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495/MetroWest Corridor

Tools for Understanding and Implementing
Brownfields Redevelopment
At the Local Level in Massachusetts

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About the 495/MetroWest Corridor Partnership

In 2003, a group of visionary regional leaders created the 495/MetroWest Corridor Partnership to serve as an advocacy organization for the thirty-two municipalities in the "Arc of Innovation" region stretching along I-495 from Route 2 in the north to Route 1 in the south. Since then, the Partnership has amassed an impressive record of accomplishment addressing issues associated with transportation, water resources, workforce development, brownfields reclamation, housing, and permitting, while being recognized by policymakers as the voice for a region crucial to the Commonwealth's economy.

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Acknowledgements

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In the past, properties' environmental contamination would mean the death knell for their use, since technology, liability protections, financing, government policies, and real estate values had not evolved to the point of encouraging remediation and reuse. Fortunately, in recent years all of these forces have matured to drive the cleanup of many such properties and their return to actively contributing to the local economy and municipal tax rolls.

As befitting Massachusetts' history of innovation, as well as the legacy of leadership in the Industrial Revolution, the Commonwealth has been at the forefront of this brownfields movement. The "covenant not to sue" program, the Brownfields Act of 1998, the array of financial incentives for brownfields reclamation, the hosting of the 2006 National Brownfields Conference, and most importantly, the wide variety of successful projects all demonstrate our public and private leaders' commitment to brownfields revitalization.

It was this history of leadership, as well as our municipal and state leaders' commitment that first led the 495/MetroWest Corridor Partnership to consider how to best showcase these innovative programs and provide a resource to the region and the Commonwealth. Due to the leadership of our Economic Development Committee, the vision of our Board of Directors, the financial support from committed companies, and the hard work of our staff and a graduate student intern, this guide became a reality.

While many individuals, agencies, organizations, companies, and municipalities contributed to the development of this document, I would be remiss if several individuals were not singled out for their crucial participation, including...

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Regardless of if you represent a municipality, public agency, or private developer, we're confident that this document will offer a comprehensive guide to available resources and programs, and have a real impact on the necessary revitalization of contaminated properties.

Thank you for your interest in brownfields reclamation and this guide, and please call upon the 495/MetroWest Corridor Partnership if we can be of any further assistance.

Sincerely yours,

Paul F. Matthews

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EXECUTIVE SUMMARY

Due to projected changes in demographic, household, and economic trends, the next twenty-five years will transform the nation's built environment as much or more so than the massive changes that swept the country in the post-war years. Compared to other parts of the country, particularly the South and Southwest, the Northeast will see less growth. However, the growth that will happen in the Northeast could potentially disrupt the historic fabric of small towns and abundant green space that define much of the attractiveness and future sustainability for the region (Nelson, 2004). Much of this residential and economic growth will be located along the I-495 corridor. This new growth will pose significant challenges for the 495/MetroWest region, including: increased strain on regional water systems, added pressure on local roads and the limited public transportation services, a need for affordable housing, loss of open space, pressure on available workforce, and in some communities, the need for public school and other public infrastructure expansion.

How will Greater Boston and the 495/MetroWest region accommodate this additional growth over the next twenty-five to thirty years? One critical tactic that can address growth is the cleanup and reuse of brownfields. The US EPA defines brownfields as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

Most federal and state attention associated with brownfields has been directed to urban and inner ring suburbs (Davis, 2002). Far less attention has been given to the issue in suburban areas on the periphery of metropolitan regions. However, brownfields are a relevant issue in suburban jurisdictions across the nation and in Massachusetts, as evident by the large number of 21E sites that exist in the 495/MetroWest region.

The suburbs located in 495/MetroWest are not new; they have long histories, which in many cases include the detrimental effects of industrialization. The brownfield problem in 495/MetroWest is not generally typified by large parcel contaminated sites or multiple contiguous parcel contamination. The brownfield problem in the suburban context is generally not high profile or even necessarily visible; rather, it is typified by small parcel contamination, such as a former corner gas station or an isolated former industrial site. Contiguous parcel contamination is rare because large swaths of industrial land were not typical in suburban land use patterns. The result is a much more scattered, subtle, and less visible issue that is often ignored as a problem. However, the problem cannot be ignored for several reasons. Brownfields are often public health and safety issues and present a threat to environmental quality, especially in those districts in which groundwater is not provided by MWRA. Brownfields are idle and underutilized property that lowers property values of surrounding parcels. Brownfields represent ideal redevelopment opportunities because they are often located in areas that have the existing infrastructure needed to accommodate new growth. Once redeveloped, brownfields can add new tax paying property to the municipal tax rolls.

Brownfield redevelopment is a complicated undertaking that can involve state and federal environmental regulations, significant legal issues, environmental cleanup technologies and environmental consultants, and a myriad of other issues. These concerns are added to the already complicated real estate development process. This resource guide is intended to help local government officials and developers understand the various perspectives of brownfield development.

The Guide provides a background on federal and state brownfields policy, detailing the historical precedents for the federal government's involvement in environmental cleanup and how federal policy and regulatory responses inadvertently assisted in creating the brownfields problem. The section also provides detail on the Massachusetts' Contingency Plan and Chapter 21E, the state regulations that guide hazardous waste cleanup in Massachusetts.

One of the most critical steps in the redevelopment of contaminated property is the clean-up process and the standards that govern a site's remediation. Due to the crucial role they play in brownfield redevelopment it is important that local governments understand how the cleanup process works. The Guide describes the concepts behind both risk assessment and Risk-Based Corrective Action (RBCA), which are the frameworks that guide brownfield cleanups throughout the country. The Guide also provides an overview of the various types of technologies/ techniques that might be employed to cleanup brownfield sites.

Acquiring, cleaning, and redeveloping contaminated land can be a very expensive and time-consuming undertaking that can involve state and federal environmental regulations, significant legal issues, environmental cleanup technologies and environmental consultants, as well as a range of other issues. In many brownfield situations, private developers and financiers are unable or unwilling to act on their own to ensure that the full economic potential of site reuse will be achieved. Often public sector financing is necessary for brownfield redevelopment projects to move forward. Fortunately, both state and federal government have developed a fairly robust package of financing incentives that local government can utilize for brownfield redevelopment. The Guide reviews the significant state and federal programs associated with brownfields redevelopment. The Guide also details how the existing financial tools that local governments often already possess can be packaged to assist in brownfield redevelopment.

Local governments can play a critical role in ensuring that brownfields can be viable for redevelopment to a higher and better use rather than continuing to sit as vacant contaminated properties. Local governments are ideal to facilitate and promote the successful reuse of brownfields. The Guide describes the various roles and actions local governments can take in spurring brownfield redevelopment.

The Guide concludes with a review of the potential reuse options that can be employed on brownfield sites.

Case studies on existing brownfield projects and policies that exist within the 495/MetroWest region are located throughout the Guide.

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ABBREVIATIONS

BRAC – Brownfield Redevelopment Access to Capital
CDBG – Community Development Block Grant
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CPA – Community Preservation Act
DEP – Department of Environmental Protection
DHCD – Department of Housing and Community Development
DIF – District Improvement Financing
EACC – Economic Assistance Coordinating Council
EDA – Economic Distressed Area
EDIP – Economic Development Incentive Program
EOEA – Executive Office of Environmental Affairs
EPA – Environmental Protection Agency
HUD – Department of Housing and Urban Development
LSP – Licensed Site Professional
MAPC – Metropolitan Area Planning Council
MCCF – Massachusetts Community Capital Fund
MCP – Massachusetts Contingency Plan
MWRA – Metropolitan Water Resources Authority
NPL – National Priority List
PAH – Polyaromatic Hydrocarbons
PDF – Priority Development Fund
PRP – Potentially Responsible Party
RAMA – Response Action Management Approach
RAO – Response Action Outcome
RCRA – Resource Conservation and Recovery Act
RRF – Ready Resource Fund
TIF – Tax Increment Financing
UST – Underground Storage Tanks
VCP – Voluntary Cleanup Program

I. Introduction

Due to projected changes in demographic, household, and economic trends, the next twenty-five years will transform the nation's built environment as much or more than the massive changes that swept the country in the post-war years. It is estimated that by 2030 about half of the buildings in which Americans live, work, and shop will have been built after 2000 (Nelson, 2004).[1] Nationally there will be significant variation in the total amount of new construction between regions. Compared to other parts of the country, particularly the South and Southwest, the Northeast will see less growth. However, the growth that will happen in the Northeast could potentially disrupt the historic fabric of small towns and abundant green space that define much of the attractiveness and future sustainability for the region (Nelson, 2004). Indeed, recent population projections by the Metropolitan Area Planning Council (MAPC) suggest that Greater Boston will continue to grow, adding an additional 465,000 residents by 2030, an increase of 10.8 percent, and add an additional 240,000 jobs in the region (MAPC, 2006a, 2006b).[2] Much of this residential and economic growth will be located along the I-495 corridor. This new growth will pose significant challenges for the 495/MetroWest region, including: increased strain on regional water systems, added pressure on local roads due in part to a lack of public transportation services in the region, a need for affordable housing, loss of open space, and in some communities, the need for public school and other public infrastructure expansion.

Recent population projections by the Metropolitan Area Planning Council (MAPC) suggest that Greater Boston will continue to grow, adding an additional 465,000 residents by 2030 and add an additional 240,000 jobs in the region.

How will Greater Boston and the 495/MetroWest region accommodate this additional growth over the next twenty-five to thirty years? Addressing this question might be the greatest challenge that is facing Greater Boston as it enters the 21st century.

There are many strategies available to 495/MetroWest to accommodate growth in ways that limit its impact on the existing built and natural environment. One critical tactic that can address growth is the cleanup and reuse of brownfields. The US EPA defines brownfields as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

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Most federal and state attention associated with brownfields has been directed to urban and inner ring suburbs (Davis, 2002). This is understandable because many cities and inner ring suburbs are managing enormous brownfield problems and because high profile brownfield redevelopment projects tend to happen in these jurisdictions. Far less attention has been given to the issue in suburban areas on the periphery of metropolitan regions. Clearly, brownfield redevelopment is not the same issue in suburban jurisdictions as it is in inner ring suburban and central cities. However, brownfields are a relevant issue in suburban jurisdictions across the nation and in Massachusetts, as evident by the large number of 21E sites that exist in the 495/MetroWest region.

Fast-growing suburban jurisdictions are often viewed as completely new places with little or no past history of growth and development. Certainly, one of the reasons these places are growing is due to the often abundant greenfields that exist in these areas.[3] Undoubtedly a factor in the growth of 495/MetroWest has been the

1 The nation had about 300 billion square feet of built space in 2000. By 2030, the nation will need about 427 billion square feet of built space to accommodate growth projections. About 82 billion of that will be from replacement of existing space and 131 billion will be new space.

2 MAPC identified the MetroWest communities of Framingham, Hopkinton, Hudson, Marlborough, Natick, Northborough, Southborough, and Westborough as a major job center within Greater Boston that will add an estimated 22,000 jobs by 2030.

3 Greensfields are defined as property that has not previously been used for commercial or industrical activities.

presence of ample greenfield land. However, the suburbs located in 495/MetroWest are not new; they have long histories, which in many include the detrimental effects of industrialization. The industrial past of 495/MetroWest was not as intense as Boston and its inner ring neighbors, but it has left a brownfield problem for the municipalities of the region to deal with.

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The brownfield problem in 495/MetroWest is not generally typified by large parcel contaminated sites or multiple contiguous parcel contamination. The brownfield problem in the suburban context is generally not high profile or even necessarily visible; rather, it is typified by small parcel contamination, such as a former corner gas station or an isolated former industrial site. Contiguous parcel contamination is rare because large swaths of industrial land were not typical in suburban land use patterns. The result is a much more scattered, subtle, and less visible issue that is often ignored as a problem. However, the problem cannot be ignored for several reasons. Brownfields are often public health and safety issues and present a threat to environmental quality, especially in those districts in which groundwater is not provided by MWRA. Brownfields are idle and underutilized property that lowers property values of surrounding parcels. Brownfields represent ideal redevelopment opportunities because they are often located in areas that have the existing infrastructure needed to accommodate new growth. Once redeveloped, brownfields add new tax paying property to the municipal tax rolls.

The brownfield problem in the suburban context is generally not high profile or even necessarily visible; rather, it is typified by small parcel contamination, such as a former corner gas station or an isolated former industrial site.

Local governments can play a critical role in ensuring that brownfields can be viable for redevelopment to a higher and better use rather than continuing to sit as vacant fallow land. Local governments can go about this through a variety of tactics and strategies, which are discussed in detail within this guidebook.

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Brownfield redevelopment is a complicated undertaking that can involve state and federal environmental regulations, significant legal issues, environmental cleanup technologies and environmental consultants, and a myriad of other issues. These concerns are added to the already complicated real estate development process. This resource guide is intended to help local government officials and staff understand the various perspectives of brownfield development. Not only state and federal financial assistance that is available, but also how the cleanup process works, what the crucial roles local governments can play in spurring redevelopment, and what type of reuse options exist for brownfield sites. Case studies on existing brownfield projects and policies that exist within the 495/MetroWest region are located throughout the guide. An appendix providing an at-a-glance table of Massachusetts' brownfield incentives is located at the end of the document.

II. Background on Federal and State Brownfields policy

Concern over environmental contamination is relatively new. The environmental movement can trace its roots to the 1962 publication of *Silent Spring* by Rachel Carson. Carson's book, which examined the disastrous effects of the chemical DDT on natural food chains, galvanized the public around the importance of the natural environment. Prior to *Silent Spring*, government involvement in issues pertaining to the environment were essentially limited to land conservation and park planning. *Silent Spring* played a major role in pushing both federal and state governments to take action on issues of environmental contamination. At the

federal level the government passed several major pieces of legislation related to environmental protection including: the National Environmental Policy Act (1969), which created the US Environmental Protection Agency; the Clean Air Act (1970); and the Federal Water Pollution Control Act (1972), which was later amended in 1977 and became commonly known as the Clean Water Act.

With these acts the federal government was attempting to address the tainted legacy and externalities of economic progress based on manufacturing and industrial development. The country's economic growth had in certain instances severely threatened the natural environment, be it air, water, or soil.

The environmental contamination of land and groundwater became national and international news in the summer of 1978, when President Jimmy Carter approved emergency financial aid to assist in the removal of 236 families living in Love Canal, a former chemical landfill that became a fifteen-acre neighborhood in the City of Niagara Falls, NY. Assessments of the site revealed that 200 tons of dioxin, a lethal chemical, was buried in the canal as well as more than 200 additional chemical compounds. In 1980 Carter declared Love Canal a national emergency, paving the way for relocation of another 710 families.

Prompted by the disaster at Love Canal, Congress passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in 1980 to facilitate the cleanup of hazardous substances released into the environment and to promote the clean up of inactive waste disposal sites. CERCLA, also known as the Superfund Act, created a tax on the chemical and petroleum industries and provided federal authority to respond directly to releases or threatened releases of hazardous substances that could endanger public health or the environment. A National Priority List (NPL) was created as part of CERCLA to highlight the properties in the United States that had the worst contamination and to set up a long-term response action for those sites. Over five years, $1.6 billion was collected, and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites. The expiration of the tax in 1995 has shifted the responsibility for the majority of the costs of toxic waste cleanups away from known polluters and onto American taxpayers. Because of CERCLA, more than 1,200 sites have been cleaned that were originally on the NPL (Wernstedt, 2001).

CERCLA uses a three-part liability scheme to regulate hazardous waste cleanup. First, CERCLA provides for strict liability such that any party may be liable for polluting a site, even if they were making their best attempt to avoid damage (CERCLA, 1980). Second, the statute provides for joint and several liability, which means that a party can be liable for the full cost of remediation even if others caused the contamination (CERCLA, 1980). Third, CERCLA is retroactive, meaning that a party who obeyed the laws prior to the passage of CERCLA may nevertheless be held liable for cleaning up the site (Collins, 2003).

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The EPA can also bring administrative orders or legal actions against potentially responsible parties (PRPs). Under CERCLA, four classes of PRPs may be liable for contamination at a CERCLA site. They include the current owner or operator of the site; the owner or operator of a site at the time that disposal of a hazardous substance, pollutant or contaminant occurred; the person who arranged for the disposal of a hazardous substance, pollutant, or contaminant at a site; and the person who transported a hazardous substance, pollutant, or contaminant to a site and also selected that site for the disposal of the substance. Such broad liability increases the number of individuals

that are possibly responsible for the contamination and its cleanup, regardless of their involvement (CERCLA, 1980).

It has been said that contamination created brownfields, but the "brownfield problem" was created by CERCLA (Rosemarin & Siros, 1999). Because of CERCLA's strict and "several" standard and other problems associated with liability contamination or the possibility of contamination, the redevelopment potential of contaminated sites is constrained. Developers have found potentially contaminated property less attractive, fearing the liability and the high costs of remediation (Rosemarin & Siros, 1999). Not only were developers reluctant to take on contaminated or potentially contaminated sites, but lenders were also against financing brownfield projects. As more redevelopment prospects became limited by uncertainties and cleanup costs, public officials recognized the constraints imposed by existing legislation. CERCLA was having a chilling effect on the redevelopment of potentially contaminated property - the exact opposite of the intended effect of the act (Rosemarin & Siros, 1999). To address this problem, the EPA cleared 27,000 potential superfund sites from the NPL. (Wagner, Joder, Mumphrey, Akundi, & Artibise, 2005).

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Developers have found potentially contaminated property less attractive, fearing the liability and the high costs of remediation.

The brownfield issue came into the spotlight because policymakers needed to address the limitations of CERCLA and grapple with concepts of how clean a contaminated site needed to be. The removal of lower-level contaminated sites from the NPL resulted in a need for each state to create its own version of CERCLA to address brownfields in their jurisdictions. Like the federal CERCLA, a state's environmental laws establish a fund to finance the state-led cleanups and give the state the authority to force PRPs to cleanup contamination (Davis & Margolis, 1997). Voluntary cleanup programs (VCPs) were the precursor to state brownfields programs. Currently, they are used as one of the primary methods of implementing state versions of CERCLA. Since CERCLA does not preempt state cleanup laws, both the federal CERCLA and the state's environmental laws must be applied to determine the requirements and the liabilities for remediation of a brownfield (Collins, 2003).

Chapter 21E and the Massachusetts Contingency Plan

Chapter 21E, originally enacted in Massachusetts in 1983 and extensively amended in 1992, is patterned closely after CERCLA. It was enacted in response to the public's demand that the state address the cleanup of oil and hazardous material disposal sites in Massachusetts (Abelson, 1999). Chapter 21E established the provisions necessary for Massachusetts to develop a hazardous waste cleanup program. As required by Chapter 21E, the Massachusetts Department of Environmental Protection (DEP) developed the Massachusetts Contingency Plan (MCP), the suite of regulations that outline all the roles and responsibilities in the cleanup process and also serve to implement the goals and standards set forth in Chapter 21E (Weltman, 1996).

Chapter 21E established the provisions necessary for Massachusetts to develop a hazardous waste cleanup program.

Liability under the MCP is strict, joint and several, and retroactive. There are two purposes behind the MCP. The first is to set standards for hazardous waste cleanups to protect public health and the environment. The second is to establish procedures to ensure that cleanups are completed to meet these standards and that they are finished as quickly and as cost effectively as possible (Weltman, 1996).

The MCP is guided by six principles (Weltman, 1996). The first principle is that Potentially Resonsible Parties (PRPs) are liable for cleaning up waste sites. The MCP encourages a "polluter pays" principle, meaning that owners and operators of toxic waste sites-and the producers and transporters of the waste-are responsible for paying for all costs of the cleanup of toxic spills and dumps. The taxpayer is not responsible for

for the cleanup. Exceptions to this are if the MassDEP cannot identify the parties responsible for the contamination or if the PRPs have gone bankrupt. These sites are then referred to as "orphan sites," and it is the MassDEP's responsibility to finance and conduct the cleanup itself. MassDEP can then encumber the property with a lien.

The second principle of the MCP is that cleanups should be directed by licensed consultants hired by the PRP. When confronted with a toxic site, PRPs hire a professional in the field of waste site assessment and remediation to supervise the cleanup. These professionals are called Licensed Site Professionals (LSPs) and must give their written approval of all assessments, plans, and designs for the cleanup. LSPs must meet minimum experience and education requirements and follow a code of ethics. At more serious sites, the MassDEP must approve all the work; however, at most sites, the LSPs are given the discretion to design and carry out the cleanups (Weltman, 1996).

The second principle of the MCP is that cleanups should be directed by licensed consultants hired by the PRP. When confronted with a toxic site, PRPs hire a professional in the field of waste site assessment and remediation to supervise the cleanup. These professionals are called Licensed Site Professionals (LSPs) and must give their written approval of all assessments, plans, and designs for the cleanup.

Another principle of the MCP is that there are deadlines for each stage in the cleanup process. All sites, regardless of their severity, must be cleaned up within five years of the reporting of their existence to the MassDEP, unless an extension is applied for and granted.

There are varied incentives for PRPs to conduct timely cleanups. The MCP provides incentives and opportunities for PRPs to quickly clean up a site. These include the opportunity to clean up less threatening releases without regulatory oversight and to avoid certain fees if actions are taken quickly. The annual fees paid by PRPs and increased reporting requirements during the cleanup process are other incentives to clean up waste sites quickly. There are several benefits of quick cleanups, including reduced toxic exposure to the public, less contamination of natural resources, and an easier and more limited cleanup.

There are also standards for how a cleanup is conducted and when it is to be completed. Cleanups are conducted under a general performance standard called the Response Action Management Approach (RAMA). Though vaguely defined, the concept requires LSPs to set high standards for testing and cleanup actions. In addition, a spill or dump is considered appropriately remediated when a level of no significant risk has been achieved. This standard of remediation requires consideration of dangers to both public health and the environment. The MCP contains specific cleanup standards for the most common contaminants. However, the MCP process allows property owners to take planned future reuses into account when performing a cleanup.

The final principle of the MCP is the importance of public participation. The purpose of the MCP is to meet the public's demand for a safe and healthy environment. Public involvement in this process is essential to ensure that the purpose of the MCP is being met. The MCP has been set up to facilitate public participation by providing grants to citizen's groups and imposing information requirements on the PRPs (i.e. public notices in newspapers when milestones are met).[4]

Recent Statutory Reforms

The Small Business Liability Relief and Brownfields Revitalization Act (the Brownfields Law) was signed into law by President George W. Bush on January 11, 2002, combining the Small Business Liability Act and the Environmental Restoration Act. The resulting legislation provides relief from CERCLA liability for small businesses and certain property owners and authorizes federal funding for the grants and loans required to assess and remediate brownfields in each state. In addition, the Brownfields

4 For a full overview of the Massachusetts' Contingency Plan go to http://www.mass.gov/dep/cleanup/laws/mcptoc.htm.

Law reflects Congress's intention for the states to play a primary role in brownfields remediation and redevelopment by encouraging state, rather than federal, enforcement of cleanup responsibility (Guariglia, Ford & Da Rosa, 2002).

On August 5, 1998 Governor Cellucci signed Chapter 206 of the Acts of 1998 (the "Brownfields Act") into law, establishing new incentives to encourage parties to clean up and redevelop contaminated property in Massachusetts. This Act provides liability relief and financial incentives to attract new resources for these properties, while ensuring that the Commonwealth's environmental standards are met (Massachusetts Department of Environmental Protection, 2006).

The Brownfields Act ends liability for "eligible persons" once they meet the MassDEP's cleanup standards for oil or hazardous material releases. According to Chapter 206 Section 9, an "eligible person" is an owner of a site where there is or has been a release of oil or hazardous waste that the individual did not cause or contribute to. An eligible person did not own or operate the site at the time the contamination was released (Chapter 206 of the Acts of 1998). Once a permanent cleanup or remedy operation status is achieved, an eligible person is protected from Commonwealth claims for response action costs and natural resource damages and from claims by third parties for contribution, response action costs, and property damage. A permanent solution is considered the attainment of a level of control of hazardous substances at a brownfield site or in the surrounding environment so there is no significant risk to the health, safety, and welfare of the surrounding environment in the foreseeable future (Massachusetts Department of Revenue, 2006). A remedy operation status is a response that has begun to eliminate a hazardous waste but still relies on active maintenance and operation to achieve a permanent solution to the contamination (Massachusetts Department of Revenue, 2006).

In addition to ending liability for eligible persons, Chapter 206 has also exempted certain owners and operators from liability for contamination that has migrated onto their property and tenants from operator liability if their tenancy began after the release was reported to the MassDEP as long as they did not cause or contribute to the contamination. It also exempted redevelopment agencies and authorities from liability as long as they acquired the property after August 5, 1998, did not cause or contribute to the contamination, notified the MassDEP of the release, provided access to people who are involved in the clean up, prevented exposure to contamination, and took immediate response actions where needed. Chapter 206 also protected owners and operators from liability for future violations after they transfer the contaminated property to a new owner (Massachusetts Department of Environmental Protection, 2006).

III. The Cleanup Process

One of the most critical steps in the redevelopment of contaminated property is the cleanup process and the standards that govern a site's remediation. Due to the crucial role they play in brownfield redevelopment it is important that local governments understand how the cleanup process works. It is particularly important because the cleanup of brownfields is not a black or white proposition of either totally clean or contaminated; with brownfields there are many shades of gray. While it may appear that 100 percent clean is ideal, this approach may apply unnecessarily high standards to sites that, based on future use, may not need that level of cleanup. Too restrictive standards deplete constrained funds, drive up costs, and reduce the opportunities for reuse (ICMA, 2001). In fact, CERCLA clean-up standards, which are very rigorous, unintentionally created many brownfield sites because the cost of investigating and cleaning them up, along with fears of liability, deterred potential owners and/or developers from doing anything with mildly contaminated property (ICMA, 2001, Rosemarin & Siros, 1999). This section explains how, through risk assessment and risk-based corrective action, the balance between the protection of public health and environment is struck with limited financial resources for clean up.

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Risk Assesssment

Risk assessment is the scientific evaluation of potential threats caused by environmental hazards. Risk assessment is used widely through many disciplines to make decisions on a myriad of projects. On a brownfield, a risk assessment examines the types and concentrations of toxic substances, the health risks linked to those substances, potential pathways through which those substances can reach humans, and the size of the human populations that can be exposed to risk (ICMA, 1997). In 1983 the National Academy of Sciences classified the procedures needed to complete risk assessment into four steps:

- Hazard identification: generates basic data about the potential harmful effects from chemicals;
- Dose-response assessment: determines what dose of the chemical causes a toxic effect;
- Exposure assessment: determines whether humans, plants, or wildlife are likely to be exposed at levels that will cause adverse effects; and
- Risk characterization: combines all of the information to produce one or more risk estimates. Such estimates serve as the basis for deciding what risk management actions are needed (National Academy of Sciences, 1983).

Risk assessment is the basic framework for the Risk-Based Corrective Action (RBCA) process that guides brownfield cleanups all over the country (ICMA, 2001).

Risk-Based Corrective Action (RCBA)

The RBCA process grew out of federal and state efforts to remove leaking underground storage tanks (USTs). The EPA's first clean-up standards for USTs were overly stringent. Average clean-up costs were $50,000 to $500,000 for a single site, which rapidly depleted many state UST clean-up funds. To address the problem, the American Society for Testing and Materials developed the *Guide to Risk-Based Corrective Action for Petroleum Release Sites.* The process presented in the Guide provided a framework that recognizes that not all sites require the same extensive clean-up effort because not all sites pose the same level of risk.

The RBCA process grew out of federal and state efforts to remove leaking underground storage tanks (USTs).

The RBCA process is designed to maintain balance by being flexible enough to allow a level of risk assessment that makes sense at a particular site while containing provisions intended to ensure that, regardless of the level of risk assessment, all sites are restored to a safe level (ICMA, 1997). RBCA uses a tiered approach that starts with an initial site assessment, which includes data collection efforts focused on determining the potential risk posed by the presence and migration of chemical(s) of concern. A site conceptual model is then developed, depicting a working hypothesis of a site based on current knowledge to identify potential exposure pathways. Exposure pathways are the ways people come into contact with a hazardous substance. The three routes of exposure are breathing, eating or drinking, or contact with the skin. At this point the party carrying out the cleanup can choose from three tiers of remediation standards, each requiring a greater level of data collection analysis.

- Tier 1: compares concentrations of toxic substances at a site with risk-based screening levels. Exposure levels are based on conservative assumptions rather than actual fate and transport modeling. Assumptions use available information from historical records, visual inspection, and initial site assessments.
- Tier 2: uses site-specific target levels that take into account actual points of exposure, rates of contaminant travel, and other factors at a particular site.
- Tier 3: uses even more sophisticated analyses that usually require a detailed site assessment probabilistic exposure evaluations, and sophisticated fate and transport models.[5]

A major consideration in determining what clean-up levels are appropriate at a site is the future use of the land. RBCA places a high priority on consideration of future land use as a way to achieve rational, cost-effective cleanups. For example, brownfields sites require the same level of investigation and remediation as any other site in the Massachusetts Contingency Plan system. However, the Massachusetts Contingency Plan

5 The reader should not confuse the above tiered system with classifying disposal sites under the MCP (i.e. Tier I vs Tier II).

process allows property owners to take planned future reuses into account when performing a cleanup. This concept is also supported by the US EPA (United States Environmental Protection Agency, 1995).

The intended future use of a brownfields site can dictate the level of cleanup that will need to take place. For example, a brownfield site with soil contamination that will be used as a parking lot will not need to be cleaned to the same level as a site with similar contamination that will be developed for housing. Determining future land use can hold the key to successful and realistic brownfields cleanup and reuse (ICMA, 2001). Because local governments exercise control over land-use decisions within their boundaries, local officials and managers need to understand the important relationship between clean-up standards and future land use (ICMA, 2001). Decisions about future land use are often dictated by municipal documents like comprehensive plans and zoning requirements. Though documents like these provide guidance in identifying future land use, it is in the best interest of all parties to initiate a dialogue early in the redevelopment process that identifies a future land use that can be supported by multiple stakeholders.

Determining future land use can hold the key to successful and realistic brownfields cleanup and reuse . . .

General Remedial Strategy

Redevelopment of brownfields properties requires a different remedial strategy and approach than employed in most federal, state, and private programs. When remediation of a site is the ultimate objective, a sequential, multiphase remedial program consisting of the following steps is standard practice:

- Site investigation (Phase I): A Phase I environmental assessment is a research of historical uses and activities on a site. The research usually includes: an inspection of the property, researching past owners and the property use during ownership, reviewing governmental records to determine past use and use or disposal of hazardous substances, interviewing past property owners and/or employees, and reviewing adjacent properties to evaluate potential sources of off-site contamination.
- Risk assessment (Phase II): If there is an indication of hazardous substances existing on the site, a Phase II assessment is completed. The purpose of a Phase II is to develop and understand what contaminants are on the site, where they are located and the intensity of contamination on the site. Samples are taken on the site and analyzed in a laboratory. The type of sampling is dependent on the suspected type, source, and depth of the contamination as well as soil conditions. Groundwater depth also is a significant factor in the types of sampling undertaken.
- Feasibility study: Following Phase I and II assessments, a feasibility study is usually conducted to evaluate the technical and cost parameters of different remediation options for site cleanup based on the future use of the site.
- Remedial design/engineering: Based on the feasibility study, a remedial design plan or strategy is developed to remediate the contamination issues on the site.
- Remediation of affected media: This is the process of actually cleaning or remediating the site of contaminants.

Types of Brownfields Cleanup

The most common soil contaminants are petroleum-based. Diesel fuel and gasoline leaks are widespread problems, as are polyaromatic hydrocarbons (PAH). Many PAHs are known carcinogens that need to be kept from contaminating drinking water. Chemicals tend to spread through soil by diffusion and convection. Diffusion is molecular transport that is motivated by differences in concentration. Convection is molecular transport where the driving force is provided by a fluid such as rain. As it soaks into the earth, water will pick up pollutant particles and carry them further from the initial spill (McLaughlin, 2001). Fortunately, the mechanisms that spread pollutants can also be used to remove them. This type of cleanup is called soil remediation.

There are two distinct classes of soil remediation: in-situ, or on-site, and ex-situ, or off-site (McLaughlin, 2001). In recent years, attention has focused on the development of on-site immobilization methods that are generally less expensive and disruptive to the natural land-

There are two distinct classes of soil remediation: in-situ, or on-site, and ex-situ, or off-site.

hydrology, and ecosystems than are conventional excavation, treatment, and disposal methods (The University of Georgia Savannah River Ecology Laboratory, 2006). However, off-site remediation has a distinct advantage over on-site remediation because it removes the bulk of contaminants off-site before they can spread further. Also, on-site remediation efforts are limited because only the top of the soil is accessible (McLaughlin, 2001).

The main goal of on-site remediation techniques is to reduce the fraction of toxic elements that is potentially mobile (Soil Remediation Using In Situ Immobilization Techniques, 2006). Environmental mobility is the capacity for toxic elements to move from contaminated materials to soil or groundwater that is not contaminated. There are several types of on-site soil remediation techniques including: soil washing, soil stabilization, and soil vapor extraction.

Soil washing is a treatment technology for removing contaminants from excavated soil by scrubbing soil with a water-based solution. Soil washing is accomplished by contacting soil with a wash solution, separating the soil and solution, and treating the solution. The solution is combined with the soil and vigorously agitated to transfer contaminants into the wash solution. The process removes contaminants from soils by dissolving or suspending them in the wash solution (which is later treated by conventional wastewater treatment methods).

Soil stabilization utilizes cement-based solidification as an effective means to treat contaminated soil. In this technology, cement is mixed into contaminated soil or sediment to bind the contaminants to treated material. Cement is mixed into the soil using a specialty auger system. As the auger penetrates the soil, cement grout is pumped through the mixing shaft and exits through jets located on the auger flighting, mixing cement into the contaminated soil. An overlapping drilling pattern is used to ensure complete mixing and treatment of the area. Cement-based soil stabilization can not only successfully treat the soil for contaminants, but also improve the physical properties of the soil for redevelopment (Portland Cement Association, 2006).

Soil vapor extraction, also known as "soil venting" or "vacuum extraction", reduces concentrations of volatile constituents in petroleum products adsorbed in soils. In this technology, a vacuum is applied through wells near the source of contamination in the soil. Volatile constituents of the contaminant "evaporate", and the vapors are drawn toward the extraction wells (United States Environmental Protection Agency, 2006f). Extracted vapor is then treated as necessary (commonly with carbon absorption) before being released to the atmosphere.

Treating contaminated groundwater can be an expensive, time-consuming effort. Technologies for treating contaminated groundwater have gone through a revolution since the early 1990s, when new technologies began rapidly replacing old inadequate ones (Montana State University Bozeman, 2004). Current and emerging technologies are designed to:

- Prevent the migration of contaminant plumes off-site;
- Isolate and contain the contaminant source(s); and
- Treat affected groundwater to acceptable water quality levels.

There are numerous types of groundwater remediation techniques, including in-well air stripping and bioremediation.

With in-well air stripping technology, air is injected into a vertical well that has been screened at two depths. The lower screen is set in the groundwater saturated zone, and the upper screen is in the unsaturated zone, often called the vadose zone. Pressurized air is injected into the well below the water table, aerating the water. The aerated water rises in the well and flows out of the system at the upper screen. Contaminated groundwater is drawn into the system at the lower screen. Contaminants like volatile organic compounds (VOCs) vaporize within the well at the top of the water table, as the air bubbles out of the water. The vapors are drawn off by a soil vapor extraction system. The partially treated ground water is never brought to the surface. It is forced into the unsaturated zone, and the process is repeated as water follows a hydraulic circulation pattern or cell that allows continuous cycling of ground water. As ground water circulates through the treatment system, contaminant concentrations are gradually reduced.

Bioremediation is a treatment process that uses naturally occurring microorganisms (fungi or

bacteria) to break down hazardous substances into less toxic or nontoxic substances. Certain microorganisms can digest organic substances such as fuels or solvents into harmless products, generally carbon dioxide or water (US Environmental Protection Agency, 1996). Bioremediation can be used to clean soil or groundwater on site or off site. Generally, an on-site groundwater bioremediation system consists of an extraction well to remove groundwater from the ground to an above-ground water treatment system. Here nutrients and an oxygen source may be added to the contaminated groundwater; then injection wells return the "conditioned" groundwater to the subsurface where the microorganisms degrade contaminants (United States Environmental Protection Agency, 1996).

IV. Financing and Incentives for Redevelopment

Acquiring, cleaning, and redeveloping contaminated land can be a very expensive and time-consuming undertaking that can involve state and federal environmental regulations, significant legal issues, environmental cleanup technologies and environmental consultants, plus a myriad of other issues. In many brownfield situations, private developers and financiers are unable or unwilling to act on their own to ensure that the full economic potential of site reuse will be achieved. Often public sector financing is necessary for brownfield redevelopment projects to move forward. Fortunately, both state and federal government have developed a fairly robust package of financing incentives that local government can utilize for brownfield redevelopment. There are also existing financial tools that local governments often already possess that can be packaged to assist in brownfield redevelopment.

In many brownfield situations, private developers and financiers are unable or unwilling to act on their own to ensure that the full economic potential of site reuse will be achieved. Often public sector financing is necessary for brownfield redevelopment projects to move forward.

Financing Tools for Local Governments

No single public-sector approach fits the financing needs of every brownfield project. By crafting and targeting financial incentives and assistance towards the reuse of contaminated property, local governments can help to advance the cleanup and reuse activities to achieve significant economic, social, and aesthetic benefits (Bartsch, 2006). Several of these methods are described in this section. State brownfields initiatives provide a foundation for local efforts to complement and build upon. In general, local governments could better position themselves to support brownfield reuse projects by giving a new twist to their existing economic development finance programs (Bartsch & Wells, 2003). This section outlines types of financial tools that local governments may already have that can help in funding brownfields redevelopment:

- Tax Increment Financing (TIF)
- Tax Abatements
- Revolving Loan Funds
- General Obligation Bonds
- Community Development Block Grants (CDBG).

Tax Increment Financing (TIF)/ District Improvement Financing (DIF)

Tax increment financing is created through a local government's assessment of property values. Special assessments are made on properties that are expected to gain particular benefits from a general improvement, or from an environmental activity, such as a cleanup. The incremental difference in tax revenues between the original assessment rate and the new, higher assessed rate is then used to finance the improvement activity (National Association of Development Organizations, 2000). Tax Increment Finance is the term that is used by most states to describe the Massachusetts program known as District Improvement Financing (DIF) (Nakajima & Smith, 2004).

Tax Abatements

Tax abatements reduce or forgive tax liability, therefore increasing the amount of money that can be used for brownfield remediation and redevelopment. Abatements most often relieve property taxes, but also are granted for sales, inventory, and other taxes. They often take several forms: freezing the assessed value of land or buildings prior to improvements; reducing the tax rate for five, ten, or twenty years; or exempting some types of property from taxation altogether (Bartsch & Wells, 2003).

Revolving Loan Funds

A revolving fund loan is a source of money that provides loans to specified parties. The parties reimburse the fund for the loan amount plus interest. Through payback of principal and interest, the fund is able to maintain the same or increased levels of funding. Revolving funds are typically developed through revenue disbursement from a trust fund (United States Environmental Protection Agency, 2006b).

General Obligation Bonds

Nearly all communities are empowered to issue general obligation (GO) bonds for a public purpose. Municipalities traditionally issue GO bonds for acquiring land, preparing sites, and making infrastructure improvements. Since these are all key elements in brownfield redevelopment, it can be argued that GO bonds could be used by local governments to support brownfield cleanup and reuse projects in their communities (Bartsch & Wells, 2003).

Community Development Block Grant Program (CDBG)

The Community Development Block Grant Program (CDBG) provides communities with resources that address a wide variety of community development needs. It provides annual grants to entitled towns, cities, and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons. HUD's CDBG funds a large range of community development activities used by state and local governments for brownfield redevelopment. The most common use of CDBG funds for brownfields has been for remediation, followed by assessment and redevelopment (U.S. Department of Housing and Urban Development, 2006).

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State Financing/Incentives

Like many other states, Massachusetts has established its own legal framework to promote the redevelopment of brownfields. Various state agencies have also maintained and supervised loans, grants, and other financial resources to assist local communities, developers, nonprofits, and many other groups. This section explains state incentives that are either explicitly designed for brownfield development or programs flexible enough to be used for brownfields redevelopment. These programs (organized by administering agency or statute) include:

- The Brownfields Act
  - Brownfield Redevelopment Fund
  - Brownfields Redevelopment Access to Capital (BRAC)
  - Brownfields Tax Credit
- Massachusetts Community Preservation Act
- Economic Development Incentive Program (EDIP)
- Massachusetts Department of Housing and Community Development
  - Community Development Funds I/II
  - Ready Resource Fund
  - Housing Development Support Program
  - Massachusetts Community Capital Fund
  - Mini-Entitlement Program
  - Priority Development Fund.
- Assistance Offered by the Executive Office of Environmental Affairs
- Brownfields Covenant Not to Sue
- Assistance Offered by the Massachusetts Department of Environmental Protection

Many of these programs are explicitly focused on brownfields development. Some are not. This review should not be considered a comprehensive list of state programs that can be utilized for brownfield development. If communities apply some creativity to make a brownfields connection, they can benefit from other state programs.

The Brownfield Act

On August 5, 1998, Governor Cellucci signed Chapter 206 of the Acts of 1998 (the "Brownfields Act") into law, establishing new incentives to encourage parties to clean up and redevelop contaminated property in Massachusetts. This Act provides liability relief and financial incentives to attract new resources for these properties, while ensuring that the Commonwealth's environmental standards are met (Massachusetts Department of Environmental Protection, 2006).

Major features of the Brownfields Act include liability relief, financial incentives, and other features. Key elements in the program include the Brownfields Redevelopment Fund, the Brownfield Redevelopment Access to Capital, and the Brownfield Tax Credit Program.

Brownfields Redevelopment Fund

The Brownfield Redevelopment Fund was created as part of the Brownfields Act to provide flexible, low-cost financing for environmental actions throughout the Brownfields Site Assessment Program and the Brownfields Remediation Program (Massachusetts Department of Environmental Protection, 2006). Projects must be located in Economic Distressed Areas (EDAs) and must have a significant impact on the economic development in those areas with respect to increasing the employment pool or contributing to either their economic or physical revitalization. Assistance from the Brownfield Redevelopment Fund must be necessary in order to make a project financially feasible. To be eligible for assistance, the owner of a contaminated site must be in accordance with Chapter 21E and cannot be subject to any outstanding administrative or judicial environmental enforcement action in Massachusetts (Massachusetts Department of Environmental Protection, 2006).

The Brownfield Redevelopment Fund was created as part of the Brownfields Act to provide flexible, low-cost financing for environmental actions throughout the Brownfields Site Assessment Program and the Brownfields Remediation Program.

There are three types of funding available through the Brownfield Redevelopment Fund: grants, loans, and priority projects. To receive a grant, eligibility is restricted to municipalities, redevelopment authorities and agencies, economic development and industrial corporations, community development corporations, and economic development authorities. Any applicant who wishes to take a loan from the Brownfield Redevelopment Fund must also provide matching funds to what was borrowed. MassDevelopment may designate "Priority Projects" through the Brownfields Redevelopment Fund. Eligibility for priority project designations is determined on a case-by-case basis by Mass Development (Massachusetts Department of Environmental Protection, 2006).

Brownfield Redevelopment Access to Capital (BRAC)

In Massachusetts, the BRAC program, "makes high-quality, low-cost, pre-negotiated, and often state-subsidized environmental insurance available to parties who wish to purchase, clean up, and/or develop brownfields sites anywhere in Massachusetts; and to lenders willing to finance such projects" (Brownfields Insurance, 2006). The BRAC program will back private sector loans with environmental insurance to ensure that the cleanup is completed. Once remediation is complete, the loan is repaid and the collateral is returned to its full economic value. This program is administered by MassBusiness and is designed to appease the concerns of lenders about

borrowers being able to repay their loans and contaminated land being "impaired collateral" (Massachusetts Department of Environmental Protection, 2006) with a reduced value. The BRAC program reduces or eliminates the environmental risk normally associated with brownfields development, thus acting as a catalyst in bringing private sector loan funding to environmental cleanup and development projects throughout Massachusetts. See the Environmental Insurance Case Study on page 26 for more information on BRAC and environmental insurance.

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Brownfields Tax Credit

Under the Brownfields Act, developers are allowed to take a portion of the clean-up costs of a brownfield as a tax credit. The amount of the credit varies according to the extent of environmental remedy. As of July, 2000, the credit is either 25 or 50 percent of certain environmental response and removal costs incurred between August 1, 1998 and January 1, 2007, provided that the taxpayer commenced and diligently pursued an environmental response action before August 5, 2005. The maximum amount of credit that may be taken in any taxable year may not exceed 50 percent of the tax liability for that year (Guide to Taxes Personal Income and Corporate Excise Tax Credits, 2006).

The tax is available to the following types of taxpayers: corporate trust, corporation included in a combined return, corporation, partnership, S corporation, sole proprietor, and a trust. Contaminated sites are eligible for the Brownfields Tax Credit if the site meets the following criteria:

- The site is owned or leased by the taxpayer for business purposes;
- The property has been reported to the Department of Environmental Protection pursuant to Massachusetts General Law Chapter 21E Section 2; and
- The property is located in an (EDA).

The credit is not allowed to taxpayers who have received financial assistance from the Brownfields Redevelopment Fund or from the Brownfields Redevelopment Access to Capital (BRAC) Program. The Brownfields Tax Credit has provided a much-needed incentive to those developers who might otherwise walk away from the costly endeavor of cleaning up and then redeveloping a brownfield.

Massachusetts Community Preservation Act

The Community Preservation Act (CPA), which was signed into law in 2000, is used to support communities in the preservation of greenspace and historic landmarks, to generate additional affordable housing units, and to establish recreational facilities. The CPA enables communities to, "levy a property tax surcharge of up to 3.0 percent on real property for the purpose of creating a local community preservation fund and qualifying for state matching funds" (Overview of the Massachusetts Community Preservation Act, 2006). This legislation strengthens and empowers the communities in Massachusetts by ensuring that decision-making occurs at the local level. All voting is done by ballot to adopt the CPA, local legislatures must appoint committees of local people to draw up plans for the use of the funds, and these plans are subject to local comment and approval. If residents do not feel that the CPA is working, then they have the option to repeal it (Community Preservation Coalition, 2006). The CPA provides new funding sources that can be used to address the acquisition and preservation of open space, the creation and support of affordable housing, and the acquisition and preservation of historic buildings and landscapes.

A minimum of 10 percent of the annual revenues of the fund must be used for each of the three core community concerns. The remaining 70 percent can be allocated for any combination

CASE STUDY:
Brownfields Redevelopment and Environmental Insurance

Brownfields redevelopment involves many stakeholders – property owners, developers, local, state and federal governments. The introduction of regulatory and financial incentives has assisted in shifting the redevelopment mind-set from 'this site is too contaminated and the liability risks are too great' to 'we can put this site back into productive re-use'.

By purchasing an environmental insurance policy, the risk of a developer not being able to complete the proposed cleanup due to the underestimation of the associated costs is substantially mitigated, thereby protecting the local community budget coffers from having to step in and complete the remediation plan. Additionally, potential future environmental costs, third-party liability and matters of risk associated with migrating pollution conditions may also be limited through an insurance policy. Mitigating these uncertainties in the brownfields equation helps enable local governments to focus on big-picture community development issues.

Whether a redevelopment project is part of a state voluntary cleanup program, or contractually under an allocation of responsibilities and liabilities through a purchase and sales agreement, or a combination of both, environmental insurance policies are an important part of returning these properties to value-producing assets for all stakeholders.

THE BRAC PROGRAM

In 1999, the Massachusetts Business Development Corporation partnered with AIG Environmental® (and recently, other insurers) to promote the cleanup of contaminated sites through the Brownfields Redevelopment Access to Capital Program (BRAC). If a site is eligible under the BRAC program, private companies are eligible for a subsidy of 50% of the insurance premium up to $50,000, or up to $150,000 for public and government entities. Since 1999, the BRAC program has facilitated the cleanup of 290 sites, which resulted in over $165 million invested in cleanup efforts for the Commonwealth of Massachusetts. These projects resulted in over $3.1 billion in private development and the creation of over 22,000 new jobs. The partnership has been a success where every $1 in environmental insurance premium subsidies results in $572 for cleanup expenditures. The Massachusetts BRAC program has become a model for other states to follow.

For more information about the BRAC program please contact your local AIG Environmental office, or e-mail us at aigenvironmental@aig.com.

ENVIRONMENTAL INSURANCE AIG ENVIRONMENTAL

Pollution Legal Liability /Cleanup Cost Cap for owners, developers, states, communities, local redevelopment authorities

Key objectives:

- Reduce or transfer environmental liabilities.
- Protect all stakeholders in the project from liability.
- Cap cleanup costs.
- Protection against government re-openers or change orders.

Coverage can be provided for:

- On-and off-site cleanup of pre-existing conditions and new conditions triggered by discovery or third-party claims resulting from pollution conditions outside the scope of the remedial plan. For example, if pollution is discovered that was previously unknown, environmental insurance can provide the funds to respond to the cleanup.
- Third-party claims for on- and off-site bodily injury and property damage, and off-site cleanup resulting from pre-existing or new conditions. The policy may protect all stakeholders involved in the project, including redevelopers, contractors, and lenders.
- Cost overruns - the policy may provide coverage for cleanup costs relating to the remedial plan that exceed the initial cleanup cost estimate.
- Government re-openers or change orders, and may also provide stop-gap coverage for environmental liability under voluntary cleanup or other governmental programs prior to eligibility for statutory liability releases.

UNMATCHED EXPERTISE, FINANCIAL STRENGTH

AIG Environmental®'s expertise in Brownfields redevelopment is unmatched and our team, including AIG Environmental's environmental engineering staff, contributes real-world experience working with federal and state environmental agencies.

FOR MORE INFORMATION ON HOW AIG Environmental®'s ENVIRONMENTAL INSURANCE CAN ASSIST REDEVELOPMENT EFFORTS:

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Department BWNF

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Send e-mail to
aigenvironmental@aig.com

of the allowed uses, or for land for recreational use. Funds available through the CPA can assist with the expense of brownfields remediation.

Economic Development Incentive Program (EDIP)

The Economic Development Incentive Program (EDIP) is designed to attract, retain, and expand businesses in specific economic target areas in Massachusetts (MGL Chapter 23A Section 3A). This program is administrated by the Massachusetts Office of Business Development. The Economic Assistance Coordinating Council (EACC) is a public-private body comprised of eleven members co-chaired by the Director of Economic Development and the Director of Housing and Community Development. It is responsible for reviewing applications from municipalities for the designation of areas as economic target areas[6] and economic opportunity areas[7], certifying projects for participation in the economic development incentive program, and establishing regulations for evaluating proposals for those projects.

A Certified Project is a business that is expanding its existing operations, relocating its operations, or building new facilities and creating permanent new jobs within an Economic Opportunity Area (EOA). Prospective candidates submit an application to the community project liaison for consideration.

Certified projects may receive state tax incentives, including a five-percent investment tax credit for qualifying tangible, depreciable assets. There also is a 10-percent abandoned building tax deduction for costs associated with the renovation of an abandoned building. In addition, such businesses qualify for municipal tax incentives, including:

- Special tax assessment - a phased-in assessment of the total value of the project property, or
- Tax Increment Financing (TIF) - a five-to 20 year property tax exemption based on the increased value of the project property due to new construction or significant improvements. With tax increment financing, all personal property taxes are exempt.

Tax savings from EDIP incentives can be utilized to offset added upfront expenses that accompany most brownfield redevelopment projects. Likewise, EDIP incentives can be packaged with other brownfield financing incentives to realize a reduction in overall costs for redevelopment.

Massachusetts Department of Housing and Community Development

The Massachusetts Department of Housing and Community Development (DHCD) administers state and federal funding programs to provide communities with resources needed to promote economic development, affordable housing, and other goals. DHCD receives Community Development Block Grant (CDBG) funding through the U.S. Department of Housing and Urban Development (HUD) that can be used for brownfields projects, such as:

- **Community Development Funds I/II:** Provides grants to municipalities for site assessment, cleanup, demolition, and other activities.
- **Ready Resource Fund:** Provides grants to municipalities to support planning, pre-development studies, property acquisition, and other activities.
- **Housing Development Support Program:** Provides grants to municipalities for housing-related activities.
- **Massachusetts Community Capital Fund:** Provides loans to businesses and other eligible entities through municipalities for real estate acquisition, new construction, and other related activities.

6 An economic target area (ETA) is defined by the Massachusetts Office of Business Development as, "three or more contiguous census tracts, in one or more municipalities, meeting one of nine statutory criteria for economic need" (*Economic Development Incentive Program (EDP)*, Massachusetts Economic Development – Business Resource Team, 2006).

7 An economic opportunity areas is defined by the Massachusetts Office of Business Development as, "an area or several areas within a designated ETA of particular need and priority for economic development. These areas are selected by the individual committees, and must meet one of four statutory criteria for designation" (*Economic Development Incentive Program (EDP)*, Massachusetts Economic Development – Business Resource Team, 2006).

CASE STUDY: ACTON

There are many Massachusetts state programs with multiple funding opportunities that communities can tap with creative approaches to assist in redeveloping brownfields. The town of Acton took advantage of funding available through Mass Housing to help redevelop a brownfield site that the Town took through tax foreclosure.

In early 2004 Governor Romney announced the creation of the Priority Development Fund, a $100-million commitment of MassHousing funds to stimulate the production of new rental housing across the state. These flexible funding dollars were designed primarily to close funding gaps that often occur in development proposals due to the high cost of housing construction in Massachusetts.

Acton utilized a $25,000 award from the Priority Development Fund to plan for the reuse of a town-owned brownfield site. The Acton Community Housing Corporation allocated the funds to complete a site analysis, a waste-water disposal plan, preliminary architectural plans for one two-bedroom home and one three-bedroom home, and construction cost estimates.

- **Mini-Entitlement Program:** Provides grants to municipalities designated as "mini-entitlements" for activities including site assessment, cleanup, and demolition (Site Assessment and Cleaning Funding, 2006).

- **Priority Development Fund:** See the Acton Case Study above for information on the Priority Development Fund.

Executive Office of Environmental Affairs (EOEA)

EOEA works with other partners at the state and federal level to support municipalities and developers in returning brownfields to constructive use through several programs, including: (Guide to Taxes Personal Income and Corporate Excise Tax Credits, 2006).

Urban Brownfield Site Assessment Program

The Urban Brownfield Site Assessment Program provides grants to assist municipalities in assessing brownfields in order to minimize the uncertainties surrounding the actual or perceived contamination associated with these sites in an urban setting. Through these grants, the EOEA provides municipalities, economic development agencies, and potential developers with the information necessary to determine cleanup options and cost estimates (Massachusetts Executive Office of Environmental Affairs, 2005a).

Commonwealth Capital Technical Assistance Grant

The Commonwealth Capital Technical Assistance Grant provides each of the Commonwealth's thirteen regional planning agencies assistance to municipalities in the completion of the fiscal year 2006 Commonwealth Capital applications (Massachusetts Executive Office of Environmental Affairs, 2005a). The Commonwealth Capital score accounts for 30 percent of the possible points for most of the Commonwealth Capital programs, and is a factor in the evaluation of proposals for the remainder of the fiscal year. Communities receive points on their Commonwealth Capital application for zoning, planning, and other measures already in place at the time of application and for measures they commit to implement by December 31 of that fiscal year. On the Commonwealth Capital Application, it is possible to obtain eight additional points for actively planning or creating incentives for the redevelopment of vacant land and buildings in each community. Creating a brownfields inventory; remediating, revitalizing or reusing land; site planning or creating funding; taxes, or regulatory incentives will help earn additional Commonwealth Capital points for a community.

Brownfield Covenant Not to Sue

The Brownsfields Covenant Not to Sue Program, "provides liability relief to owners

and operators of contaminated properties interested in cleanup and redevelopment opportunities not addressed by the liability endpoints established under other provisions in Chapter 21E" (Massachusetts Department of Environmental Protection, 2006). The Covenant Not to Sue Program offers broader eligibility and increased flexibility to provide incentive for the cleanup and redevelopment of complex or difficult brownfield sites where redevelopment would not otherwise be possible. In entering into a Covenant Not to Sue, the state of Massachusetts gives first priority to the fifteen cities with the highest poverty rates in the Commonwealth, second priority to the sites located in municipalities that are found within economic distressed areas, and third priority to sites located in any of the remaining municipalities (MGL Ch 21E section 3b).

A Covenant Not to Sue agreement may only be entered into by the Commonwealth of Massachusetts and another party if "the proposed development or reuse of the property will contribute to the economic or physical revitalization of the community in which it is located" (MGL Ch 21E section 3A). The development should also provide public benefits, including redevelopment that provides new, permanent jobs; results in affordable housing benefits; provides historic preservation; creates or revitalizes open space; or provides some other public benefit to the community.

Assistance Offered by Massachusetts Department of Environmental Protection (MassDEP)

In addition to administering state cleanup laws and regulations, the Bureau of Waste Site Cleanup in the MassDEP takes an active role in promoting brownfields redevelopment projects in a variety of ways. The MassDEP offers the following assistance:

- Centralized technical assistance in Boston and each MassDEP regional office;
- Information on the cleanup process, funding, and, in some instances, site-specific information;
- Certification of eligibility for the Brownfields Federal Tax Deduction Program;
- Flexibility on cleanup timelines available through the Special Project Designation, a provision in the MassDEP's waste site cleanup regulations;
- Support to the Executive Office of Environmental Affairs (EOEA) on the Environmental Justice Initiative designed to ensure that environmental justice populations have a strong voice in environmental decision-making; and
- Technical assistance to communities and organizations that have received funding under the EPA Brownfields Cleanup Revolving Loan Fund Program by supplying a Brownfields Site Manager to oversee remedial actions.

Federal Financing/Incentives

The remediation and redevelopment of brownfields is an issue across the nation. The federal government has identified an array of programs and resources to help the clean up and reuse of brownfield sites. There are twenty-seven federal departments/agencies in charge of nearly ninety programs that can be used to assist in brownfield redevelopment. Although only a few of these federal programs focus explicitly on brownfields, communities that creatively make a brownfields connection can benefit from many other federal programs. Highlighted here are the financing and incentives of the US EPA and the US Department of Housing and Urban Development (HUD), the two agencies that primarily drive federal brownfields policy and have the largest collection of programs and incentives explicitly dedicated to brownfields cleanup and redevelopment.

There are twenty-seven federal departments/agencies in charge of nearly ninety programs that can be used to assist in brownfield redevelopment.

CASE STUDY: NORFOLK

Norfolk takes a regional approach to Brownfield Redevelopment.

Norfolk County received a $200,000 grant from the United States Environmental Protection Agency (US EPA) in June 2004 to launch a pilot Brownfields Program in the towns of Franklin and Wrentham to assess petroleum sites. The goal of the regional effort is to:

- Provide education and outreach to community stakeholders;
- Develop a comprehensive inventory database;
- Evaluate, prioritize, and select sites for assessments; and
- Perform Phase I and Phase II site assessments on select sites.

The expected outcome of the program is to return long abandoned or underutilized industrial properties to productive re-use, thereby reducing public health risks and increasing economic development opportunities in the region.

The targeted communities of Franklin and Wrentham (combined population 40,114) are two of Norfolk County's (population 650,308) highest growth communities. Because commercial and industrial growth has not kept up with population growth, unemployment in the region has risen. The region's average wage is approximately 12 percent less than the average wage in the state.

Redevelopment of brownfields is expected to stimulate economic development that will allow the towns to diversify and increase their tax bases. Redevelopment also will help preserve green space in Franklin and Wrentham, where residential development already has replaced significant amounts of forest and agricultural lands. In May 2005, Norfolk County was awarded a second grant of $200,000 from US EPA to assess hazardous substance sites in Franklin, Wrentham, and Plainville.

The program is administered and managed by the Regional Services Department under the auspices of the Norfolk County Commissioners' Office. A Brownfields Committee comprised of local, state, and federal officials, as well as residents and representatives from community and civic organizations, works with program staff to oversee implementation of the program.

Environmental Protection Agency (EPA)

The EPA has been the most active federal agency in promoting the redevelopment of brownfields and other underutilized contaminated properties (Bartch & Dorfman, 2000).

Brownfields Action Agenda/ Brownfields Economic Redevelopment Initiative

The Brownfields Action Agenda outlines how the EPA plans to help states and local jurisdictions understand and implement the Brownfields Economic Redevelopment Initiative. The Agenda outlines EPA's activities and future plans to help states and municipalities implement and benefit from the Brownfields Initiative. Implementation of the Agenda helps to address contamination issues, declining property values, and unemployment, while maintaining deterrents to future contamination and EPA's focus on assessing and cleaning up worst sites first.

The EPA's Brownfields Economic Redevelopment Initiative empowers states, communities, and other stakeholders involved in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields. The Redevelopment Initiative is divided into four broad, overlapping categories: brownfield grants/pilots, clarification of liability and cleanup issues, partnerships and outreach, and job development and training (Bartsch & Dorfman, 2000).

Brownfield Grants

The federal grant program is competed on an annual basis with the competition guidelines usually released in the fall, with grant awards in the spring. The competition provides a variety of funding for states, municipalities, regional plan-

planning commissions, councils of governments, non-profits, and redevelopment agencies to assess and cleanup brownfields. The federal Brownfields Law passed in 2001 provided additional opportunities in the area of brownfields assessment and cleanup. The law allows sites contaminated with petroleum products to be assessed and cleaned up using federal brownfields funding. It also opened up the competition to non-profits, identifying them as eligible entities to receive cleanup grants.

Assessment Grants

Assessment grants provide funding for local governments (and others such as Councils of Government, Regional Planning Commissions and Redevelopment Agencies) to inventory, characterize, assess, and conduct planning and community involvement related to the redevelopment of brownfield sites. The EPA awards up to $200,000 to assess a site contaminated by hazardous substances (see the Marlborough Case

CASE STUDY: MARLBOROUGH

Realizing a Community Vision with US EPA Funds

Like many 19th century Massachusetts municipalities, Marlborough's economy was built on shoe manufacturing. Times have changed. The construction of Interstates 495 and 290 and the Massachusetts Turnpike allowed Marlborough to become a prime location for industries related to the new economy. Because of the city's central location in the MetroWest region, easy access to major highways, and the pro-business, pro-development policies of the city government, the population of Marlborough has more than doubled in the last 25 years to about 36,255 people.

Although Marlborough has been growing economically, development has been concentrated on the outer edges of the city. Marlborough's downtown has been unable to attract businesses due partially to the liability and stigma associated with brownfields. In June1999, the United States EPA selected Marlborough as a mini-entitlement community that would receive $200,000 in funding to help to eliminate blight.

As part of the Master Planning process to continue a bicycle path into downtown Marlborough, the Town identified the Frye Boot site, a vestige of Marlborough's shoe manufacturing industry, as one of several old buildings to redevelop near the end of the Assabet River Rail Trail. This property was taken by eminent domain in order to clear the title. When the process began to consider which site to remediate and redevelop first, a neighborhood forum voiced concern about the Frye Boot site, based on public health concerns. At this time, a consultant was hired to do a feasibility analysis to determine the best use for the site.

When Frye Boot was selected for clean-up efforts, Marlborough applied for EPA Assessment Grants and Cleanup Grants totaling $600,000. A Project Management position was created during this process because the City Planner did not have the time or resources to devote to writing grant applications, completing quarterly reports, and coordinating consultant work. This position was paid with EPA funding.

Based on the feasibility analysis and community input the Frye Boot site will be the location of mixed affordable and market-rate assisted senior housing. Affordable senior housing is in high demand in Marlborough and was a rational choice, given that the limited area available for on-site parking would best accommodate seniors.

Marlborough faced several challenges throughout this process. Owners of other sites in the City that fall under Massachusetts General Law Chapter 21E were worried about their future liability and were hesitant to let Marlborough exercise eminent domain. There was some opposition to eminent domain by City employees and because of the stigma associated with brownfields.

The City of Marlborough learned several lessons from their brownfield redevelopment efforts, including:

- Be patient, the brownfield redevelopment process takes time;
- Have a vision about the future use of the site;
- Use redeveloping brownfields as a good political tool to show the public and surrounding communities what can happen to a brownfield;
- Make sure the community backs the proposal, is involved in the process, and assists in guiding the project; and
- Do not be afraid to use eminent domain. EPA funding requires that sites be publicly held.

Study on page 31 or the Norfolk County Case Study on page 30 for more information on assessment grants). In the case of large sites or those with significant contamination, applicants may seek to waive the $200,000 limit and request up to $350,000 (United States Environmental Protection Agency, 2006a).

Assessment grants provide funding for local governments to inventory, characterize, assess, and conduct planning and community involvement related to the redevelopment of brownfield sites.

Cleanup Grants

Cleanup grants provide up to $200,000 per site to fund cleanup conducted by local governments, development agencies, and non-profits (United States Environmental Protection Agency, 2004). Cleanup grants require a 20 percent cost share, which may be in the form of a contribution of money, labor, material, or services (United States Environmental Protection Agency, 2006a). A cleanup grant applicant may request a waiver of the 20 percent cost share requirement based on hardship. Eligible entities must actually own the property before the grant award can be finalized.

Cleanup grants provide up to $200,000 per site to fund cleanup conducted by local governments, development agencies, and non-profits.

Brownfields Cleanup Revolving Loan Fund Pilots/Grants (BCRLF)

States and local governments are the targeted recipients of the Brownfields Cleanup Revolving Loan Fund Grants (BCRLF). BCRLF grants provide up to $1 million per recipient and are available for five years to capitalize a revolving loan fund. A 20 percent cost share in the form of money, labor, services, or materials is required upon repayment of the loan (United States Environmental Protection Agency, 2004). Loans are available to a wide variety of eligible borrowers for little or no interest. Under the new law, the BCRLF program also provides for subgrants for cleanup activities that do not have to be repaid. These subgrants are available to eligible recipients such as non-profits.

Brownfield Job Training Grants

EPA has partnered with other federal agencies, local job training organizations, community colleges, and labor groups to develop long-term plans for fostering workforce development through environmental training. This is done by ensuring the recruitment of trainees from socio-economically disadvantaged communities, providing quality worker-training, and allowing local residents an opportunity to qualify for jobs developed as a result of brownfields efforts. The Brownfields Job Training Grants are funded up to $200,000 over the course of two years (United States Environmental Protection Agency, 2006c).

Targeted Site Assessment Funding

The Targeted Site Assessment program (TBA) provides funding and technical assistance for environmental assessments at brownfield sites (United States Environmental Protection Agency, 2004). States and municipalities can recommend sites to the EPA to determine eligibility to receive TBA funds. Applications are accepted at any time during the year and can be found on the EPA web site (epa.gov/newengland/brownfields).

Clarification of Liability and Cleanup Issues

EPA develops and issues guidance documents to clarify the liability of prospective purchasers, lenders, property owners, and others associated with brownfield sites. The 2001 Brownfields Law provides certain protections for bona fide prospective purchasers as well as other owners.

Environmental Justice

One of the EPA's major objectives is to ensure that underserved populations in urban areas are treated fairly. Poor and minority communities frequently are exposed to environmental hazards, and only recently have EPA and other regulators formally recognized environmental inequities (United States Environmental Protection Agency 2004). Therefore, the EPA has established two programs to assist environmental justice communities with brownfield remediation and redevelopment.

Environmental Justice through Pollution Prevention (EJP2) Grants

The purpose of the EJP2 grant program is to support the use of pollution prevention approaches to address the environmental problems of minority communities and/or low-income communities. The grant program is designed to fund projects that have a direct impact on environmental justice communities. Funds awarded must be used to support pollution prevention programs in minority and/or low-income communities (Environmental Justice through Pollution Prevention Grant Program, 2006). Non-profits; community organizations; and state, county and local governments are eligible for grants up to $100,000. Projects that have national significance and involve multiple communities may request grants up to $250,000 (Bartsch & Dorfman, 2000).

Environmental Justice Grants

Environmental Justice Grants provide financial assistance to non-profits, community organizations, state or local governments, and academic institutions to improve communication and coordination among stakeholders to build community capacity. Eligible applicants can seek up to $20,000 for projects that engage in environmental justice conversations and identify and resolve environmental justice issues that affect brownfield revitalization efforts (United States Environmental Protection Agency, 2004).

Environmental Education Grants

Environmental education (EE) increases public awareness and knowledge of environmental issues and challenges. Through EE, people gain an understanding of how their individual actions affect the environment, acquire skills that they can use to weigh various sides of issues, and become better equipped to make informed decisions (United States Environmental Protection Agency, 2006e). Local or state educational agencies, colleges and universities, non-profit organizations, state environmental agencies, and education broadcasting agencies are eligible to receive EE Grants. Each year, the EPA awards grants based on funding appropriated by Congress. Annual funding for the program ranges between $2 to $3 million (United States Environmental Protection Agency, 2006e). A 25 percent non-federal match is required (United States Environmental Protection Agency, 2004).

Clean Water State Revolving Loan Fund

Clean Water State Revolving Loan Funds (CWSRFs) can be used by states for loans of up to 20 years to finance activities, such as brownfield mitigation, as long as they correct or prevent water quality problems and have the ability to repay the loan. A major benefit for municipalities and other CWSRF loan recipients is the possibility of substantial financial savings. When funded with a loan from this program, a project typically costs much less than it would if funded through the bond market. Therefore, this federal investment can result in the construction of up to four times as many projects during a 20-year period (United States Environmental Protection Agency, 1999).

Department of Housing and Urban Development

The United States Department of Housing and Urban Development (HUD) has made a commitment to the cleanup and reuse of brownfields. HUD has at least three brownfield programs that can provide resources for the renewal of economically distressed areas, including brownfield sites.

Community Development Block Grant Program

The goals of the Community Development Block Grant (CDBG) program are to provide decent, affordable housing and services to those in need, to create jobs, and to stimulate economic opportunities (United States Department of Housing and Urban Development, 2006c). CDBG helps local governments to address many of the challenges facing their communities. The grants can be used to revitalize neighborhoods, expand affordable housing, improve community facilities and services, and stimulate economic development activities, including brownfield redevelopment (Bartsch & Dorfman, 2000).

To determine the amount of each grant, HUD uses a formula that uses several measures of community needs, including the extent of poverty, population, housing overcrowding, age of housing, and population growth compared to the same measures in other metropolitan areas. HUD distributes 70 percent of the CDBG

formula appropriations to approximately 1,100 entitlement communities and the remaining 30 percent of the funds go to the states for their distribution (United States Environmental Protection Agency, 2004).

One of CDBG's values as a program is that it can help address smaller neighborhood projects as well as larger projects, where initial resource injections are needed to help with site cleanup and related preparation. In the past, cities and towns of all sizes have used CDBG resources directly for brownfield purposes, in various ways including:

- Preparing plans for redevelopment or revitalization of brownfields sites;
- Acquiring sites;
- Carrying out environmental site assessment;
- Clearing sites and demolishing and removing buildings;
- Rehabilitating buildings;
- Removing or cleaning up contamination from sites or structures; and
- Carrying out the redevelopment, including constructing real estate improvements (United States Environmental Protection Agency, 2004).

Section 108 Loan Guarantee Program

Section 108 is the loan guarantee provision of the Community Development Block Grant (CDBG) program. Section 108 provides communities with a source of financing for economic development, housing rehabilitation, public facilities, and large-scale physical development projects. It allows communities to transform a small portion of their CDBG funds into federally guaranteed loans capable of large revitalization efforts (United States Department of Housing and Urban Development, 2006e).

Entitled communities are also eligible for funding through the Section 108 Loan Guarantee Program. Communities that are not entitled may also apply, as long as the state agreed to pledge the CDBG funds necessary to secure the loan. Section 108 loans are not risk-free, however. Local governments that borrow funds guaranteed by Section 108 must pledge their current and future CDBG allocations to cover the loan amount as security for the loan (United States Department of Housing and Urban Development, 2006c).

Brownfield Economic Development Initiative (BEDI) Grants

BEDI grant funds are largely used to redevelop brownfield sites and to increase economic opportunities for low-and moderate-income people (United States Department of Housing and Urban Development, 2006a). BEDI grants provide additional security to recipients of Section 108 guaranteed loans and financial assistance for the development projects that these loans finance. BEDI funds may be used to pay for a portion of project costs, thus reducing overall financial liability, or as a loan loss reserve or debt reserve. HUD emphasizes the use of BEDI and Section 108 Loan Guarantee funds to finance projects and activities that will provide near-term results and demonstrable economic benefits. HUD does not encourage applications whose scope is limited only to site acquisition and/or remediation (i.e., land banking), where there is no immediately planned redevelopment. BEDI also addresses Section 108 recipient concerns that CDBG funding will be at risk in the event of default on Section 108 loans used for brownfield purposes (United States Environmental Protection Agency, 2004).

V. The Role of Local Government in Brownfield Remediation

Local governments are ideal to facilitate and promote the successful reuse of brownfields. Municipal officials play an important role in a brownfields project by bringing local stakeholders together. They can facilitate the discussion, which can be difficult due to the large number of groups involved and the complexity of the issues. Local governments also have an important role ensuring that community

Local governments are ideal to facilitate and promote the successful reuse of brownfields.

organizations and citizen groups directly affected by a brownfields project have sufficient access to information and a voice in the cleanup and redevelopment decisions (ICMA, 2001).

Integrating Brownfields Development with Other Priorities

One of the simplest yet most powerful ways municipalities can promote brownfield redevelopment is by integrating brownfields development with other community priorities. The most efficient way to do this is by incorporating language regarding brownfield redevelopment into a municipal master plan. Master plans are intended to guide development and improve the physical environment of a community while promoting the public interest. As a document intended to inject long-range consideration into the determination of short range action, master plans direct municipal policy on a variety of community priorities.

One of the simplest yet most powerful ways municipalities can promote brownfield redevelopment is by integrating brownfields development with other community priorities. The most efficient way to do this is by incorporating language regarding brownfield redevelopment into a municipal master plan.

Master plans can organize a working consensus on brownfield issues - what are acceptable land uses on contaminated sites, what are the barriers to redevelopment, what can the market bear, what are the potential benefits of redevelopment to the community (Ducharme, 1999). Master plans that support brownfield redevelopment provide the platform for larger efforts. A master plan that is supportive of brownfields development can help push a municipal brownfield agenda across various municipal departments and ensure intra-coordination of those departmental efforts. It can also support brownfield-related initiatives, from developing a municipal inventory of known brownfield parcels to changing zoning to make redevelopment easier. For more information on establishing a municipal brownfields inventory see the Framingham Case Study on page 36. Planning for brownfields redevelopment builds municipal readiness and capacity that can have critical impacts on whether brownfields redevelopment projects move forward or not. Through planning, municipalities can develop a working consensus among stakeholders, have a future vision, and create the institutional vehicles needed to implement their plans (Ducharme, 1999). As previously mentioned, decisions about future land use are often dictated by municipal documents like master plans and zoning requirements. The intended future use of a brownfields site can dictate the level of cleanup that will need to take place.

A master plan that is supportive of brownfields development can help push a municipal brownfield agenda across various municipal departments and ensure intra-coordination of those departmental efforts.

Through planning, municipalities can develop a working consensus among stakeholders, have a future vision, and create the institutional vehicles needed to implement their plans.

Involving Community Residents in Development Plans

Early involvement of the community in the reuse planning process is essential to successful brownfields redevelopment. The community can play many important roles throughout the brownfields redevelopment process. In the past, many developers and some public officials viewed community involvement as an impediment that added time and effort to brownfield reuse (United States Conference of Mayors, 2000). Yet early involvement of the community can help foster understanding and consensus and prevent litigation. Residents can provide past history of parcels in question and ideas about the economic activities that fit the needs of the community. Their input can help avert the costly environmental or economic problems caused by previous inappropriate uses (McCarthy, 2002).

Brokering Reuse

Local governments can act as information brokers to ensure that knowledge about multiple aspects of brownfield redevelopment is disseminated. Municipalities can inform private-sector parties about programs from both the state

CASE STUDY: FRAMINGHAM

Developing an Inventory to Prioritize Brownfield Redevelopment.

Historically Framingham has been the commercial center of the MetroWest region. This has changed over the past thirty years as commercial growth has occurred throughout the region. Framingham bears the unintended consequences of past industrialization: fear of redeveloping former commercial/industrial sites due to potential contamination issues. Because Framingham is largely built out, the Town began examining brownfield redevelopment as an economic and community development option.

Interest in brownfield redevelopment initially developed in both the Town's Department of Planning and Economic Development and Economic Development Industrial Corporation (EDIC). The Town decided that the first priority for brownfield redevelopment must be identifying and creating an inventory of sites within the community. Working off MassDEP's 21E listing, Town planners identified sixty brownfield sites within Framingham. Based on Town and department resources, planners knew that they needed to narrow the list of sixty to "something workable." From the list Town planners began working with MassDEP and the EDIC to identify five to ten priority sites for further research as potential redevelopment sites. Once an initial list of potential priority sites was established, Town planners conducted further research on each including:

- Evaluating which sites held the most potential as viable redevelopment opportunities;
- Examining assessors' data and basic site information;
- Analyzing Sanborn insurance maps for historical use data;
- Analyzing surrounding land uses;
- Researching MassDEP information on the site; and
- Contacting property owners to determine future plans for sites.

The benefits of the Town's inventory/priority list effort include:

- Narrowing the list of sixty to a priority list allowed Town planners to focus on sites that have the highest potential for redevelopment;
- Town planners strongly believe that an inventory and priority list will greatly improve their chances for the Town to receive US EPA funding to conduct targeted site assessments;
- Planners can use information developed through the inventory and priority list process in the Town's upcoming comprehensive planning process; and
- Both the inventory and priority lists represent the first step towards marketing brownfield sites for redevelopment.

It is envisioned that the inventory/priority list will be an ongoing process - new sites will be added to the inventory list, and as existing priority sites are redeveloped, others will move to the priority list.

and federal governments that can assist with paying some of the costs and can look for ways to integrate different funding sources. When considering economic and community development initiatives, local governments need to connect neighborhood revitalization efforts and strategies with the reuse of contaminated properties. By matching sites with prospective reuse by providing information or people willing to reuse the site, local municipalities demonstrate to possible buyers the benefits of purchasing a brownfield versus a greenfield. Local governments can also broker reuse by acting as a liaison with environmental regulators. Local governments can serve as a critical link between developers and state and federal environmental agencies. Municipalities can also work with agencies to ensure that regulatory issues are dealt with promptly and in a way that reflects local concerns.

Local governments can serve as a critical link between developers and state and federal environmental agencies.

Providing Municipal Funding

Municipalities can use their own resources to fund portions of redevelopment costs. This funding is particularly useful if it is used for up-front costs such as land assembly, assessment, remediation, and preparation of sites (ICMA, 1997). As illustrated in previous sections, funding

for brownfield redevelopment abounds through both the state of Massachusetts and the federal government. More often than not, local governments can be the eligible recipients for these funding programs. If communities make the brownfields connection, they can benefit from state and federal programs that might not be explicitly designed for brownfields redevelopment.

Coordinating Public Funding Resources

Local governments can inform private-sector parties about funding opportunities, apply for programs that require local government involvement, and look for ways to integrate funding sources that might not be explicitly focused on brownfield redevelopment (ICMA 1997). Since there are numerous methods of funding the remediation and redevelopment of a brownfield, funding can be maximized by using a mix of public, private, and other types of sources. Local governments can also assist in applying for various programs by providing state and federal applications, helping to complete them, and by turning them in to the proper authority.

Assuming Liability for Contamination

In some cases, local governments may agree to assume liability for remediation at sites where development is hindered because of the perception of contamination. This can quickly remove the primary deterrent to reuse (ICMA, 2001).

V. Reuse Alternatives

Each stage of remediation presents unique challenges and opportunities to engineers, contractors, and other environmental specialists. In addition to legal issues, challenges and opportunities are also inherent in the extent and type of contamination present on site and the remediation efforts required. The amount of contamination that is cleaned up from a brownfield site depends on the future use of the property. The level of cleanup of a brownfields site slated for a school or a daycare facility, for example, would have more stringent standards for residual contamination than a site that will be used for an industrial facility. Examples of some of the potential reuses of brownfields are provided in this section.

Housing

Quality housing is crucial to the well-being of any community. Brownfield sites can be particularly attractive for residential development because they are often located near the historic centers of communities or at transportation nodes. Redevelopment of brownfield sites in these areas for residential use promotes compact development. This residential use creates and maintains efficient infrastructure, ensures close-knit neighborhoods and a sense of community, minimizes both direct and indirect impacts on the environment, and takes advantage of existing transportation infrastructure. Unfortunately, due to fear of environmental contaminants, housing as a redevelopment option is often overlooked as an option on brownfield sites.

Brownfield sites can be particularly attractive for residential development because they are often located near the historic centers of communities or at transportation nodes.

Reuse of Existing Buildings, Infrastructure, and On-Site Materials

Adaptive reuse of existing buildings, deconstruction, and reuse or recycling of on-site materials can divert materials from landfills, reduce pollution associated with the manufacturing and use of new materials, and capture the embedded value of used materials. It can also create revenue and more jobs than utilizing traditional materials and methods (i.e. demolition) (United States Environmental Protection Agency, 2006b).

Open Space Preservation, Habitat Restoration, and Recreation

Creating open space, restoring natural habitat, or developing recreational areas can be a cost-effective way to reuse brownfields. Such reuses can be done in conjunction with or in place of other site uses, or they can also be utilized as interim site uses if current conditions are not conducive to other forms of redevelopment. These reuses can help to mitigate adverse environmental impacts of development, such as storm water runoff, habitat loss, and over fragmentation of open space (United States Environmental Protection Agency, 2006b).

Creating open space, restoring natural habitat, or developing recreational areas can be a cost-effective way to reuse brownfields.

Green Building Design and Construction

Green building practices offer an opportunity to create environmentally sound and resource-efficient buildings by using an integrated approach to design. Green buildings promote resource conservation, including energy efficiency, renewable energy, and water conservation features. In addition, they consider environmental impacts and waste minimization; create a healthy, comfortable, and productive work environment; reduce operation and maintenance costs; and address issues such as historical preservation, access to public transportation, and other community infrastructure systems. The entire life cycle of the building and its components is considered, as well as its economic and environmental impact and performance. Existing buildings can be retrofitted to incorporate many of these features (United States Environmental Protection Agency, 2006c).

Commercial Reuse

Redeveloping contaminated property into commercial uses has been one of the most popular and successful ways to reuse brownfields. Commercial and retail redevelopment of brownfields sites produces jobs and tax revenue on formerly vacant land. One reason commercial reuse has been so popular is because clean-up levels for a site that will be turned into a commercial or retail use are lower than other uses like housing. This is because so much of the land in commercial and retail development is taken up by either buildings or parking lots. Parking lots act as impermeable caps for soil contamination.

Commercial and retail redevelopment of brownfields sites produces jobs and tax revenue on formerly vacant land.

Multi-Use Developments

Because brownfields are often located in areas already serviced by necessary infrastructure, they can make excellent candidates for mixed-use redevelopment. This type of development offers a number of advantages over customary suburban development by reducing pollution and congestion, by providing easy access to transit, making walking or bicycling a viable transportation option, and reducing travel times and congestion if located in or near city or town centers. Mixed-use development also reclaims unused land to revitalize communities by creating commercial, residential, and employment opportunities and attracts businesses and commercial interests that might otherwise locate elsewhere (National Conference of State Legislatures, 2005).

Because brownfields are often located in areas already serviced by necessary infrastructure, they can make excellent candidates for mixed-use redevelopment.

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VII. Appendix: Massachusetts' Brownfield Incentive Programs

DEPARTMENT	PROGRAM	BRIEF SUMMARY	TYPE OF PROGRAM	WEBSITE
Massachusetts Department of Housing and Community Development	Community Development Funds I/II	Provides grants for site assessment, cleanup, demolition and other activities	Grant	http://www.mass.gov/dhcd/components/cs/1PrgApps/CDFI-II/default.HTM
Massachusetts Department of Housing and Community Development	Ready Resource Fund	Provides grants to support planning, pre-development studies, property acquisition and other activities.	Grant	http://www.mass.gov/dhcd/components/cs/1PrgApps/RRF/default.HTM
Massachusetts Department of Housing and Community Development	Housing Development Support Program	Provides grants for housing-related activities.	Grant	http://www.mass.gov/dhcd/components/cs/1PrgApps/HDSP/default.HTM
Massachusetts Department of Housing and Community Development	Mini-Entitlement Program	Provides grants to municipalities designated as "mini-entitlements" for activities that include site assessment, cleanup and demolition.	Grant	http://www.mass.gov/dhcd/components/cs/1PrgApps/MiniE/default.HTM
Massachusetts Executive Office of Environmental Affairs	Urban Brownfield Site Assessment Program	Provides assessment grants to municipalities	Grant	http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-brownfields.html
Community Preservation Coalition	Massachusetts Community Preservation Act	Tool used to assist communities to preserve open space and historic sites and to create affordable housing and recreation facilities.	Incentive	http://www.communitypreservation.org/index.cfm
Massachusetts Office of Business Development	Economic Development Incentive Program (EDIP)	Designed to attract and retain business in ETA's	Incentive	http://www.mass.gov/?pageID=eoedterminal&&L=4&L0=Home&L1=Expanding+or+Locating+in+Massachusetts&L2=State+Agencies&L3=Massachusetts+Office+of+Business+Development&sid=Eoed&b=terminalcontent&f=_em_MOBD_Services_EDIP&csid=Eoed
Massachusetts Office of the Attorney General	Brownfields Covenant Not to Sue	Offers broad eligibility and flexibility to provide incentives for the cleanup and redevelopment of brownfield sites.	Incentive	http://www.ago.state.ma.us/sp.cfm?pageid=1586
Massachusetts Department of Revenue	Brownfield Tax Credit	A portion of the clean up costs of a brownfield site may be used as a tax credit.	Incentive	http://www.massdor.com/rul_reg/tir/tir_99_13.htm
MassBusiness	Brownfield Redevelopment Access to Capital (BRAC)	Provides insurance to those who clean up and/or redevelop brownfield sites.	Insurance	http://www.mass-business.com/site/site-massbiz/content/brownfields/
MassDevelopment	Brownfield Redevelopment Fund	Provides funding to assist with brownfield assessment, cleanup and redevelopment.	Loan	http://www.massdevelopment.com/financing/lg_brownfields.aspx
Massachusetts Department of Housing and Community Development	Brownfield Redevelopment Fund	Provides loans to businesses and other eligible entities through municipalities for real estate acquisition, new construction and other related activities.	Loan	http://www.mass.gov/dhcd/components/cs/1PrgApps/MCCF/default.HTM
Commonwealth of Massachusetts	Chapter 21E	Establishes provisions for MA to establish a hazardous waste cleanup program.	Regulatory	http://www.mass.gov/legis/laws/mgl/gl-21e-toc.htm
Commonwealth of Massachusetts	Massachusetts Contingency Plan	Outlines the roles and responsibilities in cleanup and implements goals and standards in Chapter 21E.	Regulatory	http://mass.gov/dep/cleanup/laws/regulati.htm
Commonwealth of Massachusetts	The Brownfield Act	Establishes incentives to encourage clean up and redevelopment of contaminated property.	Regulatory	http://www.mass.gov/legis/laws/seslaw98/sl980206.htm