in the purchase and sale agreement. Representations and warranties can be tied to an indemnification agreement supported by holdbacks, bonds, letters of credit, or environmental insurance to cover the risk that chemical(s) of concern may turn up later on the property. Express warranties and representations include the disclosure and consideration of:

8.4.1.1 The existence of necessary permits, registrations, approvals, land use restrictions, and licenses,

8.4.1.2 Compliance with environmental laws, rules, and regulations,

8.4.1.3 Any pending, threatened or anticipated claims, lawsuits, administrative actions or investigations or a combination thereof,

8.4.1.4 Disclosure of the presence of known chemical(s) of concern and reports of releases of such chemical(s) of concern,

8.4.1.5 Disclosure of environmental studies or reports conducted regarding the property, and/or

8.4.1.6 The existence of underground storage tanks or underground pipelines.

8.4.2 *Environmental Covenants*—The transferee may establish a covenant to complete corrective action of the property, to maintain adequate investment to complete the redevelopment of the property, or to maintain insurance policies to benefit the transferor. A covenant creates a case-specific continuing obligation. In a sale or loan transaction an important pre-closing covenant is that the transferee or transferor will maintain the property in compliance with all environmental laws and will reaffirm accuracy of the representations and warranties as of the closing date. A covenant requiring that action not be taken is a negative covenant. In some cases, a transferor may want to obtain negative covenants, limiting the prospective transferee's ability to create specific hazards. Post-closing covenants may be required for a transferee in a loan transaction, or a tenant in a lease transaction.

8.4.3 *Indemnification*—A transferor that believes no significant risk exists should be willing to indemnify a prospective transferee and lenders against liability for any preexisting environmental condition(s). However, there are inherent limitations to such indemnities. The legal effect may be unclear, the indemnity may be only as good as the financial worth, of the indemnitor, or the indemnity operates after the fact (cash flow problems). Indemnification agreements can be supported by holdbacks, letters of credit, or insurance.

8.4.4 *Environmental Insurance*:

8.4.4.1 Environmental insurance may be an alternative means of transferring liability. Insurance is a means for parties to the transaction to address balance sheets concerns. Insurance policies may offer substantial capitalization multiple year policies, flexibility in policy wording, and realistic pricing of coverage.

8.4.4.2 Insurance policies can be used as a stand-alone risk transfer mechanism or to supplement an indemnity agreement. Insurers can offer support services such as claims handling and loss control. Liabilities or conditions that may need insurance coverage in a Brownfields transaction are:

8.4.4.3 Third-party bodily injury and property damage, on-property and off-property.

8.4.4.4 Environmental remedial action costs, on-property and off-property.

8.4.4.5 Legal defense expense.

8.4.4.6 Business interruption and costs of project delay.

8.4.4.7 Environmental remedial action cost cap or stop loss.

8.4.4.8 Collateral value or secured creditor loss.

8.4.4.9 Environmental condition(s) at third-party disposal sites that may have resulted from wastes generated at the Brownfields redevelopment property.

8.4.5 *Types of Insurance:*

8.4.5.1 Commercial insurance policies, especially:

8.4.5.2 Premises pollution (or property-specific) policies that can provide coverage for the environmental liabilities (see 8.4.4.2).

8.4.5.3 Pollution coverage for construction and consulting operations such as contractor’s pollution liability and environmental consultant’s professional liability policies.

8.4.6 *Surety and Bonds*—A surety is a person or organization that contractually guarantees to one party that another party will perform as promised. Some insurers act as sureties by issuing bid and performance bonds for environmental contractors.

8.4.6.1 Environmental risk management programs, including:

8.4.6.2 Finite risk programs,

8.4.6.3 Pooling arrangements including risk retention groups,

8.4.6.4 Risk purchasing groups, and/or

8.4.6.5 Captive reinsurance programs.

8.4.7 *Negotiating and Drafting of Coverage Forms*—Changes to the basic policy form should be drafted and negotiated in the context of the transaction. Insurance may need to be considered from the beginning of the transaction so that appropriate policies will be available on a timely basis, to transfer the liability most completely and efficiently, and to avoid duplication of the risk analysis and quantification process (see 7.5). The forms need to identify and actually cover the environmental exposure, the property, and the parties needing the coverage.

8.5 *Allocating Financial Risk Outside the Transaction Document:*

8.5.1 *Environmental Risk Control Transfers*—The risk of loss itself, as well as the financial consequences of the loss, may be transferred to another party. The prospective transferee may be able to insulate themselves from environmental liabilities;

however, the transaction should be structured carefully and risks assessed in light of potential regulatory agency efforts to impose liability on a responsible party. The transferee or lender can insist that the Brownfields redevelopment property giving rise to the chemical(s) of concern or environmental liability remain the responsibility of the transferor.

8.5.2 *Corrective Action Prior to Closing*—The transferee or lender can require that an agreement be reached that certain chemical(s) of concern or environmental risks be eliminated prior to closing. This requires an analysis of the availability of other parties who may also be liable for corrective action costs and the likely response of federal, state, and local regulatory authorities, and the community to any planned corrective action activity. The corrective action may be conducted pursuant to a state voluntary corrective action program (see 7.3.6). If the transferee decides to undertake corrective action, it should consider requiring the owner to share the risk of uncertainty regarding how much an acceptable corrective action will cost.

9. Implementation

9.1 Demolition, renovation, and corrective action occur during this component. The corrective action may be based on an integrated land-use scenario where remedial action may be tied to a land use restriction or to a development with unrestricted land use (see Table 5).

9.2 *Permitting*—Local, state, and federal entities may issue permits based upon agreements reached with stakeholders in previous components of the sustainable Brownfields redevelopment process. If the Brownfields redevelopment process has been carried forward successfully, the permitting process is made more efficient.

9.3 *Remedial Action*—Remedial action is an integral part of the sustainable Brownfields redevelopment process. Remedial action can occur prior to redevelopment, during redevelopment, or as part of a long-term risk-reduction program. Stakeholder buy-in and institutional controls may be necessary to ensure a sustainable restoration process is begun, but time frames should be flexible to ensure that the most cost-effective solution that provides long-term risk reduction is implemented. Economic development that provides sustainable benefits to the community is the common goal of all stakeholders.

9.4 *Exit Strategy*—The goal of all the stakeholders is to keep this component as short as possible. It is important to

TABLE 5 Example of Stakeholder Goals for the Implementation Component

STAKEHOLDER	GOAL
Community	Positive benefits from the redevelopment property
Government:	
Planners	The redevelopment project meets stakeholders objectives
Regulatory Agency	The redevelopment project meets environment and human health objectives
Transferor/Transferee	Timely completion of the redevelopment project and acceptable return on investment
Developer	Timely completion of the redevelopment project and acceptable return on investment
Insurers	The redevelopment project is consistent with the insured conditions
Banks	The redevelopment project meets the financial objectives

establish a clear exit strategy to the sustainable Brownfields redevelopment process to ensure that the property does not remain a Brownfields property in the future. Key issues that need to be resolved in order that the property exit the sustainable Brownfields redevelopment process include:

- 9.4.1 Redevelopment is underway,
- 9.4.2 Remedial action is implemented,
- 9.4.3 Institutional and engineering controls, as appropriate, are in place and maintained (that is, implementation of land use restrictions, and financial performance mechanisms), and
- 9.4.4 Local, state, and federal regulation requirements have been met.

9.4.5 The sustainable Brownfields redevelopment process is a multi-stakeholder process. Because each Brownfields redevelopment property is different (for example, variant levels of a chemical(s) of concern, different community settings, and multiple forms of reuse) each Brownfields redevelopment project may involve different components. Risk communication and community involvement activities should be continued throughout this phase.

10. Keywords

- 10.1 Brownfields; redevelopment

APPENDIXES

(Nonmandatory Information)

XI. ROLES OF LOCAL GOVERNMENT IN SUSTAINABLE BROWNFIELDS REDEVELOPMENT

X1.1 Local governments are ideally situated to facilitate and promote the successful reuse of Brownfields redevelopment properties. Local officials and municipal managers often play an integral role in bringing together all of the diverse interests involved in a Brownfields redevelopment project. Their role as facilitators is often difficult, given the many different groups involved and the complexity of the issues. For example, the regulatory framework that determines the fate of many Brownfields redevelopment properties falls under the jurisdiction of federal and state agencies, most of the necessary capital to fund development is controlled by private financial institutions, and many decisions about property reuse will be in the hands of the property owner. Local governments also have an important role in helping to ensure that community organizations and citizen groups directly affected by a Brownfields redevelopment project have sufficient access and influence in the corrective action and reuse decisions.

X1.2 The following are examples of the roles that local governments can play in the redevelopment of a Brownfields redevelopment project. They are not intended to be used as an all-inclusive guide, as there is not the “one” model for the decisions of a local government. Each local government has differing concerns and attributes that play a role in Brownfields redevelopment.

X1.3 *Integrating Brownfields Redevelopment with Other Community Priorities*—Local governments are in a unique position to look at Brownfields redevelopment in the context of the community’s broader plans and needs. Because of this perspective, they can act to encourage redevelopment projects that fit into these plans. For example, the city of Minneapolis provided financial support for the development of a shopping center with a full-service grocery store in the northwest area of town. This shopping center delivered an important benefit to residents, who previously had to drive outside the neighborhood or pay high prices at convenience stores. A local government also can assist in identifying high-priority sections of the city and focus efforts for Brownfields redevelopment and

other development on those areas.

X1.4 *Involving Community Residents in Brownfields Redevelopment Plans*—Early involvement of the community in the reuse planning process is important to successful Brownfields redevelopment and also helps to ensure that a community can achieve its long-term redevelopment goals. Local government officials should engage citizens in the decision-making process, provide them with good and timely information, and seriously consider their input. To do this, local governments often establish advisory or ad hoc community groups or utilize existing community groups to address Brownfields redevelopment. Collaborative planning and consensus-building approaches ensure equitable and meaningful community input. For example, local officials in New Orleans established a Brownfields redevelopment consortium consisting of community organizations, local government officials, and developers to learn and make decisions about the Brownfields redevelopment process.

X1.4.1 Residents may wish to participate in the property assessment stage. Identifying exposure pathways may reveal contamination at the property and how people may become exposed (breathing contaminated air, drinking or coming in contact with contaminated water, contacting or eating contaminated soil, or eating contaminated food). The property assessment may include a determination of contamination levels and/or determination of toxicity levels from the contamination. The property assessment may also include an evaluation of whether working or living near the site might adversely impact resident’s health. Other issues that could be addressed include: lack of security, unsafe buildings, or other physical hazards.

X1.5 *Brokering Reuse*—Local governments can help match properties with prospective reusers. This can be done both through general efforts to provide information on the properties and by identifying specific potential reusers for particular Brownfields redevelopment properties. The city of Trenton, New Jersey, for example, was looking for a way to reuse a portion of a former electrical component factory. At the same

time, the city was working with a local swimming pool cover company that was considering leaving the area. The city was able to facilitate an agreement under which the company moved into the vacant factory.

X1.6 Providing Funding—Local governments can use their own resources to fund portions of Brownfields redevelopment costs. This funding is particularly useful if it is used for up-front costs such as for property inventory, assessment, remedial action, and preparation of properties. Local governments often have the resources to locate the owner of a Brownfields redevelopment property who has the potential to provide funds for cleanup. By paying for assessment and remedial action, the city of Chicago’s Brownfields Pilot Program spurred private companies to invest in and reuse a number of Brownfields redevelopment properties. Other types of financial benefits, such as tax incentives, can also be used to encourage reuse. Cook County, Illinois, allows owners of some Brownfields redevelopment properties to pay reduced property taxes during remedial action and redevelopment.

X1.7 Coordinating Public Funding and Resources—Both state and federal governments have programs that can pay for some of the costs of Brownfields redevelopment property reuse. Local governments can inform private-sector parties about these programs, apply for programs that require local government involvement, and look for ways to integrate different funding sources. Creative use of state funding helped Lawrence, Massachusetts, reuse the property of an old paper factory. By shifting the location of an already planned roadway by 100 ft, the city was able to use state highway funds for demolition and improvements to the Brownfields redevelopment property.

X1.8 Acting as a Liaison with Environmental Regulators—Local governments can serve as a link between private companies and community groups, as well as state and federal environmental agencies. Local governments also can work with agencies to ensure that they handle regulatory issues promptly and in a way that reflects local concerns. For example, the redevelopment of a property in Louisville,

Kentucky, was blocked by a lien that the U.S. EPA held on the property as a result of remedial action costs the agency had absorbed eight years earlier. After the city asked that the lien be released, the EPA discovered that the statute of limitations had expired and forgave the lien.

X1.9 Assuming Liability for Environmental Condition—In some cases, it may make sense for local governments to agree to take on liability for remedial action at properties where the perception of liability is preventing development. This can quickly remove the primary deterrent to reuse. Because it could be extremely costly, this step should be taken with a great deal of caution. Wichita, Kansas found that redevelopment plans for much of its downtown seemed to have been derailed by the discovery of chemical(s) of concern in ground water. The city entered into an agreement under which it divided responsibility for remedial action costs with the principal potentially responsible party (PRP).

X1.10 Coordinating with Local Health Department—Active participation by local public health entities may improve the health, well being, and quality of life for persons living on or near redeveloped properties, and increase the sustainability of a project. Public health entities can often provide a link to communities through assistance in environmental health education and risk communication.

X1.11 Coordinating with State Government Health and Environmental Agencies—Agencies are often aware of past and present health or environmental concerns within a community. They can also respond to community concerns during site remediation.

X1.12 Brownfields Prevention—To ensure that Brownfields redevelopment properties are prevented in the future, local governments can implement controls such as ground water use restrictions; offering incentives that discourage development of Greenfields; changing mixed-use zoning laws in low-income, residential neighborhoods; and assisting state and federal agencies in monitoring compliance during the operation and closure of industrial complexes.

X2. COMMUNITY INTERACTION

X2.1 Community Involvement—Generally, the earlier the community is brought into the process, the better it is for all stakeholders involved. Involving the community in a Brownfields redevelopment project can pose some interesting challenges. Some people may be skeptical about the Brownfields redevelopment process. They may question whether they will have a real opportunity to be involved in and influence local land use decisions. One challenge for sponsors of Brownfields redevelopment projects is to determine how to convince the community that active involvement is worthwhile and to

provide them with an opportunity to have direct and meaningful impact on decisions.

X2.1.1 Community involvement may be assisted with successful risk communication. In communicating risks, several rules apply (after Covello and Allen, 1998):

(1) *Accept and Involve the Public as a Partner*—Establish a goal to produce an informed public, not to defuse public concerns or replace actions,

(2) *Plan Carefully and Evaluate your Efforts*—Different goals, audiences, and media require different actions,

(3) *Listen to the Public's Specific Concerns*—People often care more about trust, credibility, fairness, and empathy than about statistics and details,

(4) *Be Honest, Frank, and Open*—Trust and credibility are difficult to obtain; once lost, they are almost impossible to regain,

(5) *Work with other Credible Sources*—Conflicts and disagreements among organizations make communication with the public much more difficult,

(6) *Meet the Needs of the Media*—The media are usually more interested in politics than risk, simplicity than complexity, danger than safety, and

(7) *Speak Clearly and with Compassion*—Never let your efforts prevent your acknowledging the tragedy of an illness, injury, or death. People can understand risk information, but they may still not agree with you; some people will not be satisfied.

X2.2 Community Education Prior to any Specific Development Proposal—A presentation of the facts concerning a Brownfields redevelopment property through straightforward discussions and open forums for the developer and the community to express their concerns and solutions should be part of the process. Brownfields redevelopment sponsors in conjunction with public health officials should educate the community and other stakeholders on the current risks, if any, posed by the Brownfields redevelopment properties and compare these risks to other risks in the community. This will allow the community and other stakeholders to reach a balanced decision on development of the property.

X2.3 Community Technical Assistance—The community may not have the technical or financial resources to assess the technical factors involving a Brownfields redevelopment property. This is often the case where public health considerations come into play. The community should have the opportunity to influence the process based on data that are correctly interpreted and meaningful for the situation at hand. Independent technical assistance should be provided to the community (individuals or groups) that will enable it to make an informed analysis. The point is to inform the community about the range of issues at hand and the resources available for the interpretation of data. The financial resources needed by the community should be determined, and will be influenced by a number of factors, including the size of the Brownfields redevelopment property, the amount of financial resources already available for the project, and the interest present within the community.

X2.3.1 While community groups may need information about technical issues, the developer, government officials, and other stakeholders may need training in communicating site-specific technical information to community groups. The communication process should include a thorough explanation of technical aspects of a project prior to its implementation.

X2.4 Designing a Community Participation Program—Whether designing an effective community participation pro-

gram from a private developer, local, state or federal officials' perspective, it is best to consider the following guiding principles³

X2.4.1 Encourage active community participation in all aspects of environmental decision-making. The community should be seen as equal partners in dialogue on Brownfields redevelopment. They need to know all pertinent details about the project to evaluate its importance, costs, and benefits. Through continued, early interaction, community support needs to be built.

X2.4.2 Maintain honesty and integrity in the process. From the earliest stages, articulate realistic goals, expectations, and limitations of the project.

X2.4.3 Consider using a variety of public participation techniques for different-sized Brownfields redevelopment projects. The single, one-size-fits-all approach will not work for all situations.

X2.4.4 Conduct active and extensive outreach to the public. It is better to be as inclusive as possible generating a rich mix of ideas and approaches. The community has much to offer about effective interactions and approaches. Traditional and nontraditional outreach means should be attempted. Presentations in print and voice media are effective means of communication as are bulletin boards at community focal points (for example, houses of worship, grocery stores, laundromats, and community centers). Other methods such as using the Internet should also be considered.

X2.5 Implementing a Community Participation Program—The following steps are suggested approaches for setting up and implementing an effective community participation program.

X2.5.1 Identify individuals to be contacted, including those directly affected by a Brownfields redevelopment project. Determine who else is directly and indirectly affected, as well as those groups who have shown past interest in local land use planning and developmental efforts. Look for groups who do not traditionally participate, such as minority and low-income communities.

X2.5.2 Establish education programs or means to access data, or both, so that groups or individuals can obtain timely, accurate information to enable them to have meaningful input in decision making.

X2.5.3 Regionalize materials to ensure cultural sensitivity, language diversity, and geographic relevance. Provide a facilitator to public meetings who is sensitive and trained in dealing with cross-cultural exchanges.

X2.5.4 Develop cosponsoring and co-planning relationships with community groups allowing them shared roles in agenda development, goal setting, leadership, and outreach.

X2.5.5 Plan meetings that are accessible and accommodating. Meetings should be close to public transportation. Consideration should be given to such issues as child care, access for the disabled, and language interpreters. Plan schedules to

³ Principles developed by the Public Participation and Accountability Subcommittee of the National Environmental Justice Advisory Council, "The Model Plan for Public Participation," U.S. EPA, November 1996.

accommodate needs of the affected communities. Schedule meetings on evenings and weekends to avoid conflicts with community or cultural events. Create an atmosphere of equal participation. Avoid a “head table” and ensure that the public shares in assignments.

X2.5.6 Maintain clear goals by setting an agenda. Coordinate follow-up and develop an action plan. Facilitate follow-through by distributing minutes and a list of action items.

X2.6 *Community Leadership:*

X2.6.1 Most neighborhoods have institutions that are respected and viewed as voices for the community. These can be block clubs, neighborhood economic development organizations, religious or educational institutions, and local chambers of commerce. It is not uncommon for more than one leader to emerge. Good rapport should be maintained with the leader or leaders of the community to gain their cooperation in information gathering and dialogue stages of the sustainable Brownfields redevelopment process.

X2.6.2 For effective interaction, the community’s characteristics should be assessed. The community demographics, organizational structure, and local governmental jurisdictions should be determined. The research should include collection of information on the area’s infrastructure, alternative or additional properties considered for Brownfields redevelopment, and identification of adjacent communities with Brownfields redevelopment experience..

X2.6.3 Once the research is complete and incorporated, the active dialogue process should begin because the actual Brownfields redevelopment project may need to be refined and discussed with the community. At this point, any community outreach strategy already in place should be broadened to include the majority of stakeholders. Simultaneously, creative partnerships for both the short and long term need to be formed. The ultimate goal for the dialogue sessions is to establish mutual acceptance of responsibilities to the process.

X2.7 *Politics:*

X2.7.1 The political realities of each area should be assessed and incorporated into the sustainable Brownfields redevelopment process. For example, in some cities, requests for zoning changes are channeled through the local government

representatives. Thus, any plans for Brownfields redevelopment need approval by local government officials.

X2.7.2 Other political considerations may include how the municipality views industrial retention and job creation. In addition, a Brownfields redevelopment property may lie within an Empowerment Zone, a Tax Increment Financing (TIF) area, or a historically designated district. These are all political considerations that need to be researched and woven into the process for redevelopment.

X2.8 *Mutual Acceptance of Responsibilities to Process:*

X2.8.1 With straightforward and honest communication between all parties, responsibilities to the process should be easy to establish and accept. These responsibilities should be clear and consistent. Any changes in responsibilities should be discussed and agreed upon. A simple, easy-to-read document should be posted prominently and disseminated widely. Some items of mutual responsibilities can include:

X2.8.1.1 Community involvement as early and as often as possible,

X2.8.1.2 Communication with all affected parties,

X2.8.1.3 Promotion of project plans,

X2.8.1.4 Involvement in meetings as agreed upon,

X2.8.1.5 Effort at cooperation,

X2.8.1.6 Cognizance and acceptance of community vision and developer vision, and/or

X2.8.1.7 Effort put forth to consolidate these two visions.

X2.8.2 After mutual acceptance of responsibility to the process and the establishment of effective communication a final reevaluation is necessary in order to determine whether to proceed with plans as originally envisioned, to adjust plans, or to forego the project altogether.

X2.8.3 Figs. X2.1 and X2.2 show decision trees from the viewpoints of both developer and community. These figures are meant to provide general guidance with the understanding that there is no “one size fits all” model for success. While these decision trees are presented linearly, some steps may not be appropriate in all cases while other steps may be more appropriately accomplished in a different sequence than shown. In the end, it will be the cooperation and straightforward honest communication of all stakeholders in an effort that will lead to sustainable Brownfields redevelopment process.

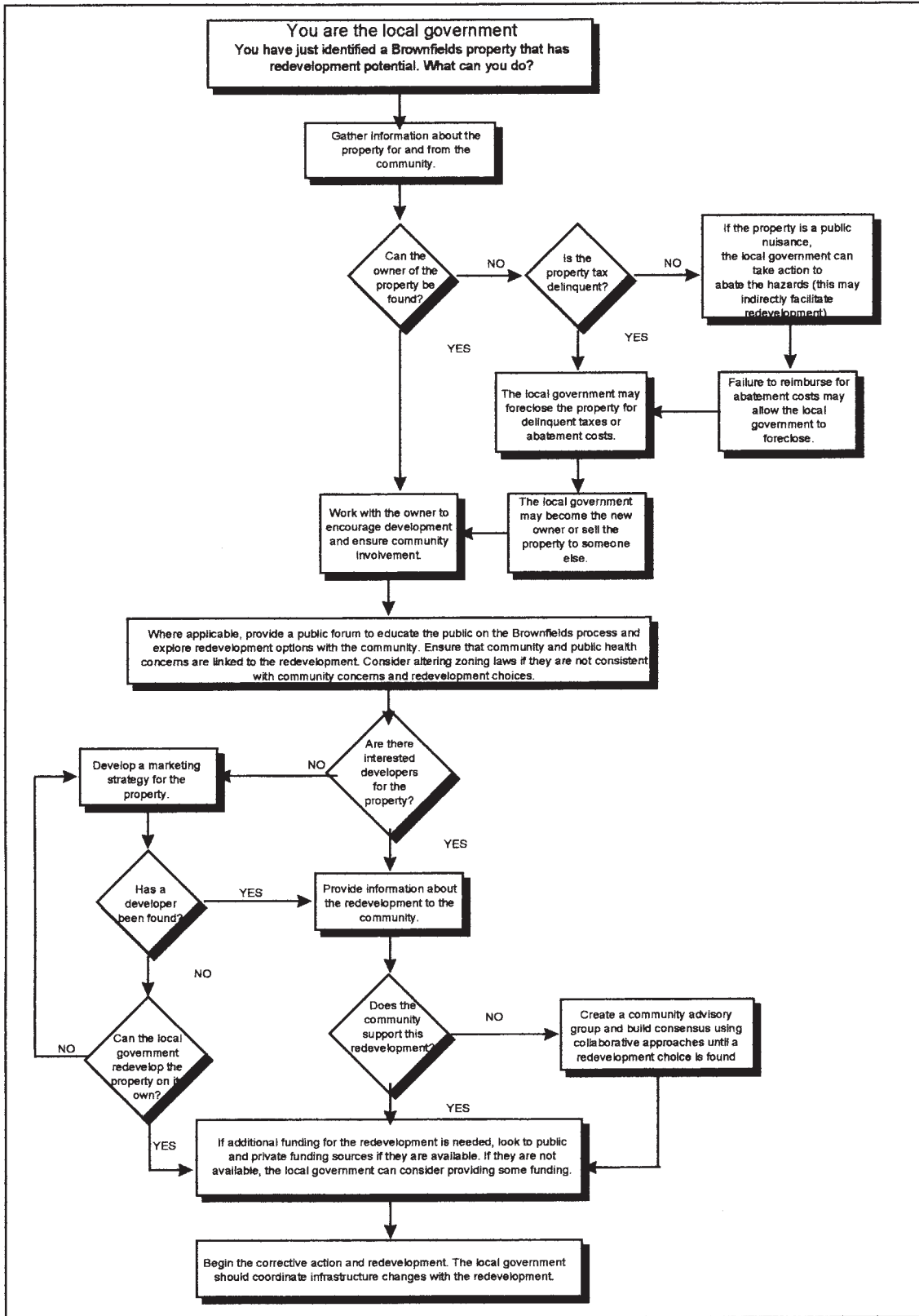


FIG. X2.1 Local Government Decision Tree

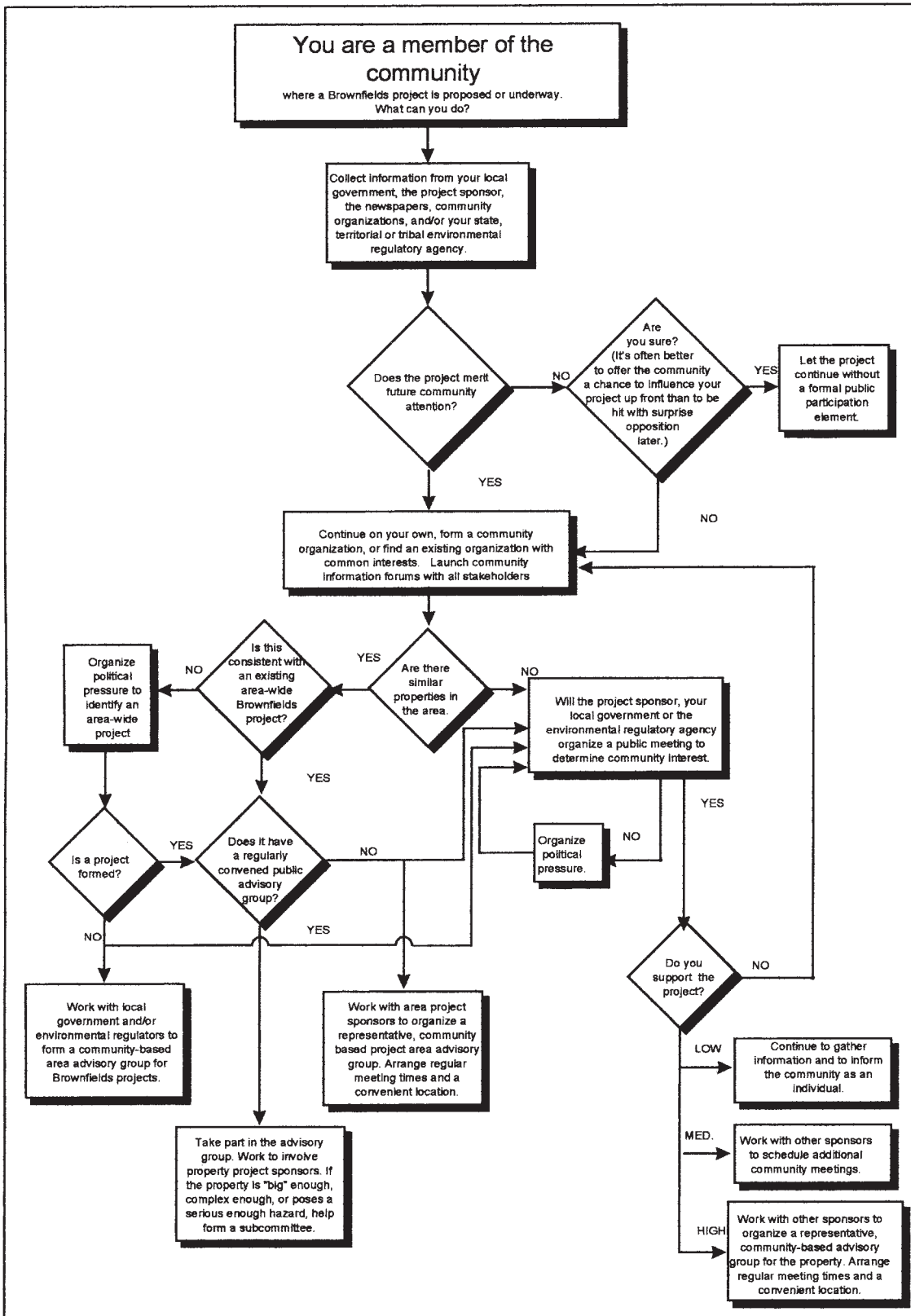


FIG. X2.2 Community Decision Tree

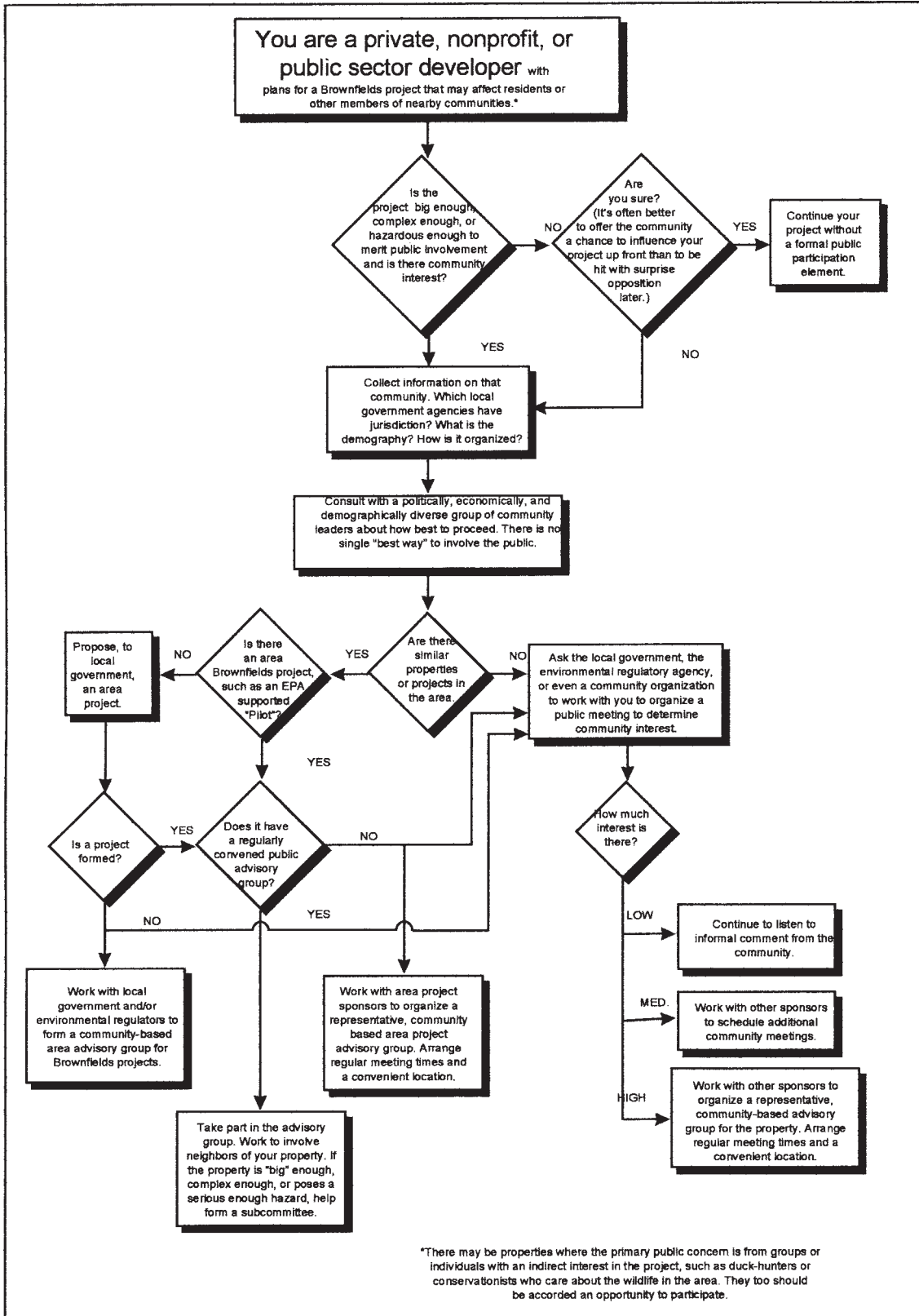


FIG. X2.3 Developer Decision Tree

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).