Utility Brownfields Resource Guide

TR-111784

Final Report, November 1998

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REPORT SUMMARY

EPRI has established a program designed to assist utilities wishing to participate in local Brownfields redevelopment projects. EPRI developed this Brownfields guide to educate utility economic and real estate development personnel in identifying, screening, and supporting Brownfields projects.

Background

As deregulation changes the electric utility industry, utilities are seeking ways to redefine their role in the communities they serve. Many utilities have found that active participation in community redevelopment not only revitalizes their service territories, but also helps to project a positive, proactive image for the company, particularly in cities with a legacy of abandoned industrial plants and languishing commercial real estate.

These properties, known as 'Brownfields,' represent lost tax revenue, lost jobs, and a deterrent to attracting new energy customers. Redevelopment offers utilities the opportunity to have a say in the way the redevelopment is effected. Utilities that get out in front of the issue can assume a leadership role in community development. Effective participation requires understanding of the complex web of technical, legal and social issues that surround Brownfields redevelopment.

Objective

This guide is intended to acquaint members with the various issues involved with Brownfields redevelopment, and assist them in keeping pace with the changing dimensions of this new area of economic development.

Approach

The Utility Brownfields Resource Guide is intended to serve as a non-technical introduction to the issues associated with Brownfields. The guide is focused on identifying, summarizing, and critiquing various sources of information related to the different facets of Brownfield redevelopment. The guide is not intended as a comprehensive "how to" manual, but instead as both a primer and reference.

Results

This guide provides a framework for following Brownfields issues, supported by case study examples targeted for energy providers. The case study reports focus on planning, forming alliances, and project implementation, and include perspectives and

roles of key Brownfield stakeholders, including utilities, developers, lenders, insurers, potential customers, local community groups, and government agencies.

External reference materials are cross-referenced directly to the associated disciplines involved with Brownfields projects. External references include books, articles, and websites, and were screened to identify utility-oriented information or projects.

EPRI Perspective

This guide was prepared under a contract to Roy F. Weston, Inc. on a cost-sharing basis, in consultation with the EPRI Target Group – Community Economic Development Solutions (CEDS). EPRI wishes to thank the members of the CEDS Target for their review and comments on drafts of this guide.

EPRI has held several Brownfields workshops and developed software for land-use planning for sustainable development that has been demonstrated on Brownfields projects. The model, Smart Places, was developed as part of a public/private partnership for use on the redevelopment of the abandoned Denver Stapleton Airport site. EPRI plans to take the Smart Places model to other communities to apply it to land-use planning in partnership with EPRI members.

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Interest Categories

Strategic Market Assessment
Industrial Technical Services
Environmental Economics & Risk Management
Soil & Groundwater Remediation

Key Words

Land use planning
Economic development
Geographic information systems
Information technology
Marketing

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INTRODUCTION

Utilities are seeking ways to redefine their role in the community as deregulation changes their identity. One way to project a positive, visible image is to participate actively in community redevelopment, particularly in cities with a proud industrial past but a legacy of abandoned plants and languished commercial real estate.

These properties, recently labeled 'Brownfields,' represent not only ugly or wasted space, they also represent lost tax revenue, lost jobs, and a lost potential energy customer. Redevelopment of the property offers utilities the prospect of new customers; participating in the redevelopment offers utilities a chance to get out in front of the issue and assume a leadership role in community improvement. Many utilities are seeing this opportunity and taking advantage of it, while others are trying to better understand the complex web of technical, legal and social issues that surround Brownfield redevelopment before taking a lead role.

The Electric Power Research Institute (EPRI) has established a program designed to assist utilities wishing to participate in local Brownfield redevelopment activities. EPRI has developed this guide to educate utility economic and real estate development personnel in identifying, screening, and ultimately participating in Brownfields projects.

The Utility Brownfields Resource Guide is intended to serve as a non-technical introduction to the issues associated with Brownfields, and is a good first reference to get acquainted with the subject. A quick survey of journals, web sites, and conferences reveals a large volume of available Brownfield information. Much of this guide, however, is devoted to identifying, summarizing, and even critiquing various sources of information on the different facets of Brownfield redevelopment. This information is presented in a manner that will allow the guide to remain current either as a desk reference, or as an on-line internet-linked guide; most of the information contained in the guide is not time-sensitive, depending instead on various authors, editors and webmasters to keep their information current.

The reader is directed to three specific parts of this guide for reference material:

- Reviews / summaries of utility Brownfields case studies completed or in progress.

- Identification and review of internet web sites containing Brownfield material.
- An annotated bibliography of articles, books and other publications on Brownfields.

These reference items are cited throughout the guide and are also included as separate chapters. To the extent possible, they are organized or otherwise cross-referenced against the different disciplines associated with Brownfield projects (environmental, legal, financial, etc.) to allow easier access. This project identified more than 50 comprehensive books and guides on Brownfields as of this writing, no one of which is targeted toward general utility use but having some valuable insights. References of this type have been screened to identify utility-oriented information or projects.

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BROWNFIELDS BASICS

2.1 Definitions

EPA defines Brownfields as "abandoned, idled, or underutilized industrial or commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination." In its simplest form, a Brownfield project is a real estate deal in which the net cost of preparing the site for redevelopment is uncertain, the community has a say in how the property is redeveloped as well as to what the redeveloped site will be, and government agencies now have an interest in the project. The interest and participation of the many stakeholders can make the project more complicated although, when done right, such projects can progress in a timely fashion and reach a more effective outcome to the benefit of all parties.

A successful Brownfield "deal" is one where these complications are overcome by a combination of financial incentives/liability protection for the developer, community support for the project, and support from government and private industry.

Every Brownfield project is different, for several reasons. First, the stakeholders and their definition of the project will often vary widely and may sometimes appear to conflict. These stakeholders (the "project team") and their motivation to participate can include any or all of the following:

- **Owner**. Former owners of the property and current owners, which may include banks and other financial institutions that have or would like to foreclose, or municipalities that have taken ownership for a variety of reasons.

- **Community.** The surrounding residents, business owners, and their elected leaders, all of whom have an interest in the potential use/reuse of the site.

- **Local Government**. Government leaders with an interest in increasing their tax revenue and creating jobs while maintaining or improving the local quality of life; they also often control access to public funding sources.

- **State/Federal Government**. Leaders with a similar economic development interest and also commitments to protect public health and the environment; retain/expand employment, fight crime, and improve the environment.

- **Lending Institutions.** Banks and other institutions interested in making a reasonable, secure rate of return on projects that help the community and commercial economic base grow.

- **Buyers**. Entities that see an opportunity for attractive investment through redevelopment where it makes sense and the community supports it.

- **Insurers**. Companies willing to share the risk associated with a project where they understand and can reasonably manage that risk.

Second, a Brownfield project must by definition include the following components:

- **Contaminant Characterization and Remediation**. The definition of any environmental problems and their proper abatement consistent with the intended use of the property.

- **Risk Assessment**. The quantitative determination of any risk posed before and after cleanup by any contaminants on site.

- **Community Relations and Support**. Solicited participation in the process by local residents and community leaders, and open communication of project progress, risk, and other community impacts.

- **Business Analysis**. A continuous monitoring of the financial viability of the redevelopment effort as additional information is received.

- **Legal and Regulatory Implications**. Proper attention to any applicable regulations governing the environmental condition of the site, and to the extent possible, legal protection of the buyer / developer from any future liability.

- **Insurance**. Prudent use of specialized insurance products that may help share the risk for both contract remedial cost overruns and future environmental claims.

- **Government Involvement**. Active participation by state and federal agencies in monitoring and approving technical aspects of the project, and in some cases, providing seed money, tax incentives and other positive contributions to project development.

Background information on each of these aspects are provided elsewhere in this section, along with recommended sources of additional information.

To a newcomer to the Brownfield arena, the intensity of community and government interest may seem daunting and perhaps undesirable. Ultimately, the business deal rests on the ability of this coalition to make the property purchase and development more attractive. This has been the focus of government Brownfields initiatives in recent

years, specifically to provide seed money to explore any technical, social or legal problems and thereby further limit the risk of the unknown.

Government understanding and targeted support of the Brownfield concept and redevelopment process has been a major goal of advocacy groups, a goal that is slowly being realized as people begin to understand the "win-win" nature of such transactions. The Environmental Financial Advisory Board (EFAB) recently suggested the true definition of a Brownfield was a function of how cleverly Congress crafted the tax incentives supporting it. The EFAB noted that the current "tax benefits are targeted at designated Enterprise Communities, Empowerment Zones, areas greater than a 20% poverty rate and certain adjacent industrial and commercial areas, and sites included as an EPA Brownfield pilot project before February 1, 1997," suggesting that minor changes in tax incentives have and would continue to favor an expanding list of candidate projects over others. These incentives can include both investment tax credits and special treatment of any remedial "investment."

2.1.1 Recommended Case Studies

Reference: CSE-7

Project Title and Location: WEPCO, Pleasant Prairie, WI 1,200 'Greenfield' Acres Surrounding A Coal-Fired Electric Generating Plant Lakeview Industrial Park, Now Home To Over 45 Other Businesses.

Participants: Wisconsin Electric Company (WEC), owner; WISPARK, a non-regulated Wisconsin Electric subsidiary, land developer; North American Realty, consultant; HNTB, Architect/Engineer/Planner.

2.1.2 Recommended References

Title: Brownfields: A Comprehensive Guide To Redeveloping Contaminated Property.

Author: Davis, Todd S., and Kevin D. Margolis. [Edited by] Todd S. Davis, and Kevin D. Margolis with a preface by Vice President Al Gore.

Publisher: American Bar Association, Section of Natural Resources, Energy, and Environmental Law, Chicago, IL, 1997, 703 pp. ill.

Abstract: This book was developed to provide both information and strategic advice to assist parties hurdle the barriers precluding Brownfields redevelopment. It also includes an in-depth look at all recently enacted state Voluntary Cleanup Programs. The four parts of the book include background information, details of the most

important legal, business, financial, and political issues associated with redeveloping contaminated real estate; discussions of the basic science and emerging concepts involved in risk-based science used to address contaminated property appropriately and cost-effectively; and important elements of each state Voluntary Cleanup Program.

Title: *Brownfields: Cleaning and Reusing Contaminated Properties.*

Author: Bartsch, Charles, and Elizabeth Collaton

Corporate Source: Northeast-Midwest Institute (U.S.), Westport, Connecticut, Praeger ix, 1997, 133 pages.

Abstract: Virtually every city in the nation's older industrial regions, no matter its size, grapples with the challenge of unused or abandoned manufacturing facilities and other industrial sites. Local public officials, economic development practitioners, and site owners who have sought to revitalize fallow industrial properties face daunting challenges. contamination of the buildings, equipment, and surrounding land and water. Public concern about health effects from hazardous chemicals, changing environmental law, and evolving private sector development and financing priorities have made it increasingly difficult for communities to restore and reuse former manufacturing sites. This study, sponsored by the Northeast-Midwest Institute, offers analysis and practical guidance on how these blighted areas--Brownfields--have been and can be brought back to life. Utility companies will find the Northeast-Midwest Institute's offerings quite insightful.

Title: *Brownfields Redevelopment: Programs And Strategies For Rehabilitating Contaminated Real Estate.*

Author: Dennison, Mark S.

Publisher: Government Institutes, Rockville, MD, (407 pages), 1998.

Abstract: A comprehensive guide to the programs and strategies that Brownfields project participants can use to perform the assessment, cleanup, and redevelopment of Brownfields properties. After reviewing federal and state programs that form the regulatory framework and economic stimulus for rehabilitating Brownfields, the author describes each step in the redevelopment process, as well as available financing tools and liability assurances. Activities underway at each of the EPA's Brownfield Assessment Pilot Projects are summarized, and Brownfields case studies of industrial, commercial, and residential redevelopment projects are provided. Contact information for EPA and state Brownfields coordinators, a model prospective purchaser agreement, sample comfort / status letters and a glossary of relevant terms are also included.

Title: *Turning Brownfields into Greenbacks.*

Author: Simons, Richard A.

Publisher: Urban Land Institute, 1997, 181 pp.

2.2 Community Support

Enlisting the support of the surrounding community is important to making a Brownfield project successful. While many developers assume that increased tax revenue, more jobs, and the removal of a local eyesore are more than enough reasons for a project to go forward, there are several major project-specific considerations that may delay a project or even kill it if not addressed through an open and participatory community relations plan. These include the following:

Environmental Cleanup Standards and Community Risk. While the community is generally pleased to see someone prepared to remedy an environmental problem, the introduction of risk assessment can open the door for debate and misunderstanding over some very technical concepts. Cleanup projects can be stalled because of citizen disagreements about the cleanup standard for a contaminant, even when the agencies are in agreement and although the neighboring community has been exposed to higher levels of contaminants for years.

Environmental Justice. Many Brownfields are located in areas that are populated largely with minority and low-income communities. Many active factories and waste management facilities are likewise located near minority and low-income neighborhoods. When confronted with the possibility of economic redevelopment in their area, many residents would argue in favor of a public use facility or park rather than a factory.

Gentrification. The flip side of the environmental justice issue is the risk to local residents since redevelopment may drive local property values higher. This process can increase property taxes thus making it too expensive to live there.

Developers. Some communities have had bad experiences with developers over-promoting their projects. Others have bad memories of the former plant occupants closing down and leaving them and their friends unemployed. Despite the best efforts of the project proponents, the community may have difficulty totally embracing the project. Community outreach programs and open communication that engages the community and involves them into the planning process is important.

ASTM is in the process of publishing a new standard, "Standard Guide to the Process of Sustainable Brownfields Redevelopment." The guide is designed to help streamline the

redevelopment process by providing guidance on risk assessment and communication and gaining community support.

2.2.1 Recommended Case Studies

Reference: CSE-11

Project Title and Location: Citizen-spurred Redevelopment of Seaholm Power Plant, Austin, Texas.

Participants: City of Austin, Texas, Austin Energy (City of Austin Department), owner; Roy F. Weston, Inc., contractor; USEPA and Texas Natural Resources Conservation Commission (TNRCC), have applicable standards, regulatory compliance review; Seaholm Reuse Planning Committee, an official citizens panel appointed by the city council; Friends of Seaholm, an ad-hoc, self-appointed group of interested citizens.

Reference: CSE-12

Project Title and Location: Dismantling and Restoration of the Comal Power Plant for Public Reuse, New Braunfels, Texas.

Participants: Lower Colorado River Authority (LCRA), owner; Roy F. Weston, Inc., building environmental consultant; Parsons Engineering Science, Inc., site remediation consultant; TLG Services, Inc., prime engineering contractor; Olshan Demolishing Inc., dismantling / demolition contractor.

Reference: CSE-14

Project Title and Location: WEPCO Brownfield Task Force And Community Non-Profit Involvement

Participants: WEPCO, donor; 16th Street Community Health Center, non-profit conducting a Brownfield community action project; various developers, bankers, attorneys, state employees.

Reference: CSE-19

Project Title and Location: Northern Indiana Public Service Company (NIPSCO) Spearheads Creation of Cooperative Brownfield Redevelopment Program in Northern Indiana.

Participants: Northern Indiana Public Service Company (NIPSCO); Northwest Indiana Forum (NWIF); and, the Northern Indiana Center for Land Redevelopment (NICLR), a non-profit affiliate of the Delta Institute.

2.2.2 Recommended References

Title: *Brownfields Redevelopment: A Guidebook For Local Governments And Communities.*

Author: Kirshenberg, Seth D., et al.

Source: International City / County Management Association; Northeast-Midwest Institute (U.S.) [Washington, DC]; The Association, 1997. vol.1. (n.p.).

Abstract: This book provides information for local governments and communities to assist them with the process of Brownfield redevelopment. It provides detailed explanations of the major issues local governments and communities confront, from liability to public financing to community involvement, case study summaries, federal programs, descriptions of State voluntary cleanup programs, listings of resources on innovative environmental technologies, summaries of activities of recipients of EPA's Brownfields Pilot Grants, documents affecting liability, local and regional contacts at federal agencies, and a list of further readings and resources.

2.3 Project Financing and Financial Analysis

Brownfields projects are still development projects, and ultimately need to be evaluated as such. However, as noted earlier, most Brownfield opportunities are marginal redevelopment projects (the cost of cleanup in some cases exceeds the current value of the property) although in many cases only minimal infusion of funds is required to improve the deal.

Most financial incentives for Brownfield projects are designed for the public sector, and are usually not available directly to private owners or developers. Partnerships with local government agencies and / or non-profit organizations are needed to attract these funding sources. Such funding can be a significant contribution to the project.

Types of financial incentives include the following:

- **Site Investigation.** Funds used to characterize the nature and extent of contamination, and in some cases can further be used to determine the most appropriate remedial strategy and its corresponding cost.
- **Site Improvement.** After the site is cleaned up / closed, funds used to add utilities and infrastructure improvements supporting the development.

- **Planning.** Costs associated with government participation in supporting the redevelopment activities.

- **Community Relations.** Funds to foster communication (meetings, newsletters, etc.) with the affected community and stakeholders.

- **Tax Credits and Other Incentives.** Special tax treatment for participants to attract their investment in the cleanup and/or redevelopment.

The actual cost of cleanup for private companies is most often funded either out-of-pocket, or from insurance proceeds. Cleanup costs for abandoned properties or properties owned by government have more funding options available, particularly for sites where specific types of redevelopment are designed as economic improvements for the community.

Some common examples of funding sources and mechanisms are described below. Additional detail on these sources and the associated application process and qualifications are provided in Chapters 4-6.

EPA Brownfields Pilot Site Grants. These grants, typically for $200,000, are designed to facilitate Brownfield redevelopment through site assessment, remediation support, redevelopment planning and municipal planning. The funds are also intended to test and publicize different redevelopment models.

EPA Brownfields Cleanup Revolving Loan Fund (BCRLF). This fund makes available funds to local government at a low interest rate for loans to specific projects. The loans can be used only for activities related to environmental cleanup (not for development or new construction, for example) undertaken by parties that did not cause the contamination.

Community Development Block Grants (CDBG). These grants are distributed by the Department of Housing and Urban Development, and have been used for Brownfield redevelopment by private companies at the community's discretion.

HUD Section 108 Loans. These loans are offered to help communities with large projects where the single year CDBG is too small. The loan is based on a pledge of future CDBG funds as collateral, and can be used for private site investigations and remedial action like CDBG.

Other Federal Funds. Transportation funds in particular have been used to fund portions of Brownfield projects, much as they have traditionally been used to investigate and clean up contamination along new transportation construction corridors. Superfund dollars have also been used by some municipalities to clean up sites that were eventually slated for redevelopment, but many potential private

investors may prefer to avoid the Superfund process and its associated delays and legal entanglements. Funds for Empowerment Zones and Enterprise Communities may also be used to support Brownfields redevelopment in some situations, but are more often limited to planning support rather than actual remedial costs.

Bonds. General Obligation Bonds in particular have traditionally been a source of funding for municipal infrastructure improvements, and as a result have been used widely for Brownfield projects. Typical uses of such funds include site purchase, improvements, and infrastructure, as well as site preparation costs including remedial action.

Private Financing/Funds. Possible sources of financing include banks, insurance companies, and previous, current, and new owners. Banks are usually interested in project financing only after cleanup has been completed and signed off by the appropriate agencies, but do often finance the redevelopment of clean properties in blighted areas. Insurance companies may be responsible in some cases for the cleanup costs; legal research has often identified active insurance policies that can be used as sources of cleanup funds years after the property is abandoned or closed. Similarly, cost recovery from previous owners (if viable) as an option, and is often pursued vigorously by EPA and state agencies under Superfund. Companies such as utilities have also provided free or in-kind services to developers when they stand to benefit from increased sale of their product from the project once completed.

2.3.1 Recommended Case Studies

Reference: CSE-9

Project Title and Location: Pennsylvania Electric Co./GPU Energy Adaptive Reuse Of Front Street Station, an aging generating plant on 22-acre waterfront property, whose cleanup was funded by seven different sources.

Participants: GPU Energy, Owner; North American Realty, Economic Reuse Plan Development; State of Pennsylvania, Regulatory Authority and Contributor; Relan Properties, Real Estate Developer; US Army Corps of Engineers, Assisting Federal Agency; Delta Development, Consultants.

Reference: CSE-15

Project Title and Location: Abandoned Power Plant Redevelopment in Kemmerer, Wyoming, Funded by a USEPA Pilot Grant.

Participants: City of Kemmerer, WY, owner; US EPA, Denver office; State of Wyoming; Department of Environmental Quality; Abandoned Mine Land Program.

2.3.2 Recommended References

Title: Financing Strategies for Brownfields Redevelopment.

Author: Environmental Financial Advisory Board.

Source: *Brownfields Report No. 3,* U.S. Environmental Protection Agency (EPA), Environmental Financial Advisory Board (EFAB), Washington, DC, 1996, 29 pp.

Abstract: This report is designed to assist the many parties involved in Brownfields redevelopment. Communities, developers, federal and state agencies, capital providers, community groups, and others. It examines financing strategies and lays out a seven-stage process for Brownfields redevelopment, depicts the economic redevelopment potential of Brownfields by classifying sites as viable, threshold, and non-viable, and presents a wide variety of financing strategies currently being used in Brownfields redevelopment. It also matches the financing strategies, where possible, to the stages in the redevelopment process, and provides seventeen real-life examples of how financing strategies have been applied in practice.

Title: *A Guidebook Of Financial Tools.*

Author: Environmental Financial Advisory Board and the Environmental Finance Center Network.

Source: Environmental Financial Advisory Board and the Environmental Finance Center Network, June 1997.

Abstract: This guidebook has been produced by the Environmental Financial Advisory Board and the Environmental Finance Center Network. This is the June 1997 revision of the April 1997 draft of the Guidebook. It will be updated on an on-going basis, based on comments and the addition of new financial tools.

2.3.3 Recommended Websites

Title: Bank of America Brownfields Redevelopment.

Site Address: http://www.bofa.com/community/env_p9.html

Site Description: Articles and references about Brownfields from a large bank's perspective. Bank of America has been a leader in private sector financing of Brownfields cleanup and redevelopment. Their site includes information about environmental financing in general and specific information about financing

Brownfields redevelopment. From their site, you can contact Bank of America's offices in Illinois and New York or a regional manager for other states.

Title: Environmental Bankers Association.

Site Address: http://envirolink.org/orgs/eba/index.html

Site Description: The EBA is a U.S. non-profit corporation that addresses the environmental risks and opportunities related to the lending, trust and facility activities of their member institutions. Brownfields redevelopment is among EBA's priority issues. EBA has members institutions in each of the Great Lakes States equipped with trained staff to handle the added complexities often presented in Brownfields redevelopment. Contact EBA for more information about EBA members in your area.

Title: EPA's Environmental Financial Advisory Board.

Site Address: http://www.epa.gov/efinpage/efab.htm

Description: This site has a searchable database of information surrounding the topic of environmental finance. Also has a tool box of articles and panel discussions on financing. Another useful feature is the Environmental Financing Information Network database. This is a collection of abstracts representing publications and other relevant materials (articles, case studies, guides, legislation, handbooks, memoranda, reports, proceedings, surveys, papers) which deal with environmental financing. **Current and recommended.**

2.4 Legal and Regulatory Issues

Brownfield veterans will often argue that the success or failure of a project is in the details, specifically the legal and regulatory subtleties that make Brownfields deals different than other development projects. Those issues most often cited as critical to project development include the following.

- Prospective Purchaser Agreements/Covenant Not to Sue.
- State Voluntary Cleanup Programs and their terms.
- Adequacy of Phase I and II investigations, particularly if they did not follow a recognized standard such as the ASTM Environmental Site Assessment protocol.

A fundamental issue in Brownfield development is the level of assurance by the buyer that they will not be subject to additional cleanup orders or enforcement action once the deal is completed and the site cleaned up. This comfort level, however, is not always

achievable through a written / negotiated agreement between the parties. Most sellers want to be relieved of any future liability once they lose control of the property, and under some conditions, the EPA and some state agencies will want a re-opener clause allowing them to consider additional site remediation.

The federal CERCLA (Superfund) law can hold all property owners as jointly and severally liable for cleanup costs if EPA determines that there is a threat to human health and the environment. A sophisticated buyer will not be put off as much by the presence of contamination on the property as he will by the risk of later EPA enforcement. This fear, and its corresponding impact on the Brownfields movement, has been addressed to some degree by EPA agreements related to state voluntary cleanup programs.

The EPA Prospective Purchaser Agreement and the associated "Covenant Not to Sue" language is at the center of this issue. In 1989 and again in 1995, EPA established a policy covering the issuance of agreements absolving buyers of property that had been cleaned up under their jurisdiction of any responsibility for cleanup costs under CERCLA. The so-called "Model Agreement" contained in the policy has its limitations (including no reference to other potentially relevant statutes, etc.), and also sets the following conditions for qualification:

- An EPA action has been, is, or will be taken at the property (i.e., don't call EPA in to mediate a property deal in which they had no participation).
- The EPA should receive a benefit, either in the form of direct cleanup or as an indirect public benefit.
- The continued operation / development at the property will not disturb or otherwise impede EPA's planned activities (if any) at the site.
- The continued operation of the property will not pose a health threat to the future users of the property.
- The prospective purchaser is financially viable.

In practice, the most likely scenario for sale of impaired property will be the buyer's concern over the adequacy of past or ongoing remedial actions at the property, and the need for some form of "comfort letter" from EPA or the state. In some cases, the property may be cleaned up to a more lenient standard based on its intended use, which would also require agreement with EPA or the state.

Problems negotiating satisfactory agreements with EPA despite the policy, the need for EPA to become a party to the cleanup in order to write the letter, and the greater incentive at the local level to make these deals happen, all resulted in the emergence of

state "voluntary cleanup programs" to provide some degree of buyer relief on non-CERCLA cleanups. Such programs began as far back as 1983, when the New Jersey ECRA (Environmental Cleanup Responsibility Act) was enacted, requiring sellers of industrial property to obtain a state sign-off for the cleanup before the transaction could be completed. Other states did essentially the same thing, though typically requiring little more than a site assessment (intrusive or not) to assure both the state and buyer that there were no major environmental problems at the site.

More recently, states have enacted statutes giving buyers legal relief from future legal action, usually for cleanups that have been completed. The biggest problem with state agreements, as of this writing, is their inability to protect buyers from EPA enforcement, and are therefore considered weak. Discussions are now under way with EPA to develop a Memoranda of Understanding between states and EPA to respect the state's position on non-federal cleanups.

A basic tool in the property transfer process continues to be the site assessment, also known as a "Phase I" (first pass at identifying risks) and "Phase II" (often includes intrusive sampling for suspected contaminants) audit or assessment. The process of conducting these audits is well-known and even standardized for some applications. As a buyer, contracting for these audits can provide a form of comfort, although most Brownfield properties are already known to contain some contamination, so much of the assessment work has already been completed.

2.4.1 Recommended Case Studies

Reference: CSE-2

Project Title and Location: Redevelopment of PECO Energy Company site in Chester, Pennsylvania.

Participants: PECO Energy, owner; City of Chester, redevelopment participant; State of Pennsylvania, USEPA, community involvement.

Reference: CSE-3

Project Title and Location: Redevelopment of Yankee Gas/Yankee Energy MGP Site for New Service Center.

Participants: Yankee Energy/Yankee Gas, owner.

Reference: CSE-6

Project Title and Location: WEPCO, Redevelopment of Former Ash Landfill site for new EZ Paintr facility in St. Francis, Wisconsin.

Participants: WEPCO, owner; EZ Paintr, purchaser.

Reference: CSE-10

Project Title and Location: Regulatory-Assisted Redevelopment of PP&L – Hershey Service Center Building into Restaurant and Hotel.

Participants: PP&L, Inc.(Formerly Pennsylvania Power & Light), owner; State of Pennsylvania, regulatory agency.

2.4.2 Recommended References

Title: *Special Report, State-by-State Survey of Brownfield and Voluntary Cleanup Programs.*

Author: Schnapf, Larry

Publisher: The Bureau of National Affairs, Inc., Washinton, D.C., 28(46): 2488-2502 pp., March 1998.

Abstract: This article, presented as a special report in the Bureau of National Affairs (BNA) Environmental Reporter, is an excellent summary of the principal features of the voluntary cleanup programs that have been enacted by 41 states. This survey was completed in January 1998. This article provides a brief definition of Brownfields and the features that are common to the state voluntary cleanup programs or Brownfield programs. A summary of each of the 41 state programs is provided, highlighting the features, principles, of each state program.

Title: *Prospective Purchaser Agreements: Reducing the Liability Risks of Contaminated Property*.

Author: Geltman, Elizabeth Glass.

Publisher: American Bar Association, Section of Natural Resources, Energy, and Environmental Law, Chicago, IL, 1997.

Abstract: This book focuses on how to draft a Prospective Purchaser Agreement (PPA) under the federal Superfund and RCRA programs. It covers historical EPA policy on prospective purchaser agreements, overview of the Brownfield purchaser problem,

samples of agreements and accompanying Covenant Not to Sue documents, EPA guidance documents, regional contacts, and accessing data on the internet. The materials in this toolkit are offered with the hope that more companies will initiate voluntary cleanup of contaminated properties, aid in the cleanup and redevelopment of urban centers, and deter urban sprawl.

Title: *The Brownfields Book.*

Author: Roy F. Weston, Inc. and Jenner & Block.

Publisher: Roy F. Weston, Inc. and Jenner & Block, Chicago, IL 1997, (111 pgs.).

Abstract: The Brownfields Book is a comprehensive guide on the legal and financial tools available to business, government, and community leaders to profitably redevelop abandoned urban properties, commonly known as "Brownfields." Co-written by environmental consultants Roy F. Weston, Inc., and law firm Jenner & Block, the book demonstrates the economic benefits of redeveloping once thriving but now vacant urban industrial and commercial properties. The book opens with an overview of the conditions that created Brownfields and goes on to discuss the legal and financial issues affecting Brownfield redevelopment efforts, some of the cost-saving approaches to site remediation, and the government and private initiatives that are available to turn Brownfields into marketable development opportunities. To support the major theme of the book that Brownfields present a unique opportunity for fostering economic growth in urban areas, case studies of abandoned properties that have been successfully revitalized are presented in detail. The book also contains a survey of state and voluntary cleanup laws, a guide to USEPA Brownfield redevelopment policies, and the web sites of relevant environmental agencies in each state.

Title: *Brownfields Law and Practice; The Cleanup and Redevelopment of Contaminated Land.*

Author: M. Bender; Gerrard, Michael (general editor).

Place of Publication: New York, 1998.

2.4.3 Recommended Websites

Title: Jenner & Block.

Site Address: http://www.jenner.com/environ/brownfie.htm

Site Description: Accepts legal questions and publishes newsletters and articles written by their environmental law department here. Co-authored *The Brownfields Book* with Roy F. Weston, Inc.

Title: Brownfields-related Law and Regulations, maintained by the USEPA.

Site Address: http://www.epa.gov/swerosps/bf/gdc.htm.

Site Description: USEPA does an excellent job of publishing virtually all of their Brownfield-related laws and regulations on this site, most the very month they are released. Most documents are downloadable in a .pdf or HTML format. This is a good site to bookmark.

Title: The Utility Connection.

Site Address: http://www.magicnet.net/~metzler/index.html.

Site Description: The Utility Connection is an overwhelmingly complete set of links to every site that might have something to do with utilities. It is well-organized, with extensive lists of links to all sorts of information, including environmental. This is a good site to bookmark for future use.

2.5 Remedial Investigation and Implementation

A clear understanding of the cleanup approach, technical options, and cleanup standards is essential to successful remediation projects. Projects today have benefited from the experience in the 1980s and early 1990s -- when the rules were new, many of the technologies were unproven, cleanup standards were set on a case-by-case basis, and remediation was a costly, seemingly endless transaction-oriented process. Today, while the process is still not simple, it is much more straightforward. The basic steps of most remedial projects include the following:

- Preliminary site assessment.
- Detailed site characterization.
- Remediation feasibility study/options analysis.
- Remediation design/specification.
- Remediation implementation/construction.
- Closure.

The details associated with each step will vary depending upon the agency providing oversight. As noted earlier, many states, for example, have property transaction laws that specify the nature and extent of the preliminary and even detailed site

investigation process, and will require state approval of the product before a transaction can be completed.

For more complicated cleanups, EPA and state agencies will often revert to detailed site characterization and analytical protocols developed under RCRA, CERCLA or TSCA, all of which are typically specific and leave little latitude for the seller. They do, however, make it easier for the agency in question to approve the findings in anticipation of the sale and corresponding "no further action" letter.

The "feasibility study," or options analysis, uses the results of the investigation to define and recommend the remedial approach. Thousands of similar studies have been performed to date for different sites, and databases identifying available remedial options for any contaminant are readily available (please see Section 2.5.3 for website addresses which include downloadable or onsite databases of remediation technologies).

The real focus of the options analysis in a Brownfields context is the selection of the appropriate cleanup standard. Standards are set either through risk assessment, or through the use of state-specific "action levels" which are typically defined for specific contaminants. The action levels are often available in tabular format, and are sometimes offered as choices, depending on the intended use of the site (i.e., risk-based cleanup based on expected human exposure). Some states will allow less stringent cleanup if the seller and buyer agree to "deed-record" the contamination; in this scenario, the state agrees that the contamination (though above the clean closure action level) does not present an unreasonable risk to human health or the environment, and wants to be certain that any future owner is aware of its presence. Deed recordation is becoming more common in Brownfield transactions, and recently has been offered in EPA regulations as well.

Once the remedy is selected and agreed upon with the state and/or EPA, the detailed design and construction proceeds according to a fairly conventional process. Remedial actions tend to fall into one of the following categories.

Removal Action. The excavation, demolition or removal by other means of contaminants until remaining media are below the defined action level.

Decontamination. The selective removal of contaminants from buildings, equipment, and/or environmental media through the use of special techniques or agents, leaving the cleaned media at the site.

Containment. Environmental isolation of contaminants on-site through either capping, bottom sealing, vertical barriers, or macroencapsulation. Capping reduces or prevents the infiltration of precipitation into the contaminated media. Cap components can consist of a soil layer (topsoil, common fill) to reduce seepage, minimize air emissions,

and allow vegetation to grow and protect underlying layers from damage; a drainage layer (sand) to laterally drain infiltrated water away from the low permeability layer; and a low permeability layer (asphalt, concrete, compacted clay, geosynthetic clay liners, or flexible membrane liners) that reduces or prevents infiltration of precipitation. Bottom sealing prevents the subsurface contaminants from migrating vertically by creating an in-situ barrier beneath the contaminants. Bottom sealing involves the displacement of a block of contaminated soil by grout injection beneath the contaminated soil. Vertical barriers prevent the horizontal movement of contaminants. Typical vertical barriers consist of slurry walls, sealable steel sheet piling or polyethylene piling, or grout injection. Macroencapsulation encases the material in an inert, virtually impermeable coating such as polyethylene or epoxy which acts to isolate the contamination from the environment.

In-Situ Treatment. Use of chemical or biological processes (natural or induced) to treat and destroy contaminants in place, often requiring many years to reach the desired endpoint (particularly for biological treatment of some persistent organic contaminants) but minimizing the amount of intrusive work necessary.

The sources identified at the end of this section provide specific information on the technology options and their development status. Users are cautioned that much of the developmental technology may be touted by EPA as "commercially available," when in fact it has sometimes been used only for EPA or other demonstration projects. The investment in a Brownfield cleanup technology is usually tied to a planned development of the site with a schedule for implementation; experimentation with remedial technologies is not usually appropriate in this situation. The commercial performance of the proposed technology application should be carefully researched before being deployed.

Confirmation sampling is largely a sampling exercise, performed using specific sampling and analytical protocols and often following a defined statistical sampling scheme (a grid system for example). Successful confirmation sampling is a prerequisite on most projects to receiving any kind of letter confirming that the site is clean or otherwise ready for transfer.

2.5.1 Recommended Case Studies

Reference: CSE-5

Project Title and Location: WEPCO, Redevelopment of MGP site in Burlington, Wisconsin, using a patented bioremediation technology.

Participants: WEPCO, owner; City of Burlington, redevelopment partner.

2.5.2 Recommended References

Title: *Market Opportunities For Innovative Site Cleanup Technologies: Middle-Atlantic States.*

Corporate Source: Environmental Protection Agency, Washington, DC (United States). Office of Solid Waste and Emergency Response, December 1995, (175 pp).

Abstract: The purpose of this report is to provide vendors and developers of innovative treatment technologies a resource to use in determining potential technology needs present in the Middle-Atlantic states in order to support them in developing marketing plans for the region. The main body of the report, Sections 2 through 7, provides detailed accounts of the potential markets for innovative hazardous waste remediation technologies in each Middle-Atlantic state. This report also contains four appendixes; Appendix A contains a list of DOD installations with two or fewer sites or estimated costs for cleanup of less than or equal to $1 million; Appendix B contains EPA-produced fact sheets concerning the Brownfields Economic Redevelopment Initiative; Appendix C contains information on various government contracts of potential interest to vendors of innovative remediation technologies; and Appendix D contains a list of references used to prepare this report.

Title: *Cleaning Up the Nation's Waste Sites. Markets and Technology Trends. 1996 Edition.*

Source: NTIS Accession Number: PB97-196075, Environmental Management Support, Inc., Silver Spring, MD., Corp. Source Codes: 084428000. Also available online at http://www.epa.gov

Sponsor: Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response. Report No.. EPA/542/R-96/005A, April 97, 32pp.

Abstract: This report was prepared to aid those who are developing and commercializing new technologies to meet the future cleanup demand. It provides an overview of the market to help industry and government officials develop research, development, and marketing strategies. This report updates and expands a 1993 analysis that brought together for the first time valuable information on site characteristics, market size, and other factors that affect the demand for remediation services. To provide a realistic estimate of expected contracting opportunities, the demand estimates are limited to remaining cleanup work and do not include projects that are underway or completed. While the report considers a broad range of remediation services required in the future, its purpose is to provide insight into the potential application of new treatment technologies.

2.5.3 Recommended Websites

Title: USEPA's Brownfields Tool Kit.

Site Address: http://clu-in.com/toolkit/index.htm

Site Description: USEPA's Brownfields Tool Kit is available online. The Tool Kit focuses on the site characterization and cleanup phase of Brownfields redevelopment. It introduces Brownfields stakeholders to the range of technology options and resources available to them. This Tool Kit provides abstracts and access information about a variety of resources, including electronic databases, bulletin boards, newsletters, regulatory and policy guidance, and technical reports that may be useful to Brownfields stakeholders as they proceed through the cleanup process. It is a companion guide to the *Road Map to Understanding Innovative Technology Options for Brownfields Investigation and Cleanup.*

Title: USEPA - Roadmap to Understanding Cleanup Technologies.

Site Address: http://www.epa.gov/swertio1/download/char/roadmap.htm

Site Description: USEPA's Roadmap to Understanding Cleanup Technologies provides a framework of the four basic phases of the characterization and cleanup of a Brownfields site—Site Assessment, Site Investigation, Cleanup Options, and Cleanup Design and Implementation—and links technology options and resources to each of those steps.

Title: Bioremediation Discussion Group and website.

Site Address: http://biogroup.gzea.com/

Site Description: The Bioremediation Discussion Group is a moderated Internet mailing list hosted by GZA GeoEnvironmental, Inc. The BioGroup fosters a global forum for discussion of the technical aspects of bioremediation science/engineering. The website allows posting of bioremediation papers, which are then free to download.

Title: Tech-Know – Online Database Of Technical Solutions To Environmental Problems.

Site Address: http://www.gnet.org

Site Description: Tech-Know is an on-line database that allows Internet users to share and receive technical solutions to environmental problems. TechKnow is a product of the Global Environment & Technology Foundation (GETF) and is built into GNET, the

Global Network of Environment & Technology. With TechKnow, users can access the database for information, and can also enter data for others. The GNET website is a great site for daily Department of Energy news updates.

Title: USEPA's Hazardous Waste Clean-up Information (CLU-IN).

Site Address: http://www.clu-in.com/

Site Description. This website provides information about innovative treatment technology to the hazardous waste remediation community. It describes programs, organizations, publications, and other tools for federal and state personnel, consulting engineers, technology developers and vendors, remediation contractors, researchers, community groups, and individual citizens. The site was developed by the USEPA but is intended as a forum for all waste remediation stakeholders.

Title: USEPA's Environmental Technology Verification (ETV) database.

Site Address: http://www.epa.gov/etv

Site Description: This site, managed by the Office of Research and Development, contains a database list of technologies verified to-date, background information about ETV, as well as complete information on ETV Pilot Projects.

Title: USEPA's Office of Solid Waste Management – Hazardous/Non-Hazardous Solid Waste Remedial Information.

Site Address: http://www.epaoswer/hazwaste/ca/index.htm

Site Description: This site contains information about hazardous/non-hazardous solid waste cleanup including RCRA regulations and guidance. Documents are available for download.

Title: U.S. Department of Energy, Office of Environmental Management.

Site Address: http://www.em.doe.gov

Site Description: Contains information about national programs, regulations and budget, waste management, environmental restoration, science and technology information, and public information and news items.

Title: Remediation Technologies Screening Matrix and Reference Guide.

Site Address: http://www.rfweston.com/allenv/etc/int2.htm

Site Description: This document was prepared for the Department of Defense and other federal agencies participating in the Federal Remediation Technology Roundtable and is available as a downloadable file.

Title: VISITT (Vendor Information System for Innovative Treatment Technologies – a Free Electronic Yellow Pages of Innovative Treatment Technologies and Vendors).

Site Address: http://11207.86.51.66/visitt.htm

Site Description: This page contains a user-friendly, downloadable database of innovative technologies provided by vendors. Contains vendor information and customized search capabilities for technologies applicable towards your site type.

Title: US EPA's Office of Research and Development Alternative Treatment Technology Information Center (ATTIC).

Site Address: http://www.epa.gov/attic/index.html

Site Description: Contains a comprehensive database providing up-to-date information on technologies. Provides access to several independent databases as well as a mechanism for retrieving full-text documents of key literature.

2.6 Health Risk Assessment and Communication

Addressing the risk of illness resulting from exposure to residual chemical contamination is fundamental to Brownfield redevelopment. Developers deal in financial risk as part of every development project, and try to minimize their risk through market research, insurance, and use of proven contractors.

With enough data, the probability of a particular event occurring can be calculated. For environmental and human health hazards, risk is defined as the product of a chemical's impact on the receptor and the concentration of the chemical at various points of exposure.

For Brownfields sites and other remediation projects, risk assessment is the science of determining the potential adverse impact of human and/or ecological exposure to contaminants. The development of a risk assessment generally follows a five-step process:

- **Hazard Identification.** Determining the concentration, location and form of contaminants of concern at the site.

- **Dose-Response Assessment.** The nature of a chemical's toxicity and its relationship to the dose, or intake.
- **Exposure Pathway Identification.**
- **Exposure Assessment.** Calculation of the intake / uptake of one or more contaminants based on the various exposure pathways applicable at the site.
- **Risk Characterization.** The combination of exposure information and toxicity to determine the added lifetime risk of a contaminant or contaminants at the site.

Hazard identification often begins with the collection and analysis of data from site characterization, and may be enhanced through additional chemical analysis to determine the hazardous concentration levels of different forms of a chemical (for example, different types of chromium have different human toxicities). The concentration of the chemical is also important, and needs to be determined through sampling distribution during the site assessment. A person occupying a contaminated site where the contaminant of concern is present in only part of the site will have less exposure. Spatial assessments, as well as exposure durations need to be factored into the analysis.

Dose-response assessment is not typically performed for individual projects, but instead determined as part of formal experimentation and reported by regulatory agencies or scientific organizations. For most chemicals, it is common to assume the response of the organism increases with the dose, although the nature of the dose-response relationship (linear, exponential etc.) is often the subject of debate.

The exposure assessment begins with identification and definition of complete exposure pathways or routes, which must include the following:

- A release source;
- A transport mechanism;
- A point of contact; and
- A receptor.

Remove any of the above components and there will not be any dose or intake, and therefore no risk to the organism. However, rather than allowing chemical contaminants to reside permanently in low or no-exposure locations, agencies will often (1) set maximum allowable concentration limits that are not risk-based, or (2) require deed restrictions on the property that warn future owners of contamination in the event their activities change the exposure characteristics. For example, the presence of a building or parking lot on top of contaminated soil is limiting the potential for

exposure, but removal and replacement with a park or homes without removing the contamination will likely increase the exposure potential.

The actual calculation of dose incorporates the following variables:

- The concentration of the chemical of interest found in the contaminated medium (soil, water, air, etc.).
- The intake rate, in units of quantity per unit of time (lb / hr, cubic meters / day, etc.).
- The exposure frequency, in days per year.
- The exposure period or duration, in days or years.
- The absorption factor, or the amount absorbed by the organism per unit of time (varies between skin, lungs, gastro-intestinal track, etc.).
- Body weight.
- Averaging time, or period over which exposure occurs (the same as exposure period for non-carcinogens).

According to American Society for Testing and Materials (ASTM) standards, Risk-Based Corrective Action (RBCA) is the integration of site assessment, remedial action selection, and monitoring with USEPA-recommended risk and exposure assessment practices. Remediation processes may be used to reduce concentrations of the chemical(s) of concern to levels below or equal to the target levels or to achieve exposure reduction (or elimination) through source removal, treatment, containment technologies as well as institutional controls (i.e., fences, deed restrictions, or restrictive zoning) or the use of engineering controls (i.e., slurry walls, capping, point of use water treatment).

Historically, agencies have required that risk assessors employ “worst-case” assumptions when making the dose calculation. Occupational exposure may require assumption of 8 hour / day exposure for 40 years. Contamination of soil in residential areas may require that long-term soil ingestion be assumed for children. All of these factors can be controlled and are often subject to negotiation between all stakeholders.

Similarly, the intake rate and absorption factors are often predetermined or provided as constants by agencies, but are also the subject of ongoing research and can change. Negotiation of risk levels may include debate over which scientific work is best or most appropriate for a particular situation.

The actual calculation of risk is computed by combining the actual/expected exposure with a reference exposure or factor. For carcinogens, the factor is called a "potency factor," which is derived from the slope of the dose response curve for a particular chemical. For non-carcinogens, the factor is called a "reference dose," which is determined from the so-called "no observed effect level," or NOEL, the highest exposure level at which no response is observed.

The risk calculation formulae produce unitless results. For cancer risk, the risk number represents the added lifetime risk of cancer from the incremental exposure to that contaminant. Compared to acute toxins, which are more akin to "poisons" encountered at home or work, carcinogens and the concept of "additional lifetime risk" is difficult for laypersons to comprehend and can create confusion during project development. Agencies generally endorse risks ranging from one in a million to one in ten thousand, which is often debated both in the technical and public forum surrounding a project. Results for multiple carcinogens are considered to be additive.

More importantly, the risk formulae can be algebraically modified to assume an acceptable risk level and compute the remediation goal required to achieve that risk level. The former approach is commonly used to determine whether the property is "clean enough" either as-is or after remediation is completed, while the latter approach is used to negotiate the cleanup standard or action level in advance of beginning cleanup. This latter approach is a fundamental "go/no-go" decision point in a Brownfield project, as it defines the amount of remedial work that will be needed to release the property for its planned use.

2.6.1 Recommended Case Studies

Reference: CSE-1

Project Title and Location: Redevelopment of Connecticut Light & Power (CL&P) former MGP site in Stamford, Connecticut as part of a comprehensive waterfront plan.

Participants: Northeast Utilities affiliate CL&P, owner; City of Stamford, partner; multiple developers and consultants, partners; State of Connecticut, lead environmental agency.

Reference: CSE-17

Project Title and Location: Three Brownfields Projects In New Jersey.

Participants: PSE&G and various other parties.

2.6.2 Recommended References

Title: *Brownfields. A Comprehensive Guide To Redeveloping Contaminated Property*.

Author: Davis, Todd S., and Kevin D. Margolis. [Edited by] Todd S. Davis, and Kevin D. Margolis; with a preface by Vice President Al Gore.

Publisher: American Bar Association, Section of Natural Resources, Energy, and Environmental Law, Chicago, IL, 1997, 703 pp.. ill.

Abstract: This book was developed to provide both information and strategic advice to assist parties hurdle the barriers precluding Brownfields redevelopment. It also includes an in-depth look at all recently enacted state Voluntary Cleanup Programs. The four parts of the book include background information, details of the most important legal, business, financial, and political issues associated with redeveloping contaminated real estate; discussions of the basic science and emerging concepts involved in risk-based science used to address contaminated property appropriately and cost-effectively; and important elements of each state Voluntary Cleanup Program.

Title: Bankers, Developers, and New Investment in Brownfield Sites. Environmental Concerns and the Social Psychology of Risk.

Author: Yount, Kristen R.; Meyer, Peter B.

Source: *Economic Development Quarterly*, November 1994, 8(4). 338-344.

Abstract: The 1980 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), known as the Superfund Act, was passed to facilitate the cleanup of contaminated properties. The act holds the past and present owners liable for the cleanup, regardless of their responsibility for the damage. This has hindered efforts to renovate abandoned and underused lands and buildings on these properties. Potential investors, such as bankers and developers, may have distorted judgements concerning the level of risk associated with the sites. This article discusses some noneconomic factors shaping investor risk perception. The authors review risk characteristics such as uncertainty and uncontrollability, the working of the availability heuristic and social amplifications of risk. They have studied literature on property developers and financiers to better comprehend both their motivations and fears of Brownfield opportunities. Findings show that investors tend to remember the court cases and articles relating to the risk and liability of cleaning up the sites, as opposed to the success stories. Public sector involvement from the local to the federal government levels is a solution for alleviating these fears and encouraging investments. The government units can implement new initiatives, such as buyer protection laws or mandating the investment in Brownfield sites as part of an institution's portfolio.

Stimulating the economy and improving investment opportunities requires the joint effort of local, regional and state government units, private sector development agencies and partnership organizations.

Title: *Risk Assessment Guidance for Superfund.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 540/1-89/002, December, 1989.

Title: *Ecological Risk Assessment Guidance For Superfund: Process For Designing And Conducting Ecological Risk Assessments.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 540-R-97-006, June 1997

Title: *Exposure Factors: Handbook Volume 2. Food Ingestion Factors.*

Source: Source. USEPA Office of Emergency and Remedial Response, Document # EPA/600/P-95/002Fb, August 1997.

Title: *Exposure Factors: Handbook Volume 3. Activity Factors.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 600/P-95/002Fc, August 1997.

Title: *Soil Screening Guidance: User's Guide.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 540/H96/018 PB96-963505, April 1996.

Title: *Soil Screening Guidance: Technical Background Document.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 540/R-95/128, PB 96-963502, May 1996.

Title: *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 600 R-93/089, July 1993.

2.6.3 Recommended Websites

Title: A Risk Assessment Primer, WESTON website.

Site Address: http://www.rweston.com/allenv/BROWN/siterisk.htm

Site Description: Available on WESTON's "All Things Environmental" web site. The primer assists in the conduct of risk analysis in support of a site remediation plan.

Title: Developing Partnerships for Risk Management, WESTON website.

Site Address: http://www.rweston.com/allenv/BROWN/propres.htm

Site Description: Developing Partnerships for Risk Management is featured on Weston's "All Things Environmental" web site discusses how corporations can create financial predictability through partnering arrangements with regulatory agencies and other private entities. These partnering agreements can manage risk by communicating and planning for environmental and economic benefits. The ultimate reward will be asset improvement, community revitalization and employment opportunities as a result of the redevelopment of environmentally impaired sites.

2.7 Insurance

Insurance can be a useful device on a Brownfield project, in two particular ways:

1. Recovery of remedial costs from older insurance coverage of the site and owner, and

2. Use of insurance products to help spread the financial risk of the redevelopment project.

Cost Recovery. Environmental impairment insurance deteriorated rapidly in the 1980s from broad coverage of most environmental problems, to “sudden and accidental” releases only, to no coverage at all.

A legal review of all past policy terms, particularly those pre-dating 1980, can identify periods of site operation (even under former owners) when releases may have been covered, and part or all of the cost of cleanup may be included. While cost recovery often requires legal action, the results can be fruitful.

This evolution has spawned numerous insurance cost recovery law suits, where insured parties claim that some/all of the cost of cleanup was associated with releases that occurred under a policy in force with no environmental exclusion language.

Utilities have been active, for example, in pursuing claims associated with former manufactured gas plant (MGP) site contamination and off-site PCB contamination of electrical equipment salvage yards that occurred decades earlier. These funds are an obvious source of redevelopment resources, particularly given that some of the sites in question in fact qualify as Brownfields themselves (MGP sites are one of the more common Brownfield targets among gas and electric companies). Several utilities (PacifiCorp, for example), have formed subsidiary corporations or L.L.C.'s to manage the proceeds from these recovery activities and carry out the remediation in preparation for redevelopment.

Remedial Insurance Products. Managing the financial risk associated with cleaning up contaminated sites typically involves sharing the risk between the owner/responsible party, the engineers and contractors doing the work, and possibly the regulatory agencies involved. While the owner may bear the bulk of the risk, the contractors share through lump-sum bidding as well as their own professional and accident insurance.

For developers looking to further spread the risk of remediation cost growth, insurance products are available that will allow this. These products are specifically designed for Brownfields-type projects, and were driven largely by the need to provide prospective buyers/developers with some assurance of the accuracy of the site cleanup and preparation costs. While the cost of remedial assessment and implementation has become well understood and the performance of remedial technology is predictable, unknown site conditions and changing waste classifications have always been a source of project uncertainty.

Examples of such coverage are as follows:

- **Property Transfer Insurance**, which is designed to address unknown/latent conditions, third party suits, and any new environmental damage that may occur.
- **Cost Cap/Stop Loss Insurance**, which is used to provide protection against cost overruns on a cleanup. Can be provided by the contractor as part of their bid.
- **Owner-Controlled Insurance**, which protects contractors and owners to protect themselves from acts or omissions of others involved in the cleanup.

The availability of these products allows the developer to share the risk of the decision to go forward with a project if finances otherwise warrant it. However, their availability may be subject to concerns over the financial viability of the project, the projected success of the selected technology, and residual liability.

2.7.1 Recommended Case Studies

Reference: CSE-6

Project Title and Location:. WEPCO, Redevelopment of Lakeside Power Plant site in St. Francis, Wisconsin for new Harnischfeger Headquarters.

Participants: WEPCO, owner; Harnischfeger Industries, Inc., purchaser.

2.7.2 Recommended References

Title: Potential Insurance Products for Brownfields Cleanup and Redevelopment. Survey Results of Insurance Industry Products Available for Transference of Risk at Potentially Contaminated Property.

Author: U.S. Environmental Protection Agency, Office of Emergency and Remedial Response; Office of Solid Waste and Emergency Response.

Source: U.S. Environmental Protection Agency, Office of Emergency and Remedial Response; Office of Solid Waste and Emergency Response, EPA Publication Number; EPA 500-R-96-001; OSWER 9230.0-74; PB96-963244, 45pp. (17pp. text, 28 attachments, including survey contacts and complete survey responses), 1996. Also available at http://www.epa.gov

Abstract: This survey is part of the EPA's Brownfields Economic Redevelopment Initiative. There are three types of risks. Remediation-based Risks; Property Value Impairment Risks; and Personal Injury Risks. EPA conducted this survey to test this assumption by posing three questions: 1) Are insurance policies in existence or under development that could serve as risk transfer mechanisms for potential contaminated properties? 2) If policies exist or are under development, how many of the risks given above are covered and how available are the policies? 3) If no policies exist or are under development for specific risks, what factors are inhibiting their development and use? Some of the findings included: all respondents indicated that insurance is available and is being purchased; the amount of minimum and maximum coverage; and suggestions for EPA involvement.

Title: Using Environmental Insurance to Reduce Environmental Liability.

Author: Bailey, Kathy D., (Chadbourne & Parke, Washington, DC); Gulledge, William, (Environ & Commercial Insurance, Reston, VA).

Source: *Nat Resource Environ*, Spring 1997 (Qtr 2), 1(4): pp. 26(7).

Abstract: The concept of liability insurance and environmental liabilities as a subset of that insurance is discussed in this article. The role of environmental liability insurance and some innovative approaches to using insurance to further property transfer transactions and other international social policies is also reviewed.

2.7.3 Recommended Websites

Title: EPA - Potential Insurance Products for Brownfields Cleanup and Redevelopment.

Site Address: http://www.epa.gov/swerosps/bf/html-doc/insurnce.htm

Site Description: EPA'S environmental insurance survey - To better understand potential insurance products and their usefulness in Brownfields revitalization.

3

UTILITY BROWNFIELD REDEVELOPMENT

3.1 The Utility Brownfield Universe

Local electric and gas utilities are in a unique position to take advantage of the Brownfield redevelopment momentum gathering in most urban areas. As a major property owner, a utility will often have surplus urban property to sell. Such properties may contain former utility operations (power plants, service centers, substations, etc.) with some degree of residual chemical contamination. A prospective buyer may not be comfortable with the remedial options and residual risk that the utility understands, respects, and perhaps even takes for granted. The Brownfields concept creates a forum where information can be shared, community redevelopment support enlisted, and even outside funding solicited, all in the interest of educating the buyer and seller and thus encouraging the sale. Such projects can turn a public relations problem and company liability into an asset.

In addition, as a seller of energy-related products and services, a utility benefits whenever a new industrial customer enters its service territory and adds both energy demand and jobs. Candidate sites for new industrial development may include industrial sites of former utility customers, because it is often in the utility's best interest to facilitate that transaction if not to participate directly. Some Brownfield activists have even suggested in their literature that utilities contribute "part of their future gain" to the project in the form of money, technical support, or reduced energy prices. This is particularly applicable to those utilities located in old industrial areas.

In short, utility interest in Brownfield redevelopment can vary in degree depending on the extent to which it wants to be involved. A utility can perform the following:

- **Initiate.** Take a contaminated utility property and proceed through high profile redevelopment effort to convert it to industrial or community use (examples: Yankee Gas Project, **CSE-3**, and Seaholm Plant Redevelopment, **CSE-11**).

- **Collaborate.** Enlist the support of local government or other private interests, form a sort of partnership, and go forward with a group identity in the name of local/regional progress (example: WEPCO-Burlington Redevelopment Project, **CSE-5**).

- **Participate.** Become involved directly in the redevelopment of a third party property, lending the company's name to a successful venture (example: PacifiCorp-Oregon Mill Site Conversion Project, **CSE-18**).

- **Facilitate.** Participate in a potential customer's redevelopment effort through technical support, community / political involvement, and / or participation in regulatory or financial negotiations. Participate in a community group supporting a particular project, lending technical and financial support without a direct financial stake (examples: Consumer Power's creation of CRDC, **CSE-16;** WEPCO's involvement in non-profits, **CSE-14;** and Northern Indiana Public Service Company's (NIPSCO) cooperative brownfield redevelopment program, **CSE-19**).

- **Instigate.** Actively participate in the preparation and marketing of distressed local property through industrial real estate connections, internet web site promotions or other avenues not otherwise available to the community (example: Detroit Edison's website), including a searchable database of industrial properties. Other utilities offering similar site selection services include: Commonwealth Edison (http://www.bc1.com/comed/comed.htm), Connecticut Light and Power (**CSE-1**), Wisconsin Electric (**CSE-14**), American Electric Power (http://www.aep.com) and NIPSCO (**CSE-19**).

The initial screening of utility Brownfield opportunities should first take into account the degree of involvement required. Because any level of utility participation is usually perceived as positive exposure, the only tangible risk (if any) is typically financial. Financial participation needs to be viewed strictly as a development venture, but factoring in the potential increase in revenue from energy sales and the possible removal of a liability from the balance sheet. Remedial costs must be considered as part of the site preparation cost, and the extent of remediation determined by the proposed end use and associated human health / ecological risk. Projects that do not require a financial investment often still require a tangible resource commitment in the form of technical expertise donated by the utility, either to oversee the technical work or in some cases to execute it. This can be difficult for many utilities due to shrinking resources, even for internal projects. Some companies track and commit a certain percentage of their employees' time to community involvement, and Brownfield projects may be a good target for this extra effort.

3.2 Barriers to Utility Participation

A utility may have the opportunity to participate in any of the following types of Brownfield-like transactions:

- **Utility-owned contaminated property.** Includes MGP sites, ash disposal sites, PCB contaminated substations, tank farms, etc.

- **Utility-owned facilities with potential residual contamination.** Includes power plants, service facilities, rights-of-way, treatment plants, etc.

- **Abandoned disposal sites.**

- **Abandoned industrial properties.** Typically includes manufacturing facilities, often including associated structures and even equipment, or a former plant site with no historical record of operations.

Each of these opportunities for redevelopment has its own particular barriers to overcome in order to be successful.

For utility-owned sites, often the biggest hurdle to beginning the process is fear of the unknown cost of cleanup itself (and concern over whether the cost of cleanup can be recovered through insurance or in the rate base, particularly if the cleanup is not conducted under a regulatory order). Many of the utility Brownfields documented in the case studies referenced in this guide were utility-owned and utility-funded, with the development opportunity driving the speed of the cleanup rather than the cleanup decision. It is difficult to avoid or even reduce the cost of the cleanup; the benefit comes from either the potential financial gain (which requires a vision) or the intangible benefit of positive public image if the project is properly promoted.

Taken together, Brownfields as redevelopment opportunities are rarely clear-cut opportunities to turn a profit. Brownfields have in fact been described (albeit simplistically) as falling into one of the following three financial categories:

- The property is worth far more than the cost of the cleanup (termed ”low-hanging fruit”) (example: Yankee Gas Project,**CSE-3**).

- The cleanup will cost far more than the property is worth, which eventually brings it to the EPA’s or state’s attention as an orphan or “Superfund” site, or

- All the rest, with most of these sites having marginal if any net worth after the cleanup is completed due to location or several other real estate market factors (proximity to utilities, work force issues, etc.).

Sites falling in the “all the rest” category are the primary test of the Brownfields movement, and the place where utilities and local governments stand to have the most impact. In many of these cases, the level of contamination is relatively low. More often than not, these sites suffer from a lack of site information and are perceived to be a problem only due to generic assumptions about the nature of past activities. If owned by a viable entity, the investment in a site assessment may in fact be used to compel the owner to take an action he is not prepared or equipped to take, thereby eliminating the incentive to act. Absent an “imminent threat to human health or the environment,” the

site may also lack the necessary attention and funding from regulatory agencies to initiate cleanup or even an intrusive assessment to determine the appropriate remedy and its cost. Lack of funds is the most common explanation for inaction.

A recent study by the Environmental Financial Advisory Board (EFAB) cited four primary barriers to Brownfield redevelopment according to real estate developers and bankers:

- **Delineating States and EPA's Roles in Cleanup Decisions.** Particularly what the cleanup standards should be and whether the state has (or could have, through a so-called "State Memorandum of Understanding," or SMOA) the final authority in setting the standards. Developers complain that they fear EPA intervention after the project has commenced (see Section 2.4). Principals also support the use of risk-based cleanup standards that are specific to the proposed end use of the property, rather than "one number fits all" cleanup requirements.

- **Protecting Against Liability from Third-party Claims.** Some complain that there is insufficient protection from environmental claims even after EPA or the state has approved the cleanup. Since EPA lacks the authority to create such a shield, the issue is more of a perception problem, one which could be solved in part by the issuance of firmer "comfort letters" or other communications that clearly state EPA's concurrence on the closure and any associated conditions.

- **Utilizing Available Federal Financial Incentives**. Numerous grant programs, tax incentives, and funding through social programs are available through the federal government, but represent a confusing mix of targeted incentives that many find difficult to sift through. Many of them require local government participation, which often do not move forward with the same urgency as developers. Suggested improvements include better cataloging of available funds as well as more money for each project.

- **Obtaining Cleanup Priorities**. Citing the historically slow, deliberate pace of state and federal cleanup projects, many suggest that Brownfield projects be given higher priority in the review queue due to the high development cost/risk of delay.

Apart from these general barriers common to many Brownfield projects, utility Brownfield advocates often have to contend with their own internal/exterior barriers. These barriers can include the following:

- **Regulatory Limitations.** Limits on the amount of redevelopment risk the regulated portion of the company is allowed to take on behalf of the ratepayers. Limits on if/how fast the company can recover cleanup costs without the impetus of a cleanup order from EPA/state.

- **Cultural Limitations.** Degree of risk company (or even non-regulated subsidiaries) is willing to take in non-core business.

- **Structural/Resource Limitations.** Availability of internal technical and financial talent to prioritize outside projects at the same time internal resources continue to be depleted due to competition.

- **Corporate Image.** Committed to a continuing local commercial presence delivering an essential product, utilities are cautious about (a) raising unnecessary public awareness of low risk projects, and (b) voluntarily involving themselves in a negative-image issue like a third party cleanup without a significant public relations upside.

- **Financial Limitations.** Discretionary investment in redevelopment projects, once a public relations / marketing tool, now must compete with other company interests on the basis of return on investment.

3.3 Utility Participation Experience

Most utilities have participated in some aspect of Brownfield redevelopment. Table 4-1, which summarizes the range of utility Brownfield case studies investigated in preparing this guide, illustrates the range of participation options noted in Section 3.1.

A few utilities have formed public-private partnerships to promote the redevelopment of Brownfield properties, providing in-kind services and expertise to help communities develop and implement strategies for returning these properties to productive use. Specific case studies detailing utility involvement of this nature are in **CSE-14** and **CSE-19** in Chapter 4 of this manual.

A total of more than 19 case studies of utility Brownfield participation were identified and investigated as part of this guide. Summaries of the case studies and corresponding contacts are presented in Section 4.

3.4 Understanding and Finding the Best Utility Brownfields "Deal"

Utility Brownfield opportunities tend to fall into one of two categories:

1. Utility-owned property requiring a decision on disposition (retain as is, upgrade, sell, other).

2. Other local property (within the utility's service territory) in need of redevelopment funding and technical support.

Another related opportunity is the development of power projects, sometimes supporting industrial redevelopment, outside the utility's service territory. As utilities expand their generating capacity by buying up other utilities' power plants and facilities, opportunities are emerging to build plants on Brownfields or to support Brownfields projects. These situations are also more complex in terms of the utility/local government relationship, and are therefore expected to be less common in the near future until the market matures.

A few significant observations about the utility Brownfield "deals" coming from the case studies and other readings include the following:

- Most of the utility experience to date has involved utility property, most notably MGP sites, PCB-contaminated substations, and former power plant/ash disposal sites. Each of these represents an environmental challenge that is often better understood by the utility and its consultant than by a buyer. In many cases, these properties are kept under utility ownership and control due to concerns with legal recourse from buyers if the property is transferred. All of these considerations make utility sites logical candidates for continued direct utility participation.

- The term "true partnership" is used frequently by proponents to describe the utility/government Brownfield relationship, but is most commonly applied when local government either (1) invests its resources in promoting the project, and/or (2) provides significant financial incentives to the project.

- A majority of utility cases really started with the utility spending or committing the money to clean up the property, often before anyone would consider redevelopment. The pace of the cleanup (and the cleanup decision, for that matter) are seemingly driven by the real or perceived potential for financial gain, although many of the projects had no development partner in the early stages.

- Utilities as a Brownfields class are best characterized as having environmental contaminants and contamination problems that are relatively immobile but which often occupy large sites. This observation is in contrast with some other industries, for example, which (for on-site issues) tend to have more groundwater problems and more localized soil contamination. Common utility Brownfield opportunities cited in the case studies involve PCBs, MGP/coal tar, and coal ash sites; these are possibly the most complex sites to address as Brownfields, since the temptation is to try to sell an in-situ containment or long-term bioremediation solution rather than pursue a more costly excavation procedure.

- Early utility Brownfields experience typically involved only complete contaminated soil removal and little, if any, flexibility on cleanup standards. More of the current projects, however, are seeing agencies consider standards negotiated to match the specific site end use (i.e., less stringent standards for industrial use).

- Utility Brownfields projects are most often financed by the utility through cleanup, and only then will partners typically get involved. Investor-owned utilities, as private corporations, are generally not directly eligible for many of the project funding options available through EPA and other federal agencies. In either event, partnering with municipal government economic development interests has provided an avenue for soliciting funds or creating financial incentives through these same channels. The case studies did reveal a few examples of the use of Tax Increment Financing, enterprise zones, and transportation grants, for example, to help fund projects or infrastructure improvements, but some of these examples still had the utility fronting the majority of the investigation costs for their own properties.

- The literature cites a growing number of utility Brownfields examples where the local utility supported redevelopment of a third party site (the "cooperate" option cited earlier), but the number of such activities is still small compared to the focus on utility-owned sites.

The "team" formed to address utility Brownfield projects typically consists of the utility itself (more often through a non-regulated development subsidiary), outside environmental and real estate support, and development / planning specialists. The team then grows to include local government as a stakeholder, and involves the citizens of the community once the project has a vision. Only utilities with significant experience in dealing with local government officials and community organizations tend to aggressively form a more complete team from the outset.

4

UTILITY BROWNFIELD CASE STUDIES

This section contains the results of a brief survey of utility Brownfield involvement. As demonstrated in this section, the level of utility participation in Brownfields activities is wide and varied. This survey is by no means comprehensive. Rather, these case studies should provide a reference point for utilities undertaking a Brownfield project. Table 4-1 on the following page provides a reference summary of the utility Brownfield case studies in this section.

Table 4-1. Utility Industry Brownfield-Related Case Studies

	Utility	*Site Location*	*Description*	*End Use*	*Funding Source*	*Contact*
CSE-1	Connecticut Light & Power/ Northeast Utilities	Stamford, CT	Redevelopment of 26-acre former MGP site which will be redeveloped for commercial use	CL&P is currently working with developers	CL&P paid for studies; City of Stamford rcvd EPA grants	Ron Klattenberg, 860/665-3627
CSE-2	PECO Energy Co.	Chester, PA	Redevelopment of 88 acres of utility-owned waterfront property	Mixed use, industrial and recreational	PECO	Robin Hoy, Environmental Affairs, 215/841-6610
CSE-3	Yankee Gas/Yankee Energy of Meriden, CT	Site on Connecticut's 'gold coast' in Norwalk, CT	Redevelopment of old MGP site in high property value area for new service center	New utility service center	Yankee Gas	Ellen Quinn or Ruthanne Calabrese, 203/639-4000
CSE-4	Wisconsin Energy Co (WEPCO)	St. Francis, WI	Redevelopment of Former Ash Landfill site	Home to EZ Paintr brush manufacturing facility	WEPCO; EZ Paintr	Jim Lingle, 414/221-2156
CSE-5	Wisconsin Energy Co (WEPCO)	Burlington, WI	Redevelopment of Former MGP site	Part of city effort to develop a riverwalk area	WEPCO	Jim Lingle, 414/221-2156
CSE-6	Wisconsin Energy Co (WEPCO)	St. Francis, WI	Redevelopment of Former Lakeside Power plant site	Office headquarters to Harnischfeger Corp.	WEPCO	Jim Lingle, 414/221-2156
CSE-7	WISPARK, a Wisconsin Energy Subsidiary	Pleasant Prairie, WI	Transform 1,200 'greenfield' acres surrounding a coal-fired electric generating plant into Lakeview Industrial Park	Industrial park	WISPARK	WISPARK corporation, 414/857-4661
CSE-8	Wisconsin Energy Co (WEPCO)	Milwaukee, WI	Old Commerce St. Plant redevelopment	Currently clean and undeveloped	WEPCO	Brian Borofka, 414/221-4872
CSE-9	Pennsylvania Electric Co/GPU Energy	Erie, PA	Adaptive reuse of Front Street Station, a retired fossil-fired generating plant on 22 acre waterfront property	Mixed use museum, library, hotel, office, retail, marina and residential	GPU, transportation grants, USACE, State of Pennsylvania	Eric Roland, 610/378-8867; Larry Valentine, 814/868-8790
CSE-10	Pennsylvania Power & Light	Hershey, PA	Redevelopment of former Hershey service center	Development will consist of a restaurant and an 80-room hotel	PP&L	Craig Shamory, 610/774-5653; James Villaume, 610/774-5094
CSE-11	Seaholm power plant redevelopment	Austin, TX	Citizen-spurred Seaholm power plant redevelopment for public reuse; located on a popular lake recreational park	To be determined by citizen's advisory board	City of Austin	Rick Scadden, WESTON, 512/329-8399
CSE-12	Lower Colorado River Authority Comal plant redevelopment	New Braunfels, TX	Dismantling and restoration of Comal power plant for public reuse; plant is a well-known local landmark next to park and near central business district	To be determined by citizen's advisory board	Lower Colorado River Auth (LCRA)	Ken Launius, 512/356-6016; John Gosdin, 512/473-3531
CSE-13	United Illuminating	Bridgeport, CT	Demolished old Steel Point power plant, remediated site, and is currently in negotiations to sell the site to developers	Will be a part of much larger city-sponsored commerical development of entire peninsula	Self-funded cleanup; redevelopment will be funded by developers	Kathleen Shanley, Mgr., Env. Issues & Audit, 203/499-2562
CSE-14	Wisconsin Energy Co (WEPCO)	Milwaukee, WI	Brownfield forum involvement; provides financial support and technical assistance to community organizations involved with brownfields		Self-funded participation	Brian Borofka, 414/221-4872
CSE-15	City of Kemmerer, WY abandoned power plant	Kemmerer, WY	EPA selected the site for a Brownfields Pilot in spring 1998.The brownfield is a 16-acre parcel and consists of 12 vacant buildings, including a potentially contaminated, idled power plant on the Hams Fork River.	Will be determined upon assessment completion	USEPA Pilot Grant	City of Kemmerer, John Roberts 307/828-2360
CSE-16	Consumers Power	Michigan	Made financial contribution to form CRDC, non-profit dedicated to facilitating property redevelopment	Should result in the attraction of large, new Consumers customers to area	Consumers Power; MI Jobs commission; various other state of Michigan groups	Bruce Rasher, 517/788-1064
CSE-17	Public Service Electricity & Gas (PSE&G)	New Jersey	a) develop old MGP site; b) old electric utility division closed and school board moved in; c) cleanup in progress	a) Homes b) School board HQ c) In progress	PSE&G	Cheryl Telford, 973/430-8277
CSE-18	PacifiCorp - Oregon Mill Site Conversion Project	7 counties in Oregon	PacifiCorp was lead private sector partner for this redevelopment project	Still a question for majority of sites enrolled; community prefers industrial/ commercial reuse	EDA; PacifiCorp; Law firm; Oregon Econ Dev. Dept	Lynn Youngbar, RDI, 541/937-8344; Dana Peck, RDI, 503/236-3516
CSE-19	Northern Indiana Public Service Company (NIPSCO)	Gary, Hammond, and East Chicago, Indiana	NIPSCO spearhead the creation of cooperative brownfield redevelopment program	Saw one site through state Voluntary Cleanup Program	NIPSCO	Lou Meschede, 219/647-5264

Reference: CSE-1

Project Title and Location: Redevelopment of Connecticut Light & Power (CL&P) former MGP site in Stamford, Connecticut as part of a comprehensive waterfront plan.

Participants: Northeast Utilities affiliate CL&P, owner; City of Stamford, partner; multiple developers and consultants, partners; State of Connecticut, lead environmental agency.

Level of Utility Involvement Owned by CL&P.

Funding: CL&P funded all studies on this property and has paid for all consultant work since in 1982. USEPA granted the City of Stamford national brownfield Showcase Community designation in June 1998. This designation allows the city to apply for up to $1 million in grants, for which they will be given top priority. The city intends to use the money for infrastructure redevelopment inprovements such as sewers, street access, etc., in the vicinity of this Brownfield project.

Site History: This site is a 40-acre parcel of land, 26 acres of which was occupied by a MGP in operation from the 1850s to the 1950s. The MGP produced coal gas from 1902 to the 1950s, thus impacting the site with coal tar by-products. The site was also used to store jet fuel, diesel fuel, and used transformers. These uses resulted in soil and groundwater contamination with contaminants such as PCBs. The entire site has been under investigation since the mid-1980s.

The redevelopment of the contaminated portion of the site was initiated when a developer who had an interest in building an indoor 13,500-seat multi-use sports arena approached the City of Stamford. In turn, the city of Stamford subsequently approached CL&P, and once CL&P realized the possibility of converting an environmental liability into a financial asset, the project began. CL&P has taken steps to develop a detailed remedial action plan to allow for the redevelopment process to get underway.

Scenario: CL&P has taken an active role in the redevelopment of this site by forming a true public/private partnership. The utility has maintained ownership of this property while redevelopment is ongoing, and is working in conjunction with the City of Stamford, multiple developers and consultants to ensure a mutually beneficial reuse of this land.

Initially, the city of Stamford was uninvolved in this project. Gradually, with increasing Brownfields publicity and assisted by a visit from Vice President Gore in 1996, the City of Stamford became more involved in Brownfield issues. In 1997, CL&P worked with

Stamford to apply for USEPA Brownfields Showcase Community designation. In spring 1998, with CL&P's assistance, the entire south end of Stamford won the USEPA's designation as a Brownfields Showcase Community (see http://www.epa.gov/swerosps/bf/html-doc/stamf_sc.htm). This designation allows the city to apply for up to $1 million in grants, for which they will be given top priority. Stamford intends to use the money for infrastructure redevelopment like sewers, street access, etc. in the vicinity of this Brownfield project.

As part of the Brownfields Showcase Community application, the City of Stamford prepared a master redevelopment plan encompassing the CL&P property. The focus of Stamford's Brownfields project is redevelopment of three large Brownfields in two low income neighborhoods by the city's harbor. These three Brownfield sites--including the CL&P site—are in a state-designated Enterprise Zone. Enterprise Zones offer the following benefits.

- A five year, 80% abatement of local property taxes on qualifying real and personal property.
- A ten year, 25% credit on that portion of the state's corporation business tax that is directly attributable to a business expansion or renovation project as determined by the Connecticut Department of Revenue Services.
- A $750 grant for each new, full-time position that is created as a direct result of a business expansion or renovation project over a twenty-four month period.

Redevelopment of the three Stamford sites, which is expected to leverage $370 million in private investment and create 600 construction and 1,300 permanent jobs, is part of a comprehensive strategy to reclaim the harbor as a major economic and recreational resource.

Environmental Issues

During a 1997 comprehensive site investigation, PCB-impacted soil was detected at two locations on the site. Analysis revealed the PCB levels in the soil to range from less than 1 PPM to 265 PPM (CT action level is 10 PPM). The PCB concentrations were compared to Connecticut standards for an industrial area, and as a result, CL&P completed a cleanup of the PCB-impacted soil. CL&P worked with an environmental consulting firm to develop the remedial plan for the sports arena, and is currently developing a complete remedial action plan for the remainder of the 26 acres. Cleanup activities have included the removal of 3,000 tons of soil containing PCBs, coal tar, and other contaminants, which were shipped to a New York state hazardous waste dump site. As of January 1998, CL&P's environmental consultant had removed all PCBs at the site.

In addition, CL&P also voluntarily decided to install six groundwater recovery wells to remove the DNAPL, LNAPL and coal tar product. CL&P officials hope that this move will successfully sell the State Department of Environmental Protection (CT DEP) on the overall master plan for redevelopment. CL&P has been successful in these pursuits thus far.

CL&P contracted consultants Fuss & O'Neil to oversee all environmental studies and remedial planning, and assist in development of a comprehensive master plan for the 40-acre property. The 14-acre, non-MGP portion of the site is under contract to a developer for combined residential condos and retail. Specific plans for the impacted portion of the CL&P property include a portion of the Stamford riverwalk, a multi-use sports arena, a terminal for a high-speed Stamford-to-New York City ferry, and a new fire station. CL&P anticipates that their portion of the project will be completed by the year 2001.

For More Information, Contact: Ron Klattenberg, Northeast Utilities Service Company, Environmental Service Office, 860/665-3627; Regional Brownfields Team, USEPA - Region 1, 617/573-9681.

Sources:

1. "CL&P to Clean Up Former Plant Site Contaminated with Coal Tar, PCBs." *Utility Environment,* January 2, 1998, 39(2): 8, McGraw-Hill Companies, Inc.

2. Interview, Ron Klattenberg, Northeast Utilities Service Company, June 1998.

3. Stamford, CT Brownfields Showcase Community, USEPA website, http://www.epa.gov/swerosps/bf/html-doc/stamf_sc.htm.

Reference: CSE-2

Project Title and Location: Redevelopment of PECO Energy Company Site in Chester, Pennsylvania.

Participants: PECO Energy Company, owner; City of Chester; State of Pennsylvania; USEPA; community involvement.

Level of Utility Involvement: Ownership, Land Use Planning

Funding: PECO Energy is funding environmental cleanup.

Site History: This 88-acre waterfront property stretches south of the Commodore Barry Bridge in Chester, PA, just outside of Philadelphia on the Delaware River. PECO Energy purchased the land piecemeal between 1915 and 1976. The land's history includes a

generating station, a coke plant, a steel mill, a chemical factory, and an oil distributor. PECO Energy currently uses portions of the land for utility purposes, including an electric transmission corridor, electric substations, combustion turbine generating units and storage of equipment and supplies. Many of the buildings on the unused land have been razed during the past three years. The majority of the property lies mainly dormant. Other portions of the land are leased to other parties.

Scenario: PECO Energy has taken an active role in initiating the redevelopment of the 88-acre waterfront site by hiring a firm to investigate, analyze, and recommend a future use for the property. PECO Energy is developing an economic development approach through a synthesis of market research, environmental considerations, physical factors, and community input and financial analysis that ultimately will lead to a conceptual future land use plan. PECO Energy is working closely with the City of Chester, State of Pennsylvania, Delaware County officials, and the community leaders. All parties hope this waterfront redevelopment project will attract commercial, residential and recreational development and the tax revenue and employment necessary to revitalize the area. Members of the company meet with city and county officials every four to six weeks to share information.

PECO Energy officials say this Brownfield project was facilitated by the 1995 passage of the Pennsylvania's Land Recycling and Environmental Remediation Standards Act, a law that increased landowners' flexibility in cleaning up old industrial sites, while limiting their liability (and that of future owners) for future environmental cleanup. Commonly referred to as Act 2, it requires a notice of intent to remediate (NIR) in which the future land use is described. Unlike many other state Brownfield laws, it also allows current owner, not just prospective purchasers, to participate in a voluntary clean-up program (VCP).

PECO Energy has also been involved in other Act 2 projects. The utility succeeded in remediating a tiny MGP site in West Chester, PA under the state VCP. The site is now an urban pocket park. In addition, several other MGP’s are being investigated and remediated under the state program.

Before Act 2 was enacted, each project could potentially be negotiated separately with the respective agencies about how clean is clean. The possibility that a company would be told to go back to clean it further years down the road was ever-present. Such inconsistency made redevelopment difficult, if not impossible. Act 2 allows owners such as PECO Energy to take a more holistic approach to toxic remediation by matching clean-up standards with the intended future use of the property. Thereby, a site that is intended for residential use must meet a higher standard of environmental cleanliness than a site intended for manufacturing or industrial purposes.

The flexibility under Act 2 allows PECO Energy to begin the end-use driven environmental study and cleanup. These activities coincide with economic development

planning and marketing efforts. Since PECO Energy is paying for the cleanup portion of this project, financing the environmental project was also relatively simple. Developers and redevelopment financing still need to be obtained.

As a separate planning effort, the City of Chester has established a "Waterfront Overlay District," a comprehensive plan that, among other things, will rezone the land in order to accommodate future development goals. The county planning commission has reviewed the plan. PECO Energy has completed a historical inventory of how the sites have been utilized during this century. This analysis helps engineers determine where contamination is likely to be as well as the likely source and type of potential contamination. Soil testing and an environmental analysis will help the company decide how much cleanup is necessary throughout the site.

All of the waterfront property lies within Chester's enterprise zone, which may help attract developers to the site. The State Department of Commerce and Economic Development will give priority status to the area for competitive grants and tax credits that would stimulate business investment, neighborhood improvements, and job training.

For More Information, Contact: Robin Hoy, Environmental Project Manager, PECO Energy, 215/841-6610; William C. Payne, Chester City Planner.

Sources:

1. Hollreiser, Eric. "PECO plans 88-acre cleanup. (PECO Energy Co.) (Environment: Brownfields)." *Philadelphia Business Journal*, 16(9): pp. 17(2), April 18, 1997 Copyright 1997, City Business-USA Inc.

2. Kidney, Steve. "Pa. Utility Starts Large-Scale Cleanup." *The Brownfields Report*, March 27, 1997. Copyright 1997 King Communications, Inc.

3. Interview, Robin Hoy, PECO Energy Company Energy , July 1998.

4. Pennsylvania Land Recycling Program – 1996 Annual Progress Report, http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/LANDRECY/facts/annual/FirstYear.htm.

Reference: CSE-3

Project Title and Location: Redevelopment of Yankee Gas MGP site for new Service Center.

Participants: Yankee Energy / Yankee Gas, owner.

Level of Utility Involvement Ownership

Funding: Yankee Gas

Site History: Like many gas companies, Yankee Gas has several old manufactured gas plant (MGPs) sites in its real estate portfolio, many which it inherited when it divested itself from Northeast Utilities. These plants produced gas for decades in the 19th century and up until the World War II era. Yankee Gas has 14 such sites throughout Connecticut, and is aggressively pursuing a voluntary cleanup and development program for these sites around the states. All told, the utility has set aside $35 million to clean these Brownfield projects.

Yankee Gas has cleanup well under way at three targeted Brownfields in its service territory, and has spent between $1 and $2 million thus far to clean up each site. The company is interested in marketing one site for redevelopment; offering long-term leases on one site once cleaned; and using another site for a service center.

Scenario: This former MGP site in Norwalk, Conn. was selected for the service center and developed for various reasons. When Yankee found itself in need of a new service center, it realized that the location of the facility was dictated by the regulatory requirement for the utility to be able to respond to a gas leak within thirty minutes. Traffic patterns and service territory boundaries limited site selection to a high-cost area. High property values, limited availability of property, affluence of the surrounding communities, and proximity to New York City helped this area earn its reputation as the Connecticut Gold Coast.

Given all of the above-listed restrictions, the Norwalk MGP site provided an optimal location for the new service center and eliminated the cost of purchasing property. Yankee performed a financial analysis comparing costs for buying an existing building, buying / developing land, or leasing / retrofitting an existing building. The redevelopment of this MGP site proved to be the least expensive option.

Also, this project was undertaken in 1994, before the passage of Connecticut's risk-based cleanup standards. In spite of this, Yankee's voluntary efforts toward cleanup were well received by state and federal regulators, and the resulting positive regulatory climate presented an ideal opportunity for redevelopment. Federal regulatory agencies were willing to delegate their oversight authority to the state agency because progress was

being made. The state, in turn, was interested in allowing the utility to propose a remediation plan which was consistent with the future site use and not state clean-up requirements. State requirements at the time were based on residential development. In addition, the site is located on the waterfront which is in an area of development interest for the local community. Development of the property by the utility eliminated the risk of condemnation or pressure by the town for public use access.

Yankee decided to conduct the site remediation voluntarily themselves for three reasons:

1. **Time constraint**. Review and approval of the cleanup plans by the state would require a significant amount of time.

2. **Cost savings**. Under the voluntary cleanup plan, the company sought to remove gross source contamination. Oversight by the state would require that the cleanup be based on the state's definition of clean, thus adding to the scope of work and therefore costs.

3. **Streamlined management**. A voluntary cleanup would allow for a streamlined management, saving both time and money.

Upon commencing construction activities, unexpected contamination was found, resulting in additional costs. An SVE system had to be installed underneath the building slab to remediate some contamination. However, even with these additional costs, remediating the site and building on it was still the best option available.

Yankee has completed this major MGP site remediation effort. Total costs for this cleanup were approximately $4 million. However, if this project had been a state-mandated cleanup, Yankee estimates that costs would have risen to $7 million, and under Superfund, costs would have exceeded $30 million. The regulatory burdens of each scenario would have lead to increased economic costs.

The site is now an active work center with space available for commercial leasing.

In general, Yankee has taken the position that cleaning up Brownfield sites is in the company's best interest, because many of the contaminated properties are located in prime areas where new development could generate added income for industry and the state. In Brownfields activities, **company officials have found that relationship-building with state and local officials is key to the success of each project**.

On 30 April 1998, Connecticut Business and Industry Association (CBIA) subsequently recognized Yankee Gas with an Environmental Success Award of Merit Yankee for its voluntary remediation program for its MGP sites.

For More Information, Contact: Ruthanne Calabrese or Ellen Quinn, Yankee Gas Services, 203/639-4000.

Sources:

1. "Utilities target contaminated areas for clean-up." *Gas Daily*, 13(183), September 18, 1996, Copyright 1996, Pasha Publications, Inc.

2. "Gas Company Exec. Clean Up MGP Sites Before Regulators Step In, " *The Brownfields Report,* October 24, 1996. Copyright 1996, King Communications Inc.

3. Quinn, Ellen J., Ruthanne F. Calabrese, Yankee Gas Services Company, and Wargo, Linda Evenson, Atlantic Environmental Services, Inc., 1995. "The Status of Remediation and Redevelopment of Contaminated Property in the U.S. MGP Owner's Perspective." *Land Contamination & Reclamation*, 3(4): pp. 13-15 to 13-17.

4. Quinn, Ellen J. "Energizing Utility Brownfields," *Corporate Environmental Strategy*, pp. 77-81.

5. Yankee Energy Website, http://www.yankeegas.com

6. Interview and unpublished comments, Ruthanne Calabrese, Yankee Energy, July 1998.

Reference: CSE-4

Project Title and Location: WEPCO, Milwaukee, WI Redevelopment of Former Ash Landfill site in St. Francis, Wisconsin.

Participants: WEPCO; EZ Paintr

Level of Utility Involvement: Ownership

Funding: EZ Paintr paid for building and environmental control requirements; WEPCO paid for disposal of excess ash.

Site History: This site is a 30-acre former coal ash landfill located in the City of St. Francis, Wisconsin. Power plant-generated ash byproducts were placed in the landfill from the 1940s to the late 1960s, WEPCO was nevertheless restricted from developing the land by Wisconsin's strict solid waste rules. WEPCO was able to use a portion of the landfill as a parking lot.

Scenario: In 1996, WEPCO was approached by EZ Paintr brush company who expressed an interest in building on the site. The brush maker first leased a portion of the site in 1992 from WEPCO, but its use was restricted to a parking lot that WEPCO had built on the landfill for them in 1995. The concrete parking lot contained a significant amount of flyash. In looking to expand, EZ Paintr had several location options for their new manufacturing facility, several of them located outside the State of Wisconsin. WEPCO realized that it was in their best interest to keep the brush company in state and within their service territory, and so was motivated to work with the state DNR in order to make this deal happen.

WEPCO successfully worked with the DNR to investigate the site and incorporate environmental considerations into the building design. Allowing use of an ash landfill for commercial activity was a precedent-setting move by the state DNR. WEPCO officials said they were pleased with the "rapid and thoughtful review of the DNR staff," and were encouraged by their demonstrated flexibility. In 1996, WEPCO managed to obtain approval from the state DNR to develop the land for building EZ Paintr's brush manufacturing plant. The plant was successfully built in 1997. WEPCO maintains ownership of the property, and EZ Paintr has a long term lease on the land.

As a result of this project, the state DNR developed a set of criteria for inactive landfills which are applied to redevelopment procedures, thus leading the way to further Brownfield-type legislation.

For More Information, Contact: Jim Lingle, WEPCO, Environmental Affairs, 414/221-2156.

Sources:

1. "Ash Landfill Re-Use Shows Promise for Coal Users," *The Brownfields Report*, September 12, 1996; Pg 7.

2. Interview, Jim Lingle, WEPCO, July 1998.

Reference: CSE-5

Project Title and Location: WEPCO, Burlington, Wisconsin Redevelopment of MGP site.

Participants: WEPCO; Waste Management of Wisconsin.

Level of Utility Involvement : Ownership.

Funding: WEPCO paid for cleanup.

Site History: WEPCO has taken the initiative to remediate all of its MGP facilities. **In 1995, WEPCO initiated a $12-million program to clean up 11 manufactured gas plant sites under its Brownfields initiatives program.** In this way, the company recognized that such "lazy assets" could be opportunities to obtain new customers in addition to removing a potential liability.

The Burlington MGP is part of this initiative. Like many MGP facilities, this 3.5-acre MGP facility in Burlington, Wisconsin, 15 miles from the Illinois border, operated from the early 1900s to roughly 1948, and has been used for a propane air plant and gas regulator station. The site was contaminated with coal tar, PAHs, and other contaminants.

Scenario: In 1995, WEPCO utilized the site for a field scale demonstration program to test the feasibility of using a patented bioremediation process developed by Waste Management Inc. If this alternative technology had worked, it could have potentially saved WEPCO money in disposal costs in the long run.

Using piping to introduce air and moisture into soil contaminated with coal tar, the experiment involved exploring whether naturally occurring microorganisms could break down the contaminants. Waste Management hauled 12,000 tons of soil from the Burlington site to its Franklin, Wis. landfill for the test. If the experiment had proven successful, the soil would have been used for construction purposes, such as road building or daily cover for the Franklin Landfill.

Although the process was less expensive than soil burning, the results were not as positive as WEPCO had hoped. While Waste Management was able to reach 80% or better reduction of PAHs, the soil was not clean enough to meet the Wisconsin goals at the time. The soil was subsequently landfilled. Remediation at this site is only partially completed, and WEPCO is still investigating other remediation alternatives for the remaining contamination, such as solidification or biological treatment.

While WEPCO began the remediation of this site on their own as part of a corporate initiative, the City of Burlington started to show interest in their project as the remediation got underway. WEPCO officials met with city officials, and the two parties are working to mesh WEPCO's remediation schedule with the city's redevelopment plan and schedule.

Burlington is planning to convert 17 different properties – including the WEPCO property - into a riverwalk and residential type of redevelopment. Burlington is

currently in the process of relocating tenants on the properties surrounding the WEPCO property.

For More Information, Contact: Jim Lingle, WEPCO, Environmental Affairs, 414/221-2156.

Sources:

1. "WEPCO to Spend $12 million to Clean Up 11 MGP Sites in Brownfields Program." *Utility Environment*, November 24, 1995: Pg 7.

2. Alexander, Catherine Barnett, "MGP Site Planning. New Community Development Projects," American Gas Association, November 1997.

3. Interview, Jim Lingle, WEPCO, July 1998.

Reference: CSE-6

Project Title and Location: WEPCO, Milwaukee, Wisconsin, Redevelopment of Lakeside Power Plant site in village of St. Francis, Wisconsin

Participants: WEPCO, owner; Harnischfeger Industries, Inc., buyer.

Level of Utility Involvement Level of Utility Involvement: Ownership

Funding: WEPCO and Harnischfeger paid for cleanup.

Site History: WEPCO's Lakeside site is a former power plant property on Lake Michigan, south of downtown Milwaukee in the village of St. Francis. This facility was the world's first pulverized coal power plant. As a result of its many years of operation, the property had soil and groundwater contamination from fuel oil storage areas, as well as some coal ash contamination.

Scenario: Harnischfeger Industries, a major manufacturer of heavy machinery for the pulp and paper and mining industries, approached WEPCO with an interest in this property as a location for their corporate headquarters, thereby spurring interest in redevelopment. WEPCO and Harnischfeger jointly worked with Wisconsin DNR to obtain approval for development of the site.

Ash was excavated, reburied, and capped on-site. Bluff stabilization was done along the lake. WEPCO and Harnischfeger shared in the cost of the cleanup.

Harnischfeger proceeded to build its new headquarters on the property, and the company moved into its new office in 1996. The site now serves as the new corporate headquarters for Harnischfeger Industries.

For More Information, Contact: Jim Lingle, WEPCO Environmental Affairs, 414/221-2156.

Sources:

1. Interview, Jim Lingle and Brian Borofka, WEPCO, June, 1998.

Reference: CSE-7

Project Title and Location: Wisconsin Energy Corporation (WEC), Pleasant Prairie, Wisconsin, 1,200 'greenfield' acres surrounding a coal-fired electric generating plant into LakeView Industrial Park, now home to over 45 other businesses.

Participants: Wisconsin Energy Corporation (WEC), owner; WISPARK, a non-regulated Wisconsin Electric subsidiary, land developer; North American Realty, consultant; HNTB, Architect/Engineer/Planner.

Level of Utility Involvement: Ownership

Funding: WISPARK

Site History: While this is not a Brownfields project, **this case study does provide a good example of utility involvement in a large public/private development deal contending with many issues and multiple partners**.

This facility is located 6.5 miles inland from Lake Michigan near Kenosha, Wisconsin. Initially, WEPCO had approximately 900 acres of land which it had acquired for its Pleasant Prairie power plant, which began operating in the 1980s. However, in 1985 the Wisconsin legislature allowed the formation of utility holding companies, thus WEC could diversify into unregulated businesses. WEC then seized the opportunity and expanded the land it had acquired for the power plant to develop an industrial park by 2,100 acres.

The 1,460-acre property surrounding the power plant is minutes from the Wisconsin/Illinois border, and is generally considered part of the Chicago metropolitan area. With its easy access to two major metropolitan areas (both Chicago and

Milwaukee), development standards and covenants that maximize green space, and service on site by Canadian Pacific and Union Pacific Railroads, this property represented an opportunity for WEC to operate as a catalyst for redevelopment as well as gain some large industrial customers.

Scenario: Public commitment was evident early on. The Wisconsin state legislature adopted legislation to incorporate the town of Pleasant Prairie as a village, which by Wisconsin law, was necessary before establishing a $25 million tax increment financing (TIF) district to pay for the extension of utilities to LakeView as well as for the distribution of utilities throughout the park. State of Wisconsin transportation grants (TEA) grants were used to build the major road connecting Interstate 94 to the park. State and local governments provided some incentives to companies moving to the park, and community support was clearly present from the beginning. Wisconsin Governor Tommy Thompson offered incentives to businesses for moving into the park, such as grants for job training and research and development. The Kenosha Area Development Corporation, a public-private venture now known as the Kenosha Area Business Alliance, was formed to help attract companies to the area.

Under the provisions of the $25 million TIF, proceeds from the sale of revenue bond paid for the extension of utilities to, and distribution of utilities within, the site. The debt incurred in the infrastructure extensions will be paid off with tax revenue from the new development by 1999, some 18 years ahead of schedule. Like most developers, WISPARK borrowed and provided equity for land acquisition and infrastructure redevelopment.

WISPARK and the village of Pleasant Prairie constructed a 100-acre lake and a 200-acre public park on land located within LakeView. The State of Wisconsin, Kenosha County and WISPARK paid for improvements to the freeway interchange and new sections of multi-lane highways.

WISPARK Corporation adopted development standards and protective covenants that at the time were more stringent that those in other Wisconsin manufacturing locations. They include maintaining 35 percent green space, large setbacks, underground utilities, and institutional-grade materials for building exteriors.

Because the park is adjacent to a floodplain, WISPARK had to assume that conservation would be part of any project it undertook. It created a stormwater drainage system by creating a series of ponds, eliminating the need for on-site detention as part of individual projects.

This park now provides 54 industrial and office facilities and more than 7,000 full-time jobs to Kenosha County. Corporate residents include Rust-Oleum, Supervalu, Snap-On

Tools, Cherry Electric, and Manu-Tronics, Inc. This is now one of the largest industrial/business parks in the Midwest.

For More Information, Contact: WISPARK Corporation, 414/857-4661.

Sources:

1. Interview, Brian Borofka, WEPCO, June 1998.

2. LakeView Corporate Park, The Urban Land Institute, Project Reference File, 27(5), January-March 1997.

3. LakeView Corporate Park, various marketing materials.

Reference: CSE-8

Project Title and Location: WEPCO, Milwaukee, Wisconsin, Redevelopment of Old Commerce Street Plant.

Participants: WEPCO

Level of Utility Involvement: Ownership

Funding: WEPCO paid for cleanup.

Site History: The Commerce Street power plant was a coal-fired facility located at the confluence of the Milwaukee and Menomonee Rivers on the northern edge of downtown Milwaukee. In operation from 1903 to roughly 1988, the Commerce Street plant is also located only a few blocks from the Bradley Center, a major sports and entertainment facility in downtown Milwaukee. The plant is within walking distance of downtown, and adjacent to the city's expanding riverwalk area. This riverside pedestrian walkway along both sides of the Milwaukee River is increasingly a center for entertainment, dining, and leisure activities for downtown workers and visitors.

WEPCO recognized that the size of the plant site and buildings, architectural design, and location adjacent to the river and downtown made this property an underutilized asset, and thus was willing to pursue redevelopment of the site.

Scenario: Although the facility was challenged with environmental problems typical of old power plants such as asbestos, lead-based paint, and some soil contamination related

to a fuel oil tank, WEPCO had money set aside for this cleanup project with the end goal of site redevelopment and/or sale. Realizing that the environmental issues were a risk virtually no buyer would accept and that the contamination issues would have to be addressed prior to any redevelopment, WEPCO decided to move forward with the asbestos abatement, salvage and remediation process in 1995. Salvage work removed plant piping, boilers, and other potential hazards in an effort to transform the site into a marketable property. Asbestos and lead removal was done concurrent with the salvage work. The buildings were level intact, however, a brick and mortar chimney was removed.

In a unique approach, the primary contract was assigned to the asbestos abatement contractor, and the salvage activity was a subcontracted to the asbestos contractor. This not only avoided the many scope issues of having two separate contracts and contractors, but also identified from mobilization the priority activity critical for redevelopment.

Completed in 1996, WEPCO was the sole contributor to the $5.3-million abatement, salvage and cleanup. In celebration of the cleanup, WEPCO held a tour of the facility with representatives from the USEPA, Wisconsin Department of Natural Resources, and civic leaders.

Although currently undeveloped, the utility is working with a local development company in exploring potential lease and redevelopment opportunities.

For More Information, Contact: Brian Borofka, WEPCO Environmental Manager, 414/221-4872 or by email brian.borofka@wepco.com.

Sources:

1. Interview, Brian Borofka, WEPCO, June, 1998.

2. "WEPCO to Spend $12 million to Clean Up 11 MGP Sites in Brownfields Program." *Utility Environment*, November 24, 1995; Pg 7.

Reference: CSE-9

Project Title and Location: Pennsylvania Electric Co (d/b/a GPU Energy) adaptive reuse of Front Street Station, a retired fossil-fired generating plant on 22-acre waterfront property.

Participants: GPU Energy, owner; North American Realty, Economic Reuse Plan Development; State of Pennsylvania, Pennsylvania Department of Environmental

Protection (PADEP); Realen Properties, Real Estate Developer; US Army Corps of Engineers, assisting federal agency; Delta Development Consultants, City of Erie, County of Erie and Erie Western PA Port Authority.

Level of Utility Involvement: Ownership

Funding: GPU self-funded the cleanup; GPU facilitated grants for the following entities. State of Pennsylvania funded the museum development; Grant of $5.4 million from the federal government; US Army Corps of Engineers, who used the federal grant money to dredge the waterfront for the warship berth; Intermodal transportation grant of $8 million; Port Authority received grant of $2 million for ferry service from both state and federal government; State put in new road to the development for $1.5 million.

Site History: Front Street Station, an electrical generating station, was retired in 1991 after roughly 80 years of operation. **Largely due to its waterfront location, GPU realized that this facility had many environmental problems but still had potential for redevelopment. In addition, this facility was also a possible source of new revenue and a catalyst** for redevelopment in Erie, Pennsylvania. This land is also virtually the only waterfront land left for this type of development. With all of these considerations in mind, in the early 1990s, GPU hired a consultant to create a reuse plan for the site. The plan called for a mixed-use waterfront center, consisting of a maritime museum, library, hotel, offices, retail, marina, and residential uses, which would be built by new users and developers.

Scenario: GPU's economic development department took the lead on this project, working directly with its environmental department and all local, state, and federal interests. GPU actively searched for and received state and federal grants for the public/private development from legislation, intermodal transportation center.

The first step for the Front Street project involved a land transaction that consisted of swapping public and private land in partnership with the Erie Port Authority. Because GPU wanted a contiguous parcel of land, it traded for the rights of a marina with the Port Authority. The marina was roughly half a mile from the other parcels of land, and did not require any environmental attention. GPU and the Port Authority in turn then donated land to the library and museum. The Port Authority agreed to bulkhead restoration along the shore as a contribution to the redevelopment project.

GPU funded the soil and groundwater remediation of metals, BTEX, PAH, PCBs, and PHCs which were present at various locations throughout the site. These contaminants had to be cleaned up to meet the statewide health standard. GPU also conducted remediation of a coal pile, removing the soil to the water table and replaced it with clean fill. Once the remediation activities were completed in 1993, GPU received No Further

Action letters from the state, and later continued remediation efforts to apply and receive liability protection under PADEP's Land Recycling Program (Act 2) for those portions of the properties which were still owned by GPU. GPU subsequently deeded these parcels to the Pennsylvania Historical Society for a museum and to the county for a library. GPU received the old grain elevator site for the marina trade with the Port Authority and purchased a community boating property in 1997.

GPU conducted in situ bioremediation of a fuel oil spill on the former Front Street station property, and the prior owner of the community boating property conducted air sparging for a formerly leaking underground storage tank. Metals contamination was present on the former Grain Elevator Site. GPU is currently submitting final reports for a site-specific release from liability for this parcel. Since Pennsylvania's Act 2 voluntary cleanup program had passed, GPU went through Act 2 for liability releases on those parcels. Cleanup of these parcels is complete, and it is anticipated that the final release for the Grain Elevator site will be issued by the end of September 1998.

Funded by the state, a portion of the old generating station was reused as a maritime museum and home port of the historic 1812 U.S. Brig NIAGARA. The US Army Corps of Engineers dredged the birth at the port so that the NIAGARA could dock. The state donated the funding for a 92,000-sq. ft. county library, the second largest in Pennsylvania. The maritime museum and the library are now attracting more than 4,000 visitors per day.

The development, now officially called Bayfront Center, currently consists of the library, maritime museum, and birth for the NIAGARA. Including the parcels GPU has remediated, 4-5 land parcels remain undeveloped. Realen Properties, the developer for the rest of the site, is still negotiating the financing for development of these parcels. GPU maintains a contract with Realen, and once financing is obtained, then GPU will sell property to them. Plans for the hotel are relatively solid and other development such as restaurants will follow, according to GPU officials.

The biggest obstacle GPU had to overcome—selling investors on the project—is currently still an issue, according to GPU officials. Since Erie is not a large city, investors sometimes find it difficult to feel secure with a large development that has some loose ends remaining.

For More Information, Contact: Eric Roland, GPU Energy, Environmental Project Manager 610/378-8867; Larry Valentine, GPU Economic Development Coordinator, 814/868-8790.

Sources:

1. "Redevelopers See Potential in Older, Smaller Power Plants." *Energy Daily*, 14 April 1998.

2. Pennsylvania Land Recycling Program – 1998 Annual Progress Report, http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/LANDRECY/FACTS/Annual/98anrpt.htm.

3. Pennsylvania Land Recycling Program – 1997 Annual Progress Report, http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/LANDRECY/FACTS/Annual/97anrpt.htm.

4. Pennsylvania Land Recycling Program – 1996 Annual Progress Report, http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/LANDRECY/facts/annual/FirstYear.htm.

5. Interview, Eric Roland, GPU Energy, Project Manager, July 1998.

6. Interview, Larry Valentine, GPU Economic Development, July 1998.

Reference: CSE-10

Project Title and Location: Brownfield redevelopment of PP&L – Hershey facility located in Derry Township, Dauphin County, Pennsylvania.

Participants: PP&L, Inc. (formerly Pennsylvania Power & Light Company), owner; State of Pennsylvania, regulatory agency.

Level of Utility Involvement: Ownership.

Funding: PP&L, Inc.

History: PP&L has many properties that it no longer needs for operations, many of which have significant environmental challenges. **In 1995, PP&L signed a multi-site agreement with Pennsylvania Department of Environmental Protection (PA DEP) requiring assessment and remediation of their old properties.** PP&L agreed to investigate and clean up, if necessary, 134 sites that may have been contaminated by past operations of PP&L or its predecessor companies. During the next 10 years, PP&L will investigate all 134 sites. Sites found to be contaminated will be cleaned up by PP&L on a schedule based on the environmental risk, if any, posed by the site. PP&L will spend up to $5 million a year on investigation and cleanup operations, which include costs for PP&L to address its Superfund sites that are not listed in the agreement. PP&L will use

the standards established under the Pennsylvania Land Recycling Program to clean up any contaminated sites.

Sites in the agreement include 79 utility poles, 23 active substations, 22 decommissioned substations, eight decommissioned power plants, a former manufactured gas plant and a coal processing plant at locations throughout PP&L's service area in eastern and central Pennsylvania. The Pennsylvania counties where sites will be investigated include Berks, Carbon, Clinton, Columbia, Cumberland, Dauphin, Lackawanna, Lancaster, Lehigh, Luzerne, Lycoming, Monroe, Montgomery, Northampton, Northumberland, Perry, Pike, Schuylkill, Wayne, Wyoming and York. Because of the success of the program, PP&L added another 40 sites to the agreement in 1996 and 1997, including 25 pole sites, 12 decommissioned substations, and two former manufactured gas plant sites.

The goals of this program are the following: (1) emphasize effective resource management based on risk reduction; (2) protect human health and environment; (3) ensure compliance with environmental requirements; (4) make sites available for economic development and to reduce PP&L's liability. Shortly after the signing of this agreement, Pennsylvania passed its Land Recycling and Remediation Standards Act in 1995 (Act 2), which allows future use of a property to dictate the cleanup standard and limits liability from further State or 3rd party actions for current or future owners/operators.

One of the facilities that was cleaned under this multi-site program is known as the Hershey Service Center site. The Hershey facility is an irregular-shaped, multi-story, 74,000 sq ft service center building. Once a chocolate factory, it was converted to a substation and service center by the Hershey Electric Company. PP&L acquired Hershey Electric Company in the 1960s, thus assuming the site. As expected in old buildings, the facility had asbestos, lead-based paint, and PCB contamination issues associated with the former substation. The property is also an irregularly shaped 2.16-acre lot with a building very close to the road with limited parking in front. Initial appraisal showed that the building added little value to the property, largely because it was constructed in several phases, considered functionally obsolete, and in need of many repairs. The site is located in a heavily traveled commercial and recreational area, but the demolition costs were projected to be very high.

Scenario: PP&L took the initiative to establish a partnership with its real estate and environmental personnel, and hired a real estate advisory group to support this new team. Together this team developed a future use plan that provided a proposed building floor plan, projected income and expenses for the redeveloped building, and redevelopment renderings. Meanwhile, PP&L's Environmental Management Division assessed the location and extent of the asbestos and lead-based paint and completed remediation of the PCB-contaminated soil by removal and off-site disposal. Following the remediation, PP&L obtained an Act 2 liability release for the site from the DEP.

Another redevelopment issue that had to be overcome was zoning. With the real estate group's assistance, PP&L uncovered a "unique building" provision in the local zoning regulations which would allow the existing building to be reused without having to meet the new zoning standards for offsets and green space. Therefore, a redeveloper of the site could reuse the existing building and have a much larger structure than would be allowed if the existing structure was demolished. With the future use plan and marketing package in hand, PP&L's Real Estate Services group was able to attract a developer for the site. PP&L also assisted the new owner/developer to overcome the rezoning issues.

Because the property had a plan that demonstrated its value and since the environmental liabilities for the site were limited by the Act 2 Liability Release from DEP, the property was sold for higher than its appraised value. The new owner intends to develop a restaurant and 80-room hotel within the existing building.

For More Information, Contact: Craig Shamory, 610/774-5653 or James Villaume, 610/774-5094.

Sources:

1. "Optimizing Benefits by Proactive Management of PP&L's Real Estate Portfolio." Presentation by Bob Farley and Craig Shamory, presented at conference titled Selling Environmentally Impaired Utility Real Estate Assets, Philadelphia, PA, June 11-12, 1998. Sponsored by the *Energy Daily* and the *Brownfields Report*.

2. Interview, Craig Shamory, PP&L, July 1998.

3. Pennsylvania Land Recycling Program – 1998 Annual Progress Report, http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/LANDRECY/FACTS/Annual/98anrpt.htm.

4. Pennsylvania Land Recycling Program – 1997 Annual Progress Report, http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/LANDRECY/FACTS/Annual/97anrpt.htm.

5. Pennsylvania Land Recycling Program – 1996 Annual Progress Report, http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/LANDRECY/facts/annual/FirstYear.htm.

Reference: CSE-11

Project Title and Location: Citizen-spurred Redevelopment of Seaholm Power Plant, Austin, Texas.

Participants: City of Austin, Texas, Austin Energy (City of Austin Department), owner; Roy F. Weston, Inc., contractor; USEPA and Texas Natural Resources Conservation Commission (TNRCC), have applicable standards, regulatory compliance review; Seaholm Reuse Planning Committee, an official citizens panel appointed by the city council; Friends of Seaholm, an ad-hoc, self-appointed group of interested citizens.

Level of Utility Involvement Owned by City of Austin, Electric Utility Department (Austin Energy); no grants or outside funding; will try to maximize the reuse of equipment and salvage old equipment to offset their costs.

Funding: City of Austin, Texas.

Site History: As Austin's favorite electric generating station slid towards retirement, community interest in its future grew. Seaholm' - a retired power plant - has a prominent location at the southeast corner of downtown overlooking Town Lake, and its large size, suggest a full range of possibilities to augment Austin's cultural life. The Austin City Council has seized the opportunity to dedicate it to civic and cultural uses. Public input is being sought to help decide its next use.

Austin's Art Deco Landmark on Town Lake has completed its original mission. Built in the 1950s, the Seaholm Power Plant is an electric power generating station which no longer produces electricity. Seaholm's 110,000 sq ft of floor area offers extraordinary large- and small-scale spaces suited for a variety of cultural activities.

Friends of Seaholm, a citizens task force, was interested in pursuing this project, and was a big reason that it came to fruition. This task force was able to get the city council to pass a resolution stating that the redevelopment project would occur and listed a deadline. The resolution also spelled out specific deadlines for removal of the equipment and remediation of environmental contamination.

The Seaholm Power Plant is an inactive power generation facility located in downtown Austin on Town Lake, the city’s most popular recreational park, and adjacent to Austin’s main business district. The power plant was built in the early 1950s, and operated until the early 1990s. The main generation equipment is located in an all concrete art-deco-style building with glass block accents. The four floors of the main turbine / generator building have approximately 110,000 square feet and house the four 20-megawatt (MW)

and one 40-MW turbine generating units that were fueled primarily by natural gas. In spring 1997, the City Council decided to decommission the power plant for future public use. A formal environmental assessment was completed in July 1997. Specifications for contractors to complete remediation and equipment removal are being written, and the regulatory process followed.

Scenario: Phase I environmental assessment, remedial alternative evaluation, and dismantling cost-estimating activities have been completed. Phase II engineering planning activities are currently underway. Contractor bidding is set to begin in October 1998, and actual equipment removal is scheduled to run from May 1999 to June of year 2000.

A team of consultants completed the Phase I activities in 4 months to meet a 1 July 1997 deadline set by the City Council. The consultants completed an indoor investigation to identify the extent of polychlorinated biphenyls (PCBs), mercury, asbestos, and lead-based paint in several facility buildings, including the main generator building. The Phase I activities also included an outdoor investigation of a former transformer storage yard and several underground storage tanks (USTs). Approximately 3,500 samples were collected during the investigation, and the resulting large amount of analytical data was managed using an in-house data management system and geographic information system (GIS) software. The consultants evaluated remedial alternatives for both future industrial reuse and public reuse scenarios based on these results, and then prepared remediation cost estimates. TLG Services, Inc. (TLG), a Bridgewater, Connecticut engineering firm specializing in power plant decommissioning, assisted with the development of a cost estimate to remove all of the plant equipment and leave the empty structures.

Based on the Phase I findings, the City of Austin decided to move forward, emphasizing the public reuse option. The budgetary estimate for remediation and dismantling to clean to public reuse levels was approximately $13,000,000, which includes a large contingency and other items such as a new roof and asbestos cell at the landfill. Presentations were made to a citizen's advisory board and the City Council addressing the findings to date and the cost of moving forward. On 15 October 1997, the City Council gave notice to proceed by approving the necessary budget and contract amendments. This includes a contract amendment for the consultants of approximately $2,500,000.

Phase II engineering planning activities are now underway. The consultant is negotiating cleanup levels with the regulatory agencies, developing remediation and dismantling contractor specifications and remedial action sampling work plans, and is assisting the City of Austin EUD with identifying qualified dismantling contractors. A special effort is being made to evaluate equipment reuse potential so that some equipment can be sold to help offset dismantling costs.

The Phase III dismantling and remediation activities will start in the fall of 1998. Phase III remediation activities will be performed for both the indoor building areas and the outside storage yard. The Phase III activities will result in empty buildings that have been cleaned to meet PCB, mercury, asbestos, and lead-based paint remediation goals. Thereafter, the City of Austin will complete final electrical network deconstruction and turn the building over for redevelopment. The building will remain in city ownership.

The Seaholm Reuse Planning Committee, a group appointed by the city council, is responsible for facilitating the public process to determine the future use(s) of the facility (this group consists of many former Friends of Seaholm members). Options currently being discussed include using the plant as a stop for Austin's proposed light-rail train, a museum, an aquarium, an art colony or multimedia center. The ultimate decision lies with the city council, but the Reuse Planning Committee will make recommendations to them.

The City of Austin has budgeted $13 million to redevelop the facility— $9 million is for environmental cleanup and $4 million is for equipment removal. The bulk of the funding will come out of the City of Austin's operating budget. The remediation and equipment removal is scheduled to occur through the fall of the year 2000.

For More Information, Contact: Rick Scadden, Roy F. Weston, Inc., 512/329-8399; Austin Energy, Rose San Miguel, Project Manager, 512/322-6218.

Sources:

1. Roy F. Weston, Inc. Project Summary, 1998.

2. Interview, Rick Scadden, Roy F. Weston, Inc., Project Director, June 1998.

3. http://www.seaholm.org/home.html, Web site of the Friends of Seaholm .

4. "Redevelopers See Potential In Older, Smaller Power Plants." *Energy Daily*, April 14, 1998, King Communications Group, Inc.

5. "Changes in Utility Industry Spark Power Plant Redevelopment." *The Brownfields Report*, March 12, 1998, King Communications Group, Inc.

Reference: CSE-12

Project Title and Location: Dismantling and Restoration of the Comal Power Plant, New Braunfels, Texas.

Participants: Lower Colorado River Authority (LCRA), owner; Roy F. Weston, Inc., building environmental consultant; Parsons Engineering Science, Inc., site remediation consultant; TLG Services, Inc., prime engineering contractor; Olshan Demolishing Inc., dismantling / demolition contractor.

Level of Utility Involvement: Owned by the Lower Colorado River Authority (LCRA) .

Funding: LCRA, investigation, and cleanup.

Site History: The Comal Power Plant Facility has been a significant resource to the New Braunfels community since its construction in the mid-1920s. Visible from most sections of town, the facility with its towering smoke stacks serves as a landmark for the downtown and Landa Park area. Although it remains a dominant feature within the community, it has seen little use and has been in a state of decline since its closure in 1977. A salvage operation between the years of 1979 and 1982 hastened the decline of the building by doing significant damage to the interior of the facility.

In 1988, LCRA began a program to identify and remediate environmental contamination at the site. In the following years, several remediation projects were completed and LCRA began working with the community to explore options for the final disposition of the site. **Discussions with the community found that the site had historic and cultural significance to the community and that its preservation as a community asset was a high priority**. In August 1997, the LCRA Board of Directors approved a plan to finalize the remediation of the site and in cooperation with the local community and potential private interest partners, seek opportunities for its redevelopment and reuse.

LCRA has committed to remediate environmental hazards on the site, including lead and asbestos contamination within building, to a standard accepted by the Texas Natural Resource Conservation Commission (TNRCC) Voluntary Cleanup Program. The end product will be a remediated site and shell building ready for redevelopment.

LCRA's objectives for the redevelopment and reuse of the Site are as follows:

- Maximize LCRA's return on its investment.
- Minimize ongoing operating and maintenance expenses.
- Add value to the community.

- Maintain the historic character of the building.
- Be compatible with the objectives of the City LCRA Facilities Committee.

Scenario: The LCRA is currently performing dismantling and restoration activities at the Comal Power Plant. In 1997, TLG Services evaluated four scenarios for the building (mothball, mothball and remediation, shell and demolition). In late 1997 and early 1998, specifications were prepared and a dismantling contractor was hired to first washdown the facility, abate remaining asbestos, demolish the boilers and remaining equipment, and complete restoration activities. After dismantlement and restoration, LCRA plans to bid the lead abatement and coating work not included in the current contracted work scope.

Concurrent with the dismantling and restoration of the building, LCRA is also conducting remediation activities associated with PCB, hydrocarbon and metals contamination at the site. Contaminated areas are currently being defined and cleanup standards are being established with the TNRCC Voluntary Cleanup Program. Site remediation is expected to be complete in 1999.

The LCRA has also hired contractors to remove equipment that can then be adapted for some public reuse.

New Braunfels has a committee and holds public meetings to gather ideas about what the final end use should be, and the current plan is for the end use of the facility to remain public.

For More Information, Contact: Ken Launius, LCRA remediation project manager, 512/356-6016; John Gosdin, LCRA redevelopment project manager, 512/473-3531; Rick Scadden, Roy F. Weston, Inc., 512/329-8399.

Sources:

1. "Redevelopers See Potential In Older, Smaller Power Plants." *Energy Daily*, April 14, 1998, King Communications Group, Inc.
2. "Changes in Utility Industry Spark Power Plant Redevelopment." *The Brownfields Report*, March 12, 1998, King Communications Group, Inc.
3. Roy F. Weston, Inc., Project Summary, 1998.
4. Interview, Rick Scadden, WESTON Project Manager, June 1998.
5. Consultation with Ken Launius and John Gosdin, LCRA project managers, July 1998.

Reference: CSE-13

Project Title and Location: United Illuminating (UI), Redevelopment of Steel Point Station as part of Peninsula Development, Bridgeport, Connecticut.

Participants: UI, owner; GEI Atlantic Environmental, consultants; independent developers.

Level of Utility Involvement: Ownership.

Funding: UI is funding cleanup; redevelopment will be funded by developers with some state and federal assistance.

Site History: United Illuminating has, historically, been a leader in innovative environmental membership and leadership roles in a number of industry groups, working cooperatively with federal and regional government agencies such as Connecticut DEP and USEPA. So it comes as no surprise that UI has a Brownfield project awaiting redevelopment.

United Illuminating's Steel Point Station generating facility is located on a peninsula near Bridgeport, Conn. Steel Point Station, located on the waterfront, was vacant for a long time. Steel Point Waterfront is a mammoth project that UI is guiding, in partnership with Bridgeport and the state. Large projects have not always fared well in this region, and UI hopes that its involvement will change that pattern. UI's Economic Development department is shepherding the Steel Point Waterfront. In the past, projects of this nature would hit obstacles and be stopped in their tracks. While UI is only one player on the Steel Point team, it is the dominant player, pushing the process, building the coalitions, assuring that the work is completed, and supplying the "energy" to get the job done.

Scenario: Since the Steel Point facility had been left vacant for such a long period of time, seasonal stresses lead to the facility being unsafe, so UI demolished it. Once contaminated with asbestos, PCBs, and other contaminants, UI has decontaminated the building and demolished it. Decontamination and demolition were conducted concurrently using a performance specification rather than a technical specification. UI is currently in negotiations to sell the site to developers.

For More Information, Contact: Kathleen Shanley, Mgr., Env. Issues & Audit, 203/499-2562; Paul Burgess, GEI Atlantic, 860/537-0751 X232.

Sources:

1. Interview, Kathleen Shanley, United Illuminating, June 1998.

2. Burgess, P.E., Paul, and Giroux, P.E., GEI Consultants, "Decontamination of Demolition Debris." *Environmental Technology*, March/April 1998, pp.26-30. Also see *Environmental Technology* website at http://www.environmentaltech.com.

3. United Illuminating website, What's New Economic Outreach, http://www.uinet.com/new/.

Reference: CSE-14

Project Title and Location: WEPCO Brownfield Forum And Community Non-Profit Involvement.

Participants: WEPCO, donor; 16th Street Community Health Center, non-profit conducting a Brownfield community action project; 30th Street Industrial Corridor Cooperation, non-profit community development corporation conducting an EPA pilot project; regional developers, bankers, attorneys, state agencies.

Level of Utility Involvement: Financial contribution, facilitator, Wisconsin DNR advisor, and task force participation.

Funding: WEPCO

History/Involvement: Since 1995, WEPCO has been involved in Brownfield issues in the community. Following are several examples of WEPCO's commitment and leadership on Brownfield issues in its service territory.

- In October 1995, WEPCO hosted and funded a one-day, invitation-only forum to discuss the then-emerging Brownfield issues. Among the participants were the Wisconsin DNR, USEPA, banks, developers, attorneys, and citizen groups.

- In 1995, WEPCO initiated a series of roundtable discussions with local business leaders, citizen advocates, agency staff and other interested parties to discuss Brownfield issues and determine the local level of interest in this issue.

- Beginning in mid-1996, WEPCO began sponsoring bi-weekly early morning sessions, loosely titled "Brownfields and Bagels." Later to be recognized as the Brownfields Forum, the utility invited developers, environmental policy makers, agency staff, citizen advocates and others to these sessions. The Brownfields Forum was invited to participate in the development of the Governor's biennial budget and legislative proposals in early 1997. The Brownfields Forum continues, meeting quarterly.

- The company is participating in key activities of the Wisconsin Legislature, the state Dept. of Natural Resources (DNR) and other groups involved in Brownfield development. WEPCO has staff members on the governor's advisory committee on Brownfield issues. WEPCO has most recently requested to participate in an advisory group in developing recommendations on Brownfields to the Governor and Legislature in January 1999.

- WEPCO is providing financial support and technical assistance to community organizations involved with Brownfields. The most significant involvement has been with the 16th Street Community Health Center (SSCHC). As an extension of the group's environmental health program, SSCHC became involved in Brownfields issues because of the threat the sites pose to human health. In February of 1996, this group became a partner with the City of Milwaukee in a proposal to the Wisconsin DNR's Brownfield Environmental Assistance Program (BEAP). WEPCO assisted this group in applying for Brownfield pilot grants. Through this program, SSCHC became the coordination point for a Brownfield Oversight Community Action Project. Two Brownfield sites were identified – Try Chem and 1906 S. Third Street. The 1906 S. Third Street site has been cleaned and is now creating jobs in an otherwise impoverished area; the Try-Chem site work is still in progress.

  Through the BEAP, WDNR was granted authorization from the USEPA to re-program Superfund dollars to provide technical assistance to municipalities to conduct Phase I and II environmental assessments on Brownfield properties. The two sites selected in Milwaukee were chosen in part because of the 16th Street Partnership with the City in the project.

- WEPCO has been an involved supporter and participant in two US EPA Brownfield pilot projects awarded to both Milwaukee County (in conjunction with the 30th Street Industrial Corridor Corporation) and the City of Milwaukee. The former project focuses on a formerly utilized industrial corridor immediately northwest of downtown Milwaukee, while the later project involves the investigation of a regional groundwater quality approach (or "aquashed" approach) in the Menomonee River Valley. The Menomonee Valley was Milwaukee's original industrial heartland, and encompasses a 1/2 by 2-mile area of former foundries, train yards, and other early industrial era buildings.

For More Information, Contact: Brian Borofka, WEPCO, Environmental Manager, 414/221-4872 or by email brian.borofka@wepco.com.

Sources:

1. Interview, Brian Borofka, WEPCO, June 1998.

2. *Sixteenth Street Community Health Center of Milwaukee, Wisconsin*, presentation given by Ellyn McKenzie at Brownfields '97 conference sponsored by USEPA, Kansas City, MO, September 3-5, 1997.

Reference: CSE-15

Project Title and Location: Abandoned Power Plant Redevelopment in Kemmerer, Wyoming, funded by a USEPA pilot grant.

Participants: City of Kemmerer, Wyoming, owner; USEPA, Denver office; State of Wyoming; Department of Environmental Quality; Abandoned Mine Land Program.

Level of Utility Involvement: Former owner.

Funding: City of Kemmerer, Wyoming; USEPA, Brownfield Pilot Grant.

Site History: The Brownfield site is a 16-acre parcel which consists of 12 vacant buildings. The site includes a potentially contaminated, idle power plant on the Hams Fork River which was built in approximately 1910. The plant was decommissioned in the 1970s, and hot spots of PCB contamination remained. The City of Kemmerer acquired the site in the early 1980s, and as part of the purchase, environmental cleanup was required. A Phase I site assessment was performed, and state clearance was granted. However, since USEPA advised but did not participate in the cleanup, they have not granted it clearance.

Scenario: This project started after the City of Kemmerer realized that the lack of USEPA clearance was deterring potential developers and financial institutions from showing interest in the site. However, as a small community, Kemmerer lacked the resources necessary to fund this project. With a broad base of community support, the project was proposed to USEPA under the Brownfields pilot program in hopes that the USEPA would be able to fill this need.

The City received a USEPA Brownfields Pilot Program grant in spring 1998. In addition, the City also applied for a grant from the Wyoming Abandoned Mine Land program to assist with the demolition of the plant. The city anticipates meeting with the USEPA for a site visit by end of summer 1998, and issuing requests for proposals (RFPs) by late August of 1998. City officials hope that a review of the site and permitting paperwork will be the only required items in order to obtain clearance from the appropriate federal agencies by late 1998.

For More Information, Contact: John Roberts, City Administrator, 307/828-2360.

Sources:

1. USEPA's Website, Brownfield Pilot Page, http://www.epa.gov/swerosps/bf/html-doc/kemmerer.htm.

2. Interview and unpublished comments, John Roberts, City of Kemmerer, WY, July 1998.

Reference: CSE-16

Project Title and Location: Consumers Energy funds creation of Non-profit entitled Consumers Renaissance Development Corporation to encourage Brownfields redevelopment.

Participants: Consumers Energy, Michigan Department of Environmental Quality (MDEQ); Michigan Municipal League; Michigan Economic Development Association; Michigan Jobs Commission.

Level of Utility Involvement: Service Contribution.

Funding: Consumers Energy, in-kind services of domestic and international business development as well as community services network; MDEQ; Michigan Municipal League; Michigan Economic Development Association; Michigan Jobs Commission, $250,000 grant given to CRDC for education and training in 1996; $360,000 given in 1997-8; Pro bono services donated by several professional services firms.

History/Involvement: In 1996, Consumers Energy created its Consumers Renaissance Development Corp. (CRDC) to promote the redevelopment of former industrial and commercial properties in Michigan that remain unused because of environmental concerns. The utility realized that it was in its best interest to promote reuse of these sites in order to revitalize its service territory's economy while attracting large, new customers. With funding assistance from MDEQ, Michigan Municipal League, Michigan Economic Development Association, and the Michigan Jobs Commission, as well as pro bono services donated by several professional services firms, Consumers Power's CRDC clearly had strong support.

CRDC's mission is as follows:

- Promote the redevelopment of Brownfields throughout Michigan by raising the level of awareness about the benefits and new tools available to local government.

- Assist communities to prepare for capturing investment and with facilitation of transactions.

- Through education and advocacy, affect public policy to level the playing field between greenfields and Brownfields.

CRDC works with public and private agencies to restore Brownfield sites. In doing so, CRDC provides Brownfield guides, workshops, transaction facilitation services, in addition to assistance with marketing strategies, creating inventories, and locating appropriate resources and contacts.

CRDC had four first-year goals:

1. Conduct seminars for local government officials and economic developers.

2. Distribute practical and user-friendly information on the technical, legal, financial, and political aspects of Brownfield development.

3. Complete one or more pilot programs showing "how to" implement Brownfield redevelopment projects; and

4. Provide assistance and information to qualifying local governments and communities on a one-on-one basis.

Accomplishments

Goal One: In June 1996, CRDC announced its first pilot project. the redevelopment of the former United Technologies Automotive facility in Branch County's Quincy Township. Negotiations began in late May 1996 and concluded in mid-October 1996.

On October 15,1996, the 104,000 sq. ft. building, which sits on 32 acres, was purchased by Fairway Products, an original equipment manufacturer for the auto industry. The venture is expected to initially create 10 new jobs and up to 45 additional jobs in the future.

In addition, the Michigan Jobs Commission awarded an $810,000 economic development grant to Quincy Township, which allows for expansion of the manufacturing company as well as support for future industrial development.

Goal Two: CRDC developed a 400-page manual called the Brownfield Redevelopment Guide. The primer contains chapters that explain Brownfields legislation, how to work with government officials, and Brownfields financing options. CRDC consulted a team of experts including lawyers, developers, state and local officials, consultants and bankers. Since its debut in February 1997, roughly 1,000 guides have been distributed.

Goal Three: Manual in hand, the groundwork was ready for CRDC seminars. In March and April of 1997, CRDC hosted seven one-day training session seminars to over 300 individuals throughout Michigan. Training sessions continue by invitation.

Goal Four: CRDC continues to consult a number of communities to help them market their Brownfields and establish redevelopment plans. Thus far, CRDC has closed five deals and has another 35 in progress.

For More Information, Contact: Bruce Rasher, CRDC, Vice President, 517/788-0331.

Sources:

1. "Consumers Power Forms Corp. to Manage Brownfields as U.S. Sites Gain Funding." *Utility Environment*, July 5, 1996; 21(7): 9, The McGraw-Hill Companies.

2. Rasher, Bruce. "1997 Marks First Full Year of Accomplishments for Consumers Renaissance Development Corporation." *Atlantic Siteline*, a GEI Consultants, Inc. publication, December 1997.

3. *CRDC*, Rasher, Bruce. Presentation given at the USEPA Brownfields '97 Conference, sponsored by USEPA, Kansas City, MO, September 3-5, 1997.

4. Interview, Bruce Rasher, CRDC, July 1998.

5. Consumers Energy Website, http://www.crdc@consumersenergy.com/community/devinit.html.

Reference: CSE-17

Project Title and Location: Capsules of Three New Jersey Brownfield Projects.

Participants: PSE&G and various other parties.

Level of Utility Involvement: Ownership.

Funding: PSE&G self-funded cleanup.

History: PSE&G is conducting an aggressive MGP remediation program. PSE&G is presently implementing a comprehensive cleanup program designed to achieve two primary objectives: protection of human health and the environment through site cleanup, and economic redevelopment of the sites once they are made suitable for reuse. Since approximately 1989, PSE&G has been partnering with regulators, local government, and affected communities to achieve these two goals at 39 MGP sites, even when the operations at the site were conducted by a predecessor company.

Scenario: PSE&G has several Brownfield projects at various stages of completion. Brief capsules of three of these projects follow.

1. **Redevelopment of an old New Brunswick, NJ electric division and workstation with PCB contamination.** This PSE&G electric division and workstation site in New Brunswick was no longer needed. The City of New Brunswick was targeted by Governor Whitman for redevelopment initiatives, and the PSE&G site was located within one of the state-designated Empowerment Zones. At the same time, the local school board lost their division headquarters, which was located just outside the redevelopment zone. The school board then approached PSE&G to inquire about moving to the PSE&G property. PSE&G worked with the New Jersey Department of Environmental Protection (NJ DEP) to remediate the PCB contamination, and the property was subsequently sold to the school board for their new office.

2. **Paterson Gas Works site, a 13-acre parcel of land located in an industrial section near the Passaic River in Paterson, NJ.** PSE&G employed the first commercial application of the HT-6 thermal desorption unit technology to remove contaminants from the soil at this Paterson, NJ site. The technology is owned and operated by Seaview Thermal Systems of Blue Bell, Pa. With this system, contaminated soil passes through screw conveyor heating chambers which can reach temperatures as high as 2,000 degrees Fahrenheit. Contaminants are vaporized from the soil, then separately condensed. Oil byproducts are collected and sold to the petroleum industry. Residual clean water is collected and returned to the processed soil. At this site, the processed soil was then reused on site as fill. During the spring of 1994, two temporary "bubbles" were erected over the former gas works' relief holder and tar pit, as well as an area used to stockpile material prior to processing. The unit processed contaminated materials. Unfortunately, the operating performance did not met design levels. However, an engineering evaluation performed in early 1995 identified and resolved the operating problem. After the work under the "bubbles" was completed, up to an additional 100,000 tons of soil was also processed. PSE&G installed a perimeter air monitoring system to apprise site operators in the event of any release of organic emissions above certain NJDEP-approved limits. This system was installed to ensure that the health and safety of the surrounding community is adequately safeguarded during this project. Redevelopment discussions are currently in progress.

3. **Old MGP site in Riverton, NJ.** In the historic community of Riverton, a two-acre site was used by the River Shore Gas Company between 1900 and 1904 for an MGP. River Shore Gas was one of many companies merged to form PSE&G. The MGP plant facilities were dismantled sometime before 1919. The property remained vacant until it was sold in the mid-1950s and subdivided for residential development. Today, five single family residential homes are located on the site. Since the site had subsurface contamination with coal tar and other contaminants, PSE&G purchased the homes and the homes on two adjacent properties as part of its remedial effort. PSE&G

received NJ DEP approval in 1996 to begin final remediation after 6 years of in-depth remedial investigative activities. Engineering and institutional controls were utilized to remediate the contamination. Remedial activities included the removal of 7,000 tons of contaminated soil, the reconstruction of Jack's Run, a drainage creek, and a comprehensive restoration and landscaping plan. All remedial activities were completed in November 1996. The restored site will be available for productive use once PSE&G receives final approval from NJ DEP.

For More Information, Contact: Cheryl Telford, PSE&G Environmental Policy Manager, 973/430-8277.

Sources:

1. Interview, Cheryl Telford, PSE&G Environmental Policy Manager, July 1998.

2. PSE&G 1997 Environmental Progress Report, available at http://www.pseg.com/environment/environmental.html.

3. PSE&G 1995 Environmental Progress Report.

Reference: CSE-18

Project Title and Location: Oregon Mill Site Conversion Project, Seven Counties in Oregon.

Participants: Rural Development Initiatives, Inc. (RDI), non-profit development organization and lead public sector partner for the project; PacifiCorp, third largest investor-owned utility west of the Rockies and lead private-sector partner for this project; U.S. Bank of Washington, commercial lending institution and project partner; Stoel, Rives, Boley, Jones, and Gray, project law firm; Economic Development Administration (EDA), federal project partner; US EPA, federal contributor that awarded Rural Development's $200,000 pilot site grant; Oregon Economic Development Department, state project partner.

Level of Utility Involvement: Ownership.

Funding: US EPA, Brownfield pilot grant, $200,000; EDA, $300,000 grant.

History: In the early 1990s, the U.S. Forest Service policies were forced to change as a result of increasing public concern over protection of Pacific Northwest forest ecosystems and legal challenges under the Endangered Species Act. In order to protect the environment, the agency announced major scalebacks in allowable harvests of timber from federal lands. As a result, over 120 timber mills closed, resulting in the loss of

roughly 55,000 jobs statewide and the devastation of the small rural communities whose livelihoods were linked to the timber industry.

This loss was compounded by the fact that former mill sites possess some environmental contamination, a stigma that actively discouraged their redevelopment. As is the case everywhere, investors were reluctant to get involved because of liability, cleanup and time delay concerns.

In 1993, as a result of a presidential visit to the Northwest Timber Summit, a series of government assistance programs were devised, collectively known as the Northwest Economic Adjustment Initiative. These programs were designed to encourage redevelopment. The EDA received in its 1994 appropriations an additional $16.4 million in economic adjustment assistance grants for timber-dependent communities.

Scenario: A public/private partnership consisting of the Oregon Economic Development Department (OEDD), RDI, PacifiCorp, U.S. Bank of Washingon, and the law firm of Stoel, Rives, Boley, Jones, and Gray sought to redevelop seven former mill sites in Oregon, and applied for the EDA grants. Known as the Oregon Mill Site Conversion Project, EDA awarded the partnership $366,000. Since RDI is the project manager, their nonprofit status makes the partnership eligible for federal funding.

The overall goal was to develop complete master development plans that would transform the seven sites into productive, readily usable industrial or commercial parcels. During the first year, the project goals were to (1) assess environmental conditions at the properties; (2) identify and quantify cleanup strategy and cost; and (3) inform the community.

A consultant to RDI issued a survey issued to select communities with well-established local economic development corporations, and based on the results, the seven communities were carefully selected.

Mill owners had reservations about involvement in the project, mostly out of fear of being held liable for any unforeseen regulatory action, should contamination be discovered on their land. To allay these fears, in 1994 the partnership crafted a formal Memoranda of Understanding (MOU) with mill owners, clearly outlining roles, responsibilities and legal protections. Even if contamination was discovered, the MOU read, the mills were free to exit the program at any time without fear of state enforcement action.

Once the MOUs were signed, RDI and the mill owners presented the project to local community leaders. RDI facilitated the creation of community-based redevelopment teams, called Local Action Committees, which met bi-monthly to discuss redevelopment issues. These committees were comprised of civic groups, nonprofits, government agencies, private-sector companies, and environmental groups.

Concurrent with the community actions, RDI contracted environmental consultants to conduct Phase I site assessments, including wetland delineations and flood plain evaluations. All seven sites had wetlands, and hydrocarbon contamination was the most common contaminant. While all sites demonstrated some redevelopment potential, infrastructure improvements such as water and sewer service and transportation access improvements were necessary across the board. By fall of 1996, these improvements were underway.

The sites represented a variety of challenges and opportunities. Two had owners with some potential capacity to fund cleanup. Another property was owned by an entrepreneur with an interest in redeveloping the site. Still another had only minor contamination, which the owners remediated before selling the site in 1995 to a developer, who used the site for a rock crushing operation in conjunction with a nearby gold mine.

The Coquille site is a former Georgia-Pacific mill that closed down in 1990. For several years, GP officials were interested in redeveloping the property for industrial use. However, city officials were also well aware that GP was under no obligation to do so, and could potentially just pay taxes on the property and never redevelop it. Finally, in the early 1990s, GP turned over the property to the City of Coquille and agreed to pay $1 million in remediation costs. By the time the mill conversion project began, the city was planning to redevelop the site using a combination of funding from GP and OEDD. The site is enrolled in the Oregon voluntary cleanup program, and has undergone site assessment but has not been remediated. Estimated costs are much less than the $1 million GP committed.

The Astoria mill went bankrupt in the early 1990s after defaulting on a Small Business Administration (SBA) loan. The SBA holds a lien on the property. City of Astoria officials are intent on redeveloping the site, and have requested that SBA waive or reduce the lien and transfer the property to city hands. However, the city is not willing to take title and assume liability until all remediation activities are complete. The site is presently enrolled in the Oregon voluntary cleanup program. The first $500,000 came from the Oregon DEQ, and the second $500,000 was funded by the city, backed by a loan from Shore Trust Bank. How the site will be reused remains a question, because the community is divided about retail versus industrial use.

In 1995, RDI received two additional pieces of funding. The first came from the USEPA in the form of a $200,000 Brownfields Pilot Site grant, and is mainly being used to develop master plans for the seven sites. The master plans weave remedial requirements into feasible, practical reuse plans for each site.

EDA committed an additional $300,000 to the project, primarily for developing generic remedies for common pollutants found at the seven sites. The grant also supports the

creation of a computer model designed to help communities weigh the relative costs and benefits of a development.

By summer 1995, the Local Action Committees had spelled out possible reuse options. The most popular option was industrial/commercial activity, such as a business park. At this time, RDI is exploring the idea of giving commercial real estate firms exclusive rights to market the sites.

Two of the seven sites have thus far changed hands, and will soon be redeveloped. Since the costs associated with cleanup thus far have been quite low, RDI added five additional sites to the project in January 1996.

Utility Involvement

PacifiCorp's subsidiary, Pacific Power and Light, an electric utility covering seven western states, lead the private sector partners involved with the project. PacifiCorp was concerned about the viability of the small milling towns, and so was willing to commit resources to that end. It also committed staff time for project management, site planning, and technical assistance, in addition to financial assistance. It was also instrumental in recruiting other private-sector participants, like the bank and law firm.

For More Information, Contact: Lynn Youngbar, RDI, Director, 541/937-8344; Dana Peck, Project Manager, RDI, 503/236-3516.

Sources:

1. Pepper, Edith. Lessons from the Field – Unlocking Economic Potential with an Environmental Key, Northeast-Midwest Institute, 1997.

2. Maguire, Tom, *Brownfields EPA Pilots News*, "Giving the Public its Day. How Three Pilots Have Used Different Forms of Charrettes To Enliven Community Involvement Efforts," Volume 2, Issue 1, April 1998. Published by the Institute for Responsible Management, New Brunswick, NJ.

Reference: CSE-19

Project Title and Location: NIPSCO Spearheads Creation of Cooperative Brownfield Redevelopment Program in Northern Indiana.

Participants: Northern Indiana Public Service Company (NIPSCO); Northwest Indiana Forum (NWIF); and, the Northern Indiana Center for Land Redevelopment (NICLR), a non-profit affiliate of the Delta Institute.

Funding: NIPSCO, in-kind services from corporate environmental, economic development, real estate and legal review departments, and seed money for NICLR; NWIF, in-kind environmental and economic development expertise and promotion of the program to its 600-member businesses.

History/Involvement: Since 1996, NIPSCO has provided in-kind, technical environmental expertise to the Northwest Indiana Brownfield Redevelopment Project (NIBRP), a U.S. EPA regional Brownfield pilot comprised of business leaders, environmental groups, labor organizations, and citizens of Gary, Hammond, and East Chicago. NIBRP is dedicated to the restoration of economic strength and environmental well-being in these three northwest Indiana cities. In addition, NIPSCO has assisted local economic development organizations throughout Northern Indiana in marketing their Brownfield sites through the company's computerized Site Selection Center. The Center allows prospective land purchasers to view industrial sites, property records and other information about property.

Since 1997, through creation of its cooperative Brownfield redevelopment program with NWIF and NICLR, NIPSCO has endeavored to augment and support local community-based Brownfield projects by bringing additional private-sector resources and expertise to bear on their redevelopment. The cooperative program facilitates removal of barriers to redevelopment by identifying sites, assessing their environmental problems, creating redevelopment strategies, and identifying end-users. The program also incorporates discussions with local residents and business owners to ensure community participation in environmental cleanup and redevelopment planning on a site-specific basis. In appropriate circumstances, NICLR may acquire options or take title to effect redevelopment.

Accomplishments:

- Technical and economic development support provided by NIPSCO has facilitated successful redevelopment of the City of Hammond's and NIBRP's Brownfield pilot site known as West Point Industrial Park. Corrective action conducted through the Indiana Department of Environmental Management's (IDEM) Voluntary Remediation Program is anticipated to result in issuance of both a Covenant Not to Sue and a Certificate of Completion. To date, two companies have commenced construction at the site which will account for over 75 jobs and increased tax base.

- The cooperative partners sponsored a Brownfields redevelopment workshop for Greater Northwest Indiana, in cooperation with IDEM and other state departments including commerce, health, and finance development. The purpose of the workshop was to inform and educate the public and the local business community about environmental management, finance incentives, and organizations that pertain to Brownfield redevelopment.

- NICLR is actively facilitating a number of urban redevelopment projects by providing tailored solutions on an individual project basis to overcome barriers to redevelopment.

For More Information, Contact: Louis Meschede, NIPSCO, Program Leader-Land Services, 219/647-5264.

5

BIBLIOGRAPHY OF SELECTED BROWNFIELD REFERENCES

5.1 Other Sources for Additional Case Studies

Title: *Lessons from the Field: Unlocking Economic Potential with an Environmental Key*.

Author: Pepper, Edith M.

Publisher: Northeast-Midwest Institute, Washington D.C., 1997.

Abstract: This book complements several Northeast-Midwest Institute books that analyze Brownfield policy issues, particularly *Coming Clean for Economic Development. A Resource Book on Environmental Cleanup and Economic Development Opportunities* (September 1996, 178 pages). It includes a total of 20 case studies from many different settings ranging from large metropolitan areas (over 250,000 population), medium cities (between 50,000-250,000), and small communities. Project sizes are also varied ranging from a $200-million / 24-acre downtown property cleanup to a smaller scale project that would provide approx. 150 jobs to a small town.

Title: The Status Of Remediation And Redevelopment Of Contaminated Property In The US. MGP Owners Perspective.

Author(s): Quinn, E.J.; Calabrese, R.F.; Wargo, L. (Yankee Gas Services Company, Meriden, CT (United States)).

Conference Title: International Symposium and Trade Fair on the Cleanup of Manufactured Gas Plants.

Conference Location: Prague (Czech Republic) **Conference Date**: 19-21 Sep 1995.

Source: Land Contamination and Reclamation, 1995, 3(4): pp. 13-15 to 13-17.

Abstract: There are numerous instances in the US and Europe where industrial waste has contaminated properties. Many of these contaminated properties have been

abandoned due to the extensive cost of site remediation. The abandonment of 'Brownfields' poses problems not only for public health and the environment but also for the economic well-being of the urban area in which they are located. Industry has opted to develop clean properties, 'greenfields', in lieu of site reuse. Since many of these properties are in prime urban locations, the reclamation and redevelopment of contaminated sites in urban 'Brownfields' has become an important international issue. A local gas distribution company in Connecticut required a new service center. A former MGP site provided an optimal location. The development of the cleanup plan and its implementation is described. **Title:** Consumers Power Forms Corp. To Manage Brownfields As U.S. Sites Gain Funding.

Source: *Utility Environment*, July 5, 1996, 21(7): pp. 9.**Title:** Contamination and Industrial Site Reuse.

Author: Bartsch, Charles and Elizabeth Collaton.

Source: *NE-MW Economic Review*, Washington, DC. Northeast Midwest Institute, 1994, pp. 4-9.

Abstract: Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) liability principle support by the EPA and goals can be achieved that does not impede financial transactions or extend lender immunity. Banking organizations and individual lenders say that public policy should encourage lending for site cleanup and reuse. Some say that CERCLA provisions do not impede investments and worry about limiting lender liability. Lack of consensus on "How clean is clean." Affordable cost for cleanup in cost areas is a concern and can be helped by federal funding programs. The following case studies are described in this article. New Haven, Connecticut, U.S. Repeating Arms Complex; Ambridge, Pennsylvania, WorldClass Steel, Inc.; Minneapolis, Minnesota, Pure Oil and Gas Farm Project.

5.2 City Program Information

Title: *The Chicago Brownfields Initiative.*

Source: City of Chicago, September 1997, website.
http://www.ci.chi.il.us/WorkSmart/Environment

Abstract: This publication covers key dates, policy initiatives, all sources of Chicago Brownfields funding, tax incentives, and development scenarios.

Title: *Brownfield Developer's Toolbox* (manual) and *Detroit. Windows of Opportunity. Turning Brownfields into Gr$$n* (manual and video).

Author: Malcolm Pirnie Engineers in association with Wade-Trim Associates and Plunkett & Cooney.

Source: Detroit Department of Environmental Affairs, May 1998.

Abstract: This guide provides an overview of the opportunities and advantages associated with Brownfield redevelopment in Detroit and describes available resources to assist in completing this process. Additional information is provided in the accompanying Brownfield Developer's Toolbox manual, and the Redevelopment video that highlights Brownfield successes in Detroit. These tools were designed to provide practical advice on how to redevelop Detroit's Brownfields and how to identify and resolve environmental issues.

Title: Restoring Contaminated Industrial Sites.

Author: Bartsch, Charles; Munson, Richard.

Source: *Issues In Science and Technology*, Richardson, TX. The University of Texas at Dallas, Pages 74-78, 1994.

Abstract: The industrial plants of the past have given the communities it once supported a big problem. The sites could be contaminated, and with the federal government passing the Comprehensive Environmental Response, Compensation, and Liability Act in 1980, the liability of cleanup cost has been an obstacle for redevelopment. If the site falls under the National Priority List, the federal government has established a fund for cleanup. If the site does not, it has to fall to someone to clean it up and that means sometimes the local government. Wichita, Kansas was a city that negotiated with the Environmental Protection Agency to eliminate the stigma of being a Superfund site and accepted the liability for cleanup of an area to move ahead with an economic revitalization project. This cleared the major stumbling block of lending institutions not making redevelopment loans. In providing more funds, the city adopted a change to the tax-increment financing by decreasing property value on contaminated areas and then backed bonds with the estimated increase in property taxes that the clean property would deliver.

5.3 Community Program Information

Title: Financing Brownfields Redevelopment. Linkage to the Empowerment Zone/Enterprise Community Program.

Author: Environmental Financial Advisory Board.

Source: *Brownfields Report No. 2,* U.S. Environmental Protection Agency (EPA), Environmental Financial Advisory Board (EFAB), Washington D.C., 1996, pp. 31 (includes executive summary and appendix).

Abstract: This advisory, from the Environmental Financial Advisory Board (EFAB), provides several case studies that can show how the empowerment zone (EZ) areas and enterprise communities (EC) can be a starting point to finding financing for Brownfield redevelopment. The empowerment zone/enterprise community program is intended to revitalize distressed urban and rural communities by creating economic opportunities, improving physical, environmental, community, and human resources, and building partnerships between local groups and federal governments. The report discusses what financing is available, who was selected, how the grants can be spent, and the administrative and reporting requirements. The document gives four clear conclusions of how the Environmental Protection Agency (EPA) can use these programs to help disadvantaged communities finance Brownfield redevelopment. Eight urban communities participating in the EZ/EC Program were contacted to determine if and how Brownfields cleanup and redevelopment activity interacted with their required strategic planning efforts. Six provided sufficient information with which to create case reviews. The EZ/EC programs profiled in this report include those of Baltimore, Philadelphia, New York City, Los Angeles, Kansas City, and Houston.

Conference Title: *EPA Brownfields '97 Conference. Partnering for a Greener Tomorrow. Track Two: Community Involvement.* September 3-5, 1997.

Conference Location: Kansas City Convention Center, Kansas City, Missouri.

Conference Overview: Community involvement is crucial to the long-term success of the Brownfields program. Discuss ways to turn community visions into reality by attracting the private sector, marshaling public resources, and involving stakeholders at the local level. See how concerns about environmental justice, job opportunities, and public health can be integrated into land use planning. Listen to Brownfields veterans from all levels of business, government, and community organizations explain how to build model public-private partnerships that work.

Title: *Community Brownfield Guidebook: Assessing and Resolving Environmental Barriers to Redevelopment.*

Author(s): Lergh, Nancey G. and Rhonda Hise.

Source: Funded by Atlanta Community Outreach Partnership Center (COPC), a joint project by the Community Design Center of Atlanta, the Georgia Institute of Technology, and Georgia State University. Provided by the City of Atlanta, Bureau of Planning, 1996.

Abstract: This guidebook was designed to assist community members, groups, agencies, and officials to identify the environmental barriers to urban redevelopment.

5.4 Comprehensive Resources

Title: *Brownfields: A Comprehensive Guide To Redeveloping Contaminated Property.*

Author: Davis, Todd S., and Kevin D. Margolis. [Edited by] Todd S. Davis, and Kevin D. Margolis; with a preface by Vice President Al Gore.

Publisher: American Bar Association, Section of Natural Resources, Energy, and Environmental Law, Chicago, IL, 1997, 703 pp. ill.

Abstract: This book was developed to provide both information and strategic advice to assist parties hurdle the barriers precluding Brownfields redevelopment. It also includes an in-depth look at all recently enacted state Voluntary Cleanup Programs. The four parts of the book include background information, details of the most important legal, business, financial, and political issues associated with redeveloping contaminated real estate; discussions of the basic science and emerging concepts involved in risk-based science used to address contaminated property appropriately and cost-effectively; and important elements of each state Voluntary Cleanup Program.

Title: *The Brownfields Book.*

Author: Roy F. Weston, Inc. and Jenner & Block.

Publisher: Roy F. Weston, Inc. and Jenner & Block, Chicago, IL (111 pgs.) 1997.

Abstract: *The Brownfields Book* is a comprehensive guide on the legal and financial tools available to business, government, and community leaders to profitably redevelop abandoned urban properties, commonly known as "Brownfields." Co-written by environmental consultants Roy F. Weston, Inc., and law firm Jenner & Block, the book demonstrates the economic benefits of redeveloping once thriving but now vacant urban industrial and commercial properties. The book opens with an overview of the conditions that created Brownfields and goes on to discuss the legal and financial issues affecting Brownfield redevelopment efforts, some of the cost-saving approaches to site remediation, and the government and private initiatives that are available to turn Brownfields into marketable development opportunities. To support the major theme of the book that Brownfields present a unique opportunity for fostering economic growth in urban areas, case studies of abandoned properties that have been successfully revitalized are presented in detail. The book also contains a survey of state and voluntary cleanup laws, a guide to USEPA Brownfield redevelopment policies, and the web sites of relevant environmental agencies in each state.

From the Publisher

Besides being an excellent resource document, *The Brownfields Book* can be used by real estate developers, investors, industrial clients, and community organizations as an effective tool to turn Brownfields into profitable properties that create jobs, clean up the environment, and help sustain a higher standard of living in our cities and surrounding communities

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Title: *Brownfields: Cleaning and Reusing Contaminated Properties.*

Author: Bartsch, Charles, and Elizabeth Collaton.

Corporate Source: Northeast-Midwest Institute (U.S.), Westport, Conn., Praeger ix, 133 pp.; Connecticut, 1997.

Abstract: Virtually every city in the nation's older industrial regions, no matter its size, grapples with the challenge of unused or abandoned manufacturing facilities and other industrial sites. Local public officials, economic development practitioners, and site owners who have sought to revitalize fallow industrial properties face daunting challenges. contamination of the buildings, equipment, and surrounding land and water. Public concern about health effects from hazardous chemicals, changing environmental law, and evolving private sector development and financing priorities have made it increasingly difficult for communities to restore and reuse former manufacturing sites. This study, sponsored by the Northeast-Midwest Institute, offers analysis and practical guidance on how these blighted areas--Brownfields--have been and can be brought back to life. Utility companies will find the Northeast-Midwest Institute's offerings quite insightful.

Title: Brownfields: Options and Opportunities.

Author(s): Kirshenberg, Seth D. and Charles Bartsch.

Publisher: *MIS Report* (International City / County Management Association), May 1997, 29(5). 1-25.

Abstract: This report is a summary of the book and CD ROM titled *Brownfields Development. A Guide for Local Governments.*

Title: *Brownfields Redevelopment: Programs And Strategies For Rehabilitating Contaminated Real Estate.*

Author: Dennison, Mark S.

Publisher: Government Institutes, Rockville, MD, (407 pages), 1998.

Abstract: A comprehensive guide to the programs and strategies that Brownfields project participants can use to perform the assessment, cleanup, and redevelopment of Brownfields properties. After reviewing federal and state programs that form the regulatory framework and economic stimulus for rehabilitating Brownfields, the author describes each step in the redevelopment process, as well as available financing tools and liability assurances. Activities underway at each of the EPA's Brownfield Assessment Pilot Projects are summarized, and Brownfields case studies of industrial, commercial, and residential redevelopment projects are provided. Contact information for EPA and state Brownfields coordinators, a model prospective purchaser agreement, sample comfort/status letters and a glossary of relevant terms are also included.

Title: Turning Brownfields into Greenbacks.

Author: Simons, Richard A.

Publisher: Urban Land Institute, 1997 (181 pp.)

Abstract: A pragmatic guide to redeveloping brownfields, this book offers realistic methods and techniques to turn contaminated land into a profit opportunity. Both developers and public officials will learn which brownfields are good candidates for redevelopment, and what subsidies and other inducements are needed to encourage it. More than 50 tools and strategies that will help you maneuver through government regulations, secure sources of financing, reduce liability, undertake remediation, and get loan guarantees and assurances.

5.5 Conferences

Conference Title: *Risk-Based Decision-Making Facilitating Real Estate Transactions and Brownfield Redevelopments, September 28-29, 1998.*

Conference Location: Fairmont Hotel, Chicago, IL.

Conference Overview: The purpose of this conference was to 1) lay out a framework for building a streamlined and technically defensible "risk-based" program for mandatory and voluntary site cleanups, and 2) show how risk-based cleanup programs

have been successfully applied in public / private partnerships involving financial transactions and brownfield redevelopments.

Conference Title: *EPA Brownfields '97 Conference: Partnering for a Greener Tomorrow. Track Three: Finance,* September 3-5, 1997.

Conference Location: Kansas City Convention Center, Kansas City, Missouri.

Conference Overview: Finance is an integral component of the Brownfields program. Learn where to find money and how to get it, by exploring tools available to local governments, environmental banking, investment opportunities, due diligence requirements, site assessments, the role of foundations and nonprofit organizations, and leveraging of public financing with private financing. Learn how the private sector views the cleanup and redevelopment of Brownfields and how to attract new businesses to your community.

Conference Title: *EPA Brownfields '97 Conference: Partnering for a Greener Tomorrow. Track Four: Legal,* September 3-5, 1997.

Conference Location: Kansas City Convention Center, Kansas City, Missouri.

Conference Overview: The existing legal framework of the Brownfields program may seem daunting, but you can understand it easily and use it to your advantage. Discuss legislative outlooks with congressional staff and navigate complex regulations with seasoned environmental professionals. Learn about real estate transactions, dispute resolution techniques, the insurance industry's new attitude about Brownfields, and government comfort and assurance issues.

Conference Title: *Brownfields: Innovative Tools that Work,* March 26-27, 1998.

Conference Location: Baltimore, Maryland.

Conference Overview: Covered the latest and most effective means to revitalize Brownfields – from site location to financing and insurance.

Conference Title: *EPA Brownfields '97 Conference: Partnering for a Greener Tomorrow, Track One: Assessment and Cleanup*, September 3-5, 1997.

Location: Kansas City Convention Center, Kansas City, Missouri.

Topic Abstract: The processes of site assessment and cleanup are changing more rapidly today than ever before. Keep up with the most current tools, information systems,

techniques, and community-based risk management strategies. Learn from experts in the Brownfields arena about a host of topics, ranging from the latest information on cutting-edge innovative technologies, such as phytoremediation and soil vapor extraction, to the most recent updates of risk-based corrective action policies.

Conference Overview: The overall purpose of the Conference was to promote communications among environmental justice and other community organizations throughout the U.S.; establish a national presence through which Brownfields activists could work together to influence policy; ensure that Brownfields projects are not used as an excuse to perpetuate polluting industries in communities; and build a community-based Brownfields strategy. Conference packet includes contact lists, key speaker biographies, exhibitor information, landview CD, and a Conference disk order form.

Conference Title: *Risk-Based Decision-Making In Successful Financial Transactions And Brownfield Redevelopments*, April 8-9, 1998.

Conference Location: Washington, D.C.

Conference Overview: Presentation topics included the following. capturing market opportunities and financing Brownfields; the role of RBCA in financial transactions; banking on Brownfields; successful Brownfield transactions; state Brownfield and voluntary cleanup programs; negotiating the disposition and purchase of contaminated properties; tiered risk-based solutions for accelerating site cleanups; USEPA, GSA Brownfields programs; Economic Development Agency Brownfields Programs; institutional controls tied to future land use / cleanup standards and financial assurances; venture capital approach to contaminated properties; Brownfield deals through nonprofit organizations; creative financing and insurance options for Brownfields; and cleaning up impaired real estate assets.

Conference Title: *Selling Environmentally Impaired Utility Real Estate Assets*, June 11-12, 1998.

Conference Location: Doubletree Hotel, Philadelphia, Pennsylvania.

Conference Overview: Some of the presentation topics included the following. Superfund Reform Initiatives and Applications to Site Remediation; Planning, Marketing, & Selling Surplus Land, MGP Sites, and Electric Generating Stations; Accessing Brownfield moneys under U.S. Treasury, HUD and EPA programs; Public / Private Agreements; Industry Perspective - How Utilities are Reacting; Brownfield and the Reutilization of Utility Sites; Environmental Insurance as a Risk Management Tool; Risk-based Analysis; and MGP Sites, an International Perspective.

Conference Title: *National Brownfields Transaction Conference*; a joint EPA / SONREEL program, June 18, 1996.

Conference Location: Chicago, Illinois: course materials / American Bar Association, Section of Natural Resources, Energy, and Environmental Law.

Source: American Bar Association Section of Natural Resources, Energy, and Environmental Law United States Environmental Protection Agency, 1996 Continuing Legal Education Series, [Chicago, Ill.]. ABA 1 v. (various pagings). maps; 28 cm [Chicago, Ill.], 1996.

Conference Title: *EPA Brownfields '97 Conference: Partnering for a Greener Tomorrow, Track Five: Redevelopment*, September 3-5, 1997.

Location: Kansas City Convention Center, Kansas City, Missouri.

Topic Abstract: Successful redevelopment is a keystone of the Brownfields program. Discuss how to put together successful real estate ventures, attract small and minority-owned businesses, develop waterfronts and former railyards, and address competing community interests. Learn how the Brownfields program is redeveloping federal properties, assisting rural communities, and improving public transportation.

Conference Overview: The purpose of the Conference was to promote communications among environmental justice and other community organizations throughout the U.S.; establish a national presence through which Brownfields activists could work together to influence policy; ensure that Brownfields projects are not used as an excuse to perpetuate polluting industries in communities; and build a community-based Brownfields strategy. Conference packet includes contact lists, key speaker biographies, exhibitor information, landview CD, and a Conference disk order form.

5.6 Financial References

Title: For the CEO of the 1990s: Risk-Based Decision Making Influencing Financial Transactions & Brownfields Redevelopments: Proceedings.

Publisher: RTM Comns, October 1997.

Title: *Metro Boston Brownfields Status Report; From Eyesore To Opportunity: Financing & Other Strategies To Recycle Contaminated Sites.*

Source: Massachusetts Metropolitan Area Planning Council Inner Core Committee, [Boston, Mass. MAPC 1 v. (various pagings) . ill. ; 28 cm., Massachusetts, 1995.

Title: Analysis & Perspective. Financing Brownfields Development. Part I.

Source: *BNA Toxics Law Daily*, January 15, 1998.

Title: Information for Capital Providers in Brownfield Site Redevelopment.

Author: The Environmental Financial Advisory Board (EFAB).

Source: U.S. Environmental Protection Agency (EPA), Environmental Financial Advisory Board (EFAB), Washington, D.C., 1995, pp. 17; also available from http://www.epa.gov.

Abstract: This is the first in a series of advisories planned by the Environmental Financial Advisory Board (EFAB) addressing the issue of the redevelopment of contaminated industrial and commercial sites, also known as "Brownfields." This particular advisory is designed primarily for capital providers, such as financial institutions, finance companies, insurance industries, and other financial service firms that provide debt capital. It focuses on the relationship between Brownfield site redevelopment and remediation and the role that capital providers play in those undertakings.

Title: *Urban Brownfields Site Survey: Preliminary Analysis.*

Author: Austrian, Ziona; Eichler, Henning.

Source: The Economic Development Program; The Urban Center; Levin College Urban Affairs; Cleveland State University, pp. 19, 1994.

Abstract: The Great Lakes Environmental Finance Center surveyed public and private officials on Brownfield issues. This report documents the results. Eleven out of 125 sent out were returned. Some states recorded inventories of Brownfields (31%) and a majority of these had identified and prioritized the sites. Most of the respondents stated Brownfields do pose an obstacle in economical development. The main reason the sites are overlooked for industry are the uncertainties about liability and cost of cleanup, lack of financing available because of lenders possible liability, inadequate cleanup standards with regard to future site use. There are several graphs included with this report that cover the following: survey respondents by state and sector; agencies involved in identifying Brownfield sites; percentage Brownfields present an economic barrier; financing programs; regulatory changes necessary for redevelopment; percentage of involvement of the following groups in Brownfield cleanup; state environmental agencies; neighborhood development organizations; city/regional economic development organizations; and state economic development agencies.

Title: Private Financing for Development of Sites with Residual Contamination: A Lender's Approach to Avoiding Liability for Environmental Impairment; Use of Environmental Insurance to Encourage Redevelopment vs. Development of Greenfields.

Author: Abarbanel, Stephen J.

Source: Presentation at 1995 Astswmo Brownfields, Workshop in Washington D.C. on August 16, 1995, 14 pp.

Abstract: The paper discusses the background of lender liability in accordance with the Comprehensive Environmental Response, Compensation and Liability Act, state statutes and under common laws. Contains an outline on establishing an Environmental Risk Management plan with reference to the key personnel that needs to be involved. The advantages and disadvantages of different types of coverage are examined for both the lender and the borrower. This paper was put out in conjunction with a seminar at a Conference, therefore it is not a comprehensive guide for any one of the programs.

Title: Financing Brownfield Cleanup and Redevelopment.

Author: Bartsch, Charles.

Source: *NE-MW Economic Review,* Northeast Midwest Institute, Washington, D.C., June 1994, pp. 4-9.

Abstract: The possibility of contamination of many industrial sites has lead to difficulty in finding financing for cleanup and redevelopment. The Northeast Midwest Congressional Coalition has discussed some of the different financial options open for Brownfields. This article gives information on legislative proposal on options including tax incentives, capital attraction incentives, and initiatives to support financing. Specific tax incentive programs mentioned are environmental remediation tax credit, tax-exempt industrial development bond, industrial- site remediation account, exempting the loan interest from Brownfields project loans, and a Brownfield development tax credit. The capital attraction incentives mentioned are federal loans to states to make financial resources directly available, change the Community Reinvestment Act to allows loans for cleanup, amend federal economic development programs to reflect Brownfields, use part of the Superfund Trust Fund to set up a revolving loan fund for Brownfields, and allow for direct loan application to the Superfund Trust fund by communities. There is also a listing of other alternative capital attractions that have not been fully developed. The article discusses the different incentives to support financing. Certifying state programs to handle low and medium level contaminated sites would help close the EPA's role. The certification of the state would be made

possible by clarifying the processes for site characterization and cleanup. Establishing a state-level insurance pool to cover costs that are surprises or overruns and help property owners if standards change. The problem with lender liability needs to be addressed. There are several bills that have been announced that would protect innocent land owners, shelter lenders from Superfund liability, and give lenders more comfort in lending for Brownfields cleanup and redevelopment. The article also listed several other measures of support for these projects.

Title: Information Needs of Capital Providers in Brownfields Redevelopment.

Author: Environmental Financial Advisory Board.

Source: *Brownfields Report Number 1*, U.S. Environmental Protection Agency (EPA), Environmental Financial Advisory Board (EFAB), Washington, DC, 1995, 12 pp.

Abstract: This advisory is the first in a series of reports from the Economic Incentives Committee of the Environmental Financial Advisory Board (EFAB). The reports deal with the financial and environmental issues affecting the redevelopment of contaminated industrial and commercial sites, or "Brownfields." This advisory identifies the information needs of capital providers in redevelopment transactions and recommends actions the Environmental Protection Agency (EPA) could take to help these needs. The lenders, or capital providers, have become reluctant partners in Brownfields redevelopment, due partly to the uncertainty of financial risk from environmental contamination. The capital providers/lenders are hesitant to lend money, which inhibits redevelopment and environmental cleanup. The Board's view is that in many cases, by eliminating or reducing this uncertainty, capital providers would be more inclined to lend money for projects. Redevelopment and the associated cleanup would proceed, in part, because capital providers would have a greater understanding of the financial risk involved. As a result, capital providers would be better able to respond to their customers' financing needs and they would, in effect, become partners in financing environmental compliance. This advisory presents a simplified model for lending decisions that reflects basic criteria--credit, capacity and environmental factors. The advisory further elaborates on several categories of environmental factors that capital providers should be knowledgeable of when evaluating either lending opportunities. These categories are environmental legislation, regulations, and court rulings; site assessment; cleanup; reuse of property; and liability. The Board recommends that the EPA support the development of a Brownfields Clearinghouse to help capital providers in making lending decisions to fund the redevelopment and cleanup of Brownfield properties. The Clearinghouse would be a partnership with various organizations, including state environmental regulatory agencies; capital providers; and urban and community planners.

Title: Financing Strategies for Brownfields Redevelopment.

Author: Environmental Financial Advisory Board.

Source: *Brownfields Report No. 3*, U.S. Environmental Protection Agency (EPA), Environmental Financial Advisory Board (EFAB), Washington, DC, 1996, 29 pp.

Abstract: EPA's Brownfields Initiative seeks to empower stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and reuse Brownfields in a sustainable way. Brownfields are abandoned, idled, or under-used industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination. The initiative is designed, in part, to free the market mechanisms of redevelopment to facilitate environmental cleanup and protection. The Environmental Financial Advisory Board (EFAB)is focusing on the financial issues associated with this effort to revitalize Brownfields. EFAB seeks to encourage and facilitate investment in Brownfields and to have its work support and complement the Brownfields Initiative underway at EPA. This report is designed to assist the many parties involved in Brownfields redevelopment: communities; developers; federal and state agencies; capital providers, community groups; and others. The report examines financing strategies that can help revitalize Brownfields. First, it lays out a seven-stage process for Brownfields redevelopment encompassing site identification, initial site assessment, economic assessment, detailed site assessment (if needed), project development and financing, cleanup planning and execution, and redevelopment of property. It then depicts the economic redevelopment potential of Brownfields by classifying sites as viable, threshold, and non- viable, and suggests governments may wish to leverage limited public resources and attract private investment by targeting threshold and non-viable sites. The report also presents a wide variety of financing strategies currently being used in Brownfields redevelopment, including equity participation, fees, taxes, debt finance, grants, informational / advisory services, liability assurances, financial assurances, and legislative reforms. The report matches the financing strategies, where possible, to the stages in the redevelopment process. Finally, it provides seventeen real-life examples of how financing strategies have been applied in practice. EFAB has found that there are many financing strategies available to facilitate Brownfields redevelopment. Different strategies may be appropriate at different stages in the redevelopment process, and a combination of strategies may be needed to meet the financing demands of any single Brownfields project. The Board further notes that successful implementation of financing strategies requires collective and cooperative action on the part of all parties involved in Brownfields redevelopment. An understanding and sharing of information on Brownfields financing strategies among all parties involved are keys to successful projects.

Title: EFAB Indianapolis Meeting on Financing Brownfields Redevelopment.

Author: Environmental Financial Advisory Board.

Source: Brownfields Report No. 4, Washington, D.C., U.S. Environmental Protection Agency (EPA), Environmental Financial Advisory Board (EFAB), 1996, pp. 24.

Abstract: Many American cities are running out of clean land to support economic and community development. Brownfields, abandoned or under-utilized industrial and commercial properties with known or suspected contamination problems, are a major problem. To gain public input on the dimensions of the Brownfields problem and possible solutions, the Environmental Finance Advisory Board (EFAB) of the United States Environmental Protection Agency (EPA) held a two-day public meeting on March 27-28, 1995 in Indianapolis, Indiana. Primary goals of the meeting were to discuss the barriers limiting the public and private sector's ability to finance Brownfields site cleanup and redevelopment and to find solutions. The meeting was held in Indianapolis, Indiana, at the invitation of Mayor Stephen Goldsmith, an EFAB member. Warren Tyler, a Vice President of State Savings Bank in Columbus, Ohio and an EFAB member, chaired the meeting. This report was developed to capture the major ideas presented and discussed at the meeting. During the two-day meeting, speakers shared their ideas and experiences with the EFAB on the financial, legal, real estate, regulatory, economic development, and community issues faced in redeveloping Brownfields. Speaker sessions covered the following key topics: Brownfield definitions and perspectives; federal and state Brownfield initiatives; community and neighborhood involvement; financial perspectives; business perspectives and capital provider perspectives. At the meeting, speakers and attendees shared information that will help in evaluating financing barriers and various strategies related to Brownfields cleanup and redevelopment. Participants identified possible federal actions that could encourage public and private sector investment in site cleanup and redevelopment. In addition, many legal liability, regulatory, financial, community and institutional barriers that discourage investment in these properties were highlighted. This report identifies the major ideas and issues presented during the meeting.

Title: *A Guidebook of Financial Tools.*

Author: Environmental Financial Advisory Board and the Environmental Finance Center Network.

Source: Environmental Financial Advisory Board and the Environmental Finance Center Network, June 1997.

Abstract: The guidebook has been produced by the Environmental Financial Advisory Board and the Environmental Finance Center Network. This is the June 1997 revision of the April 1997 draft of the Guidebook and has been uploaded. It will be updated on an on-going basis, based on comments and the addition of new financial tools. See also abstracts from the Environmental Financing Information Network (EFIN) database, which contains additional information. To **search** for topics in this Guidebook and the

Environmental Finance Program Web site, see the Environmental Finance Program Search Page. For **comments** on the Guidebook, please contact Timothy McProuty, Environmental Finance Program Lead at **mcprouty.timothy@epamail.epa.gov**.

Title: Attention Oilheat Marketers. Turn Brownfields Into Greenbacks Using Property Tax Reductions.

Author(s): Airst, R.L. (American Land Recycling Corp., Exton, PA (United States)).

Source: *Fuel Oil and Oil Heat with Air Conditioning,* March 1997, 56: pp.22-23, 44.

Title: *Financing Brownfield Reuse. Creative Use of Selected Public Sector Programs.*

Author: Bartsch, Charles.

Source: Northeast-Midwest Institute, July 1997. 1-10. Website: http://www.nemw.org.

Abstract: This report discusses topics such as HUD programs, community development block grants, section 108 loan guarantees, empowerment zones and enterprise communities, small business administration (SBA) programs, and tax code provisions.

Title: A Boon for Brownfields.

Author: Airst, Randall JD, LLM and Susan Stann, JD.

Source: *Environmental Protection*, 9(7): 12-15.

Abstract: This article discusses the financing of a Brownfields redevelopment project, from the problems and threats of liability to acquiring layered financing from various sources, and obtaining remediation loans under the Community Reinvestment Act program.

5.7 Insurance References

Title: *Potential Insurance Products for Brownfields Cleanup and Redevelopment. Survey Results of Insurance Industry Products Available for Transference of Risk at Potentially Contaminated Property.*

Author: U.S. Environmental Protection Agency, Office of Emergency and Remedial Response; Office of Solid Waste and Emergency Response.

Source: U.S. Environmental Protection Agency, Office of Emergency and Remedial Response; Office of Solid Waste and Emergency Response, EPA Publication Number;

EPA 500-R-96-001; OSWER 9230.0-74; PB96-963244, 45pp. (17 text, 28 attachments, including survey contacts and complete survey responses), 1996. Also available at http://www.epa.gov.

Abstract: This survey is part of the EPA's Brownfields Economic Redevelopment Initiative. Key players in economic redevelopment are sometimes reluctant to pursue redevelopment activities at Brownfields because of the fear of incurring potential liability. There are three types of risks. Remediation-based Risks; Property Value Impairment Risks; and Personal Injury Risks. Some parties assert that insurance products in existence or under development transfer these risks from the key players involved in Brownfields redevelopment to a third party. EPA conducted this survey to test this assumption by posing three questions. 1) Are insurance policies in existence or under development that could serve as risk transfer mechanisms for potential contaminated properties? 2) If policies exist or are under development, how many of the risks given above are covered and how available are the policies? 3) If no policies exist or are under development for specific risks, what factors are inhibiting their development and use? To conduct the survey, the EPA identified no more than nine representatives of the insurance industry known as key players. The EPA conducted phone interviews with eight of these representatives. The EPA used a standard list of risks, to maintain consistency when insurance representatives referred to risks covered or not covered. This report presents the findings. Some of the findings included. all respondents indicated that insurance is available and is being purchased; the amount of minimum and maximum coverage; and suggestions for EPA involvement.

Title: Using Environmental Insurance to Reduce Environmental Liability.

Author: Bailey, Kathy D., (Chadbourne & Parke, Washington, DC); Gulledge, William, (Environ & Commercial Insurance, Reston, VA).

Source: *Nat Resource Environ*, Spring 1997 (Qtr 2), 1(4). pp. 26(7).

Abstract: The concept of liability insurance and environmental liabilities as a subset of that insurance is discussed in this article. The role of environmental liability insurance and some innovative approaches to using insurance to further property transfer transactions and other international social policies is also reviewed.

Title: A Developer's Perspective on Brownfields and Environmental Insurance.

Author: Abelson, Ned, Goulston & Storrs, Boston, Massachusetts.

Source: *Environ Regul Permit*, Spring 1997, 6(3). pp. 13(4).

Title: Potential Insurance Products for Brownfields Cleanup and Redevelopment. Survey Results of Insurance Industry Products Available for Transference of Risk at Potentially Contaminated Property.

Source: Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response, Corp. Source Codes: 031287614, Report No: EPA/500/R-96/001; OSWER-9230.0-74, Jun 96, 52p, Journal Announcement. GRAI9701, NTIS Accession Number: PB96-963244.

5.8 Legal References

Title: *Brownfields Law and Practice: The Cleanup and Redevelopment of Contaminated Land.*

Author: M. Bender; Gerrard, Michael (general editor).

Place of Publication: New York, 1998

Title: Presidential Showcase Program: Brownfields Redevelopment. Making Brownfields Transactions Work. A Key To Urban Revitalization And Environmental Stewardship.

Source: ABA Annual Meeting, San Francisco, [S.l.], American Bar Association, August 4, 1997, vol.1. (various pagings), ill. ; 28 cm.

Title: Brownfields Transactions; Making the Deals Work.

Source: ABA Satellite Seminar, March 27, 1997, [U.S.] American Bar Association, 1997, n.p., pp.194.

Title: *Brownfields Initiatives Aspects of Corporations.*

Author: Minc, David C

Source: American Bar Association Section of Real Property, Probate, and Trust Law, Chicago, Ill. (750 N. Lake Shore Dr., Chicago 60611). American Bar Association , 1 v. (various pagings) ; 28 cm., Illinois, 1995. Tuesday, August 8, 1995, Chicago, Illinois.

Title: Recycling Brownfields: The Legislative Climate.

Author: Dinsmore, Clement

Source: *Journal of Urban Technology*, 1995, 2(2), pp. 2-20, The Society of Urban Technology, New York.

Abstract: The responses of state and federal governments to the problems of Brownfields are discussed. The states included are primarily in the Northeast and Midwest and the various policies some have enacted for Brownfields cleanup and redevelopment. The article discusses the previous session of Congress' position on environmental issues and the legislation proposed. Effects on Brownfield legislation from the change in Congress are addressed. The author gives recommendations for state and federal governments to help with the Brownfield issue.

Title: Environmental Liability Protection And Other Advantages Of Voluntary Cleanup Programs.

Author(s): Bost, R.C.; Linton, K.E. (ERM-Southwest, Inc., Houston, TX (United States)).

Title: 8. Annual International Energy Week Conference and Exhibition. Conference Papers. Book 1: Petro-Safe.

Conference Title: Energy Week '97 Conference Exhibition.

Conference Location: Houston, TX (United States) **Conference Date**: 28-30 Jan 1997.

Publisher: Houston, TX (United States) PennWell Conferences and Exhibitions.

Publication Date: 1997, pp. 187-194 (253 p).

Title: Give Diligence Its Due. Self-Incentive Auditing Laws Protect From Disclosure and Facilitate Brownfield Redevelopment.

Author: Nye, Julia Lynn; Fox, Thomas R., Kleberg Law Firm, Houston, TX

Source: *Soil & Groundwater Cleanup*, Dec-Jan 1997. pp. 30(4).

Title: Removing Regulatory Uncertainty in the Redevelopment of Brownfields.

Author: Ritter, Don; Schilling, Joseph, National Environmental Policy Institute.

Source: *Corp Environ Strategy*, Spring 1996 (Qtr 2), 3(3). p84(6).

Title: *Environmental Partnerships. A Field Guide For Nonprofit Organizations And Community Interests.*

Author: Management Institute for Environment and Business.

Publisher: Harcourt Brace & Company, (61 pages), 1995.

Abstract: This manual introduces partnerships from the nonprofit organization / community interest standpoint – the basic concepts, initial selection guidance, locating potential partners, the mechanics of a successful partnership, and how to look back and consider future partnerships.

Title: *Environmental Partnerships. A Field Guide For Government Agencies.*

Author: Management Institute for Environment and Business.

Publisher: Harcourt Brace & Company, (61 pages), 1995.

Abstract: This manual introduces partnerships from the governmental standpoint – the basic concepts, initial selection guidance, locating potential partners, the mechanics of a successful partnership, and how to look back and consider future partnerships.

Title: *Environmental Partnerships. A Business Handbook.*

Author: Management Institute for Environment And Business.

Publisher: Harcourt Brace & Company, (61 pages), 1995.

Abstract: This manual introduces partnerships for companies– the basic concepts, initial selection guidance, locating potential partners, the mechanics of a successful partnership, and how to look back and consider future partnerships.

Title: Environmental Liability Protection And Other Advantages Of Voluntary Cleanup Programs.

Author(s): Bost, R.C. ; Linton, K.E. (ERM-Southwest, Inc., Houston, TX (United States)).

Title: 8. Annual International Energy Week Conference And Exhibition. Conference Papers. Book 1. Petro-Safe.

Conference Title: Energy Week '97 Conference Exhibition. Houston, TX (United States), 28-30, Jan 1997.

Publisher: Houston, TX (United States), PennWell Conferences and Exhibitions.

Publication Date: 1997, p 187-194 (253 p).

Abstract: Historically, regulatory agencies have required that contaminated sites be returned to pristine conditions, often at very high costs. Fear of these enormous environmental liabilities has resulted in abandonment of many industrial and commercial properties, referred to as Brownfields. The development of Risk-Based Corrective Action programs has provided a means for regulatory agencies to evaluate contaminated sites based on risk to human health and the environment, resulting in more reasonable remedial measures and costs. Governmental bodies have created a more flexible means of addressing contaminated sites using Risk-Based Corrective Action and other incentives to encourage the redevelopment of sites through Voluntary Cleanup Programs. This study describes the development of Voluntary Cleanup Programs, and the successful implementation of Risk-Based Corrective Action with a focus on the states of Texas, Louisiana, and Oklahoma.

Title: *Prospective Purchaser Agreements. Reducing the Liability Risks of Contaminated Property*.

Author: Geltman, Elizabeth Glass.

Publisher: American Bar Association, Section of Natural Resources, Energy, and Environmental Law, Chicago, IL, 1997.

Abstract: This book focuses on how to draft a Prospective Purchaser Agreement (PPA) under the federal Superfund and RCRA programs. It covers historical EPA policy on prospective purchaser agreements, overview of the Brownfield purchaser problem, samples of agreements and accompanying covenant not to sue documents, EPA guidance documents, regional contacts, and accessing data on the internet. The materials in this toolkit are offered with the hope that more companies will initiate voluntary cleanup of contaminated properties, aid in the cleanup and redevelopment of urban centers, and deter urban sprawl.

Title: Options For Streamlining the Site Assessment Process.

Author(s): Myers, R. (Environmental Protection Agency, Washington, DC (United States)).

Title: Hazwaste World, Superfund XVII. Conference proceedings.

Conference Title: 17. Superfund Hazardous Waste Conference.

Conference Location: Washington, DC (United States) **Conference Date**: 15-17 Oct 1996.

Publisher: Bethesda, MD (United States) E.J. Krause and Associates, Inc.

Publication Date: 1996, p 159-162 (879 p).

5.9 MGP-Specific References

Title: Remediating MGP Brownfields.

Author(s): Larsen, B.R.

Source: *Pollution Engineering*, May 1997, 29(5): pp. 66-69.

Abstract: Provides an overview of MGP Brownfield sites, waste characteristics, technology screening for VOCs and SVOCs, in-situ VOC and SVOC treatment technologies, liability issues, and the EPA's Brownfield Initiative.

Title: *Brownfield Sites: A Briefing for the Gas Industry. Topical Report, January-July 1995.*

Source: Vierima, T. L. ; Tikalsky, S. M., Resource Strategies, Inc., Madison, WI. Sponsor. Gas Research Inst., Chicago, IL. Report No.. GRI-95/0210. July 1995, 38 pp.

Abstract: This 38-page report provides the gas industry with a comprehensive overview of the rapidly evolving issues surrounding Brownfields redevelopment. New initiatives at the federal, state and local levels are making it easier to clean up and redevelop these properties. Gas companies may have to reduce liabilities associated with currently owned properties, to achieve cost savings in siting new facilities, to create customer growth in stagnant territories, and to explore new business opportunities. This report provides gas companies with an introduction to the issue, and guidance toward the information they need if they choose to pursue these opportunities.

Title: Yesterday's Pride, Today's Liability.

Author: Hatheway, Allen W., P.E.

Source: *Civil Engineering,* November 1997: 38-41.

Title: *Topical Report. Brownfield Sites. A Briefing for the Gas Industry.*

Author: Tikalsky, S.M., Resource Strategies, Inc.

Source: U.S. Department of Commerce – NTIS, Springfield, VA, July 1995.

5.10 Real Estate References

Title: Hidden potential. (Includes related articles on cleaning up plant sites and the Consumers Renaissance Development Corp.)

Author: Rasher, Bruce; Alper, Daniel A.; Reshen, Bruce-Sean.

Source: *Electric Perspectives*, March-April, 1998, 23(2), p.54 (11).

Title: Real Asset Management Turns Overlooked Assets Into Revenue (Electric Utility Companies).

Author: Hatch, David; Kalter, Jay; Szkolnik, Jeffrey.

Source: *Electric Light & Power*, May, 1997, 75(5), pp. 17(1).

Title: *Brownfields Redevelopment: Programs & Strategies for Contaminated Real Estate.*

Author: Dennison, Mark S.

Publisher: Government Institutes, December 1997.

Title: *Brownfields: A Practical Guide to the Cleanup, Transfer, & Redevelopment of Contaminated Properties.*

Author(s): Moyer, Craig A. and Gregory D. Trimarche.

Publisher: Argent Communications Group, Foresthill, CA, March 1997.

Abstract: This book addresses issues essential to the completion of successful Brownfields transactions including site investigation and remediation, cleanup standards and land use controls, using federal, state and local government programs, valuing contaminated property, strategies for obtaining project financing, making responsible parties pay for cleanup costs, new insurance products to protect investors from liability, assessing and allocating future risks, and putting together an effective Brownfields team.

Title: *Brownfields Redevelopment; A Guidebook For Local Governments And Communities.*

Author: Kirshenberg, Seth D., et al.

Source: International City / County Management Association; Northeast-Midwest Institute (U.S.) [Washington, DC]; The Association, 1997. vol.1. (n.p.).

Abstract: This book provides information for local governments and communities to assist them with the process of Brownfield redevelopment. It provides detailed explanations of the major issues local governments and communities confront from liability to public financing to community involvement, case study summaries, federal programs, descriptions of State voluntary cleanup programs, listings of resources on innovative environmental technologies, summaries of activities of recipients of EPA's Brownfields Pilot Grants, documents affecting liability, local and regional contacts at federal agencies, and a list of further readings and resources.

Title: Brownfields vs Greenfields -- Considerations For Facility Siting.

Author(s): Hale, D.W.; Kaiding, D.C.; DeMaria, M.J. (Blasland, Bouck and Lee, Inc., Syracuse, NY (United States)).

Title: Superfund 16: Conference And Exhibition Proceedings. Volume 1.

Conference Title: 16. Hazardous Waste Conference And Exhibition. New Frontiers In Hazardous Waste, Washington, DC (United States), 6-8 Nov 1995.

Publisher: Bethesda, MD (United States) E.J. Krause and Associates.

Publication Date: 1995, p 76-79, (828 p).

Abstract: Wary of the potential remedial costs associated with Brownfield sites, industry has focused its development on greenfield areas -- undeveloped areas where the potential for previous environmental contamination is remote. This paper evaluates the impact of the development of these Brownfield areas from both an environmental and economic perspective. Critical to this evaluation is the impact of Brownfield development as it relates to urban areas. Mature, heavily developed urban areas are usually unable to offer substantial greenfield areas, and as a result, have suffered a declining tax base, as employment opportunities are shifted beyond city limits. This paper also explores the advantages and disadvantages of developing Brownfield versus greenfield areas, including issues such as. infrastructure, proximity to public transportation, public acceptance, and zoning and permitting. Furthermore, this paper provides an overview of current and pending legislation from both the federal

government and various state agencies with regard to incentives being offered for the development of Brownfield sites.

Title: The Impact of Uncertain Environmental Liability on Industrial Real Estate Development. Developing a Framework for Analysis.

Author: Boyd, James; et al.

Source: *Resources for the Future***,** Washington, DC, 1994, 67 pp.

Abstract: This report states that it is not just the environmental laws (SUPERFUND) that are prohibiting Brownfield redevelopment. The article describes the following downfalls to redeveloping Brownfields. questionable liability of past, present and prospective owners; getting financial backing; property not put on the market; contractual protection not workable. The report arrives at the conclusions by studying previous legal cases and its own case studies. The report reviews the issues of property abandonment, obstacles of redeveloping urban land, and the effects CERCLA and other regulations have on Brownfield redevelopment. Twelve case studies were performed in Indiana, Pennsylvania, Vermont, Michigan, Iowa, New Jersey, and Utah. Some of the case studies may refer to more than one site a company has and were conducted by telephone and written correspondence with experts who are dealing with these sites. The focus was in the nature of the Brownfield issue in its location. There are Appendices on property transaction models, full case studies of the above mentioned states, and state actions.

Title: Potential For Redevelopment of Contaminated Brownfield Sites.

Author: Page, William G.; Rabinowitz, Harvey Z.

Source: *Economic Development Quarterly*, November 1994, 8(4). 353-363.

Abstract: Contamination from past industrial practices and the enforcement of present environmental policies have affected the redevelopment of Brownfield sites. Before Superfund legislation was enacted, there were no laws specifically monitoring the disposal of toxic and hazardous waste. Businesses were not required to pay disposal costs for dumping the wastes on sites. This resulted in the contamination of the sites and created public hazards. As a result, Congress passed laws following two approaches. 1) to regulate the use and disposal of toxic and hazardous materials and 2) make the polluter pay for the cleanup and any damage caused. Under the legislation, the owner of the site is liable for the cleanup costs, regardless of his responsibility for the contamination. Prospective investors are reluctant to undertake redevelopment projects. However, there are contaminated Brownfield sites which have been redeveloped without a government mandated cleanup. This article gives examples of

these projects, including the problems, costs and outcomes of these efforts. There are sites which have value for private sector use and the authors state that environmental polices should provide incentives for their redevelopment. The authors present a model which uses the return on investment and the risk of contamination as factors for determining which projects receive the remediation funds.

Title: Thinking Through Brownfields.

Author: Kass, Stephen L., Carter Ledyard & Milburn, New York City.

Source: *Corporate Environmental Strategy*, Fall 1997, 5(1). pp. 58-62.

Abstract: This article discusses the competing factors of joint ventures between experienced real estate developers and engineering/consulting firms during Brownfield projects.

Title: Risk Factors in the Appraisal of Contaminated Property.

Author: Chalmers, James A.; Jackson, Thomas O.

Source: *Appraisal Journal*, January 1996, 64(1). pp. 44(15).

Title: Brownfields Real Estate Value, Location Key Factors In Successful Development of Used Property.

Source: *BNA National Environment Daily*, April 10, 1998.

Title: Economic Opportunities through Redevelopment of Brownfields.

Author: Law, Kevin S.

Source: *LI Business News*, October 13, 1997, n41, p30(1).

Title: *Environmental Site Assessments and their Impact on Property Value. The Appraiser's Role.*

Author(s): Colangelo, Robert V., CPG, and Ronald D. Miller, Esq.

Publisher. Appraisal Institute, (224 pages), 1995.

Abstract: This guide for appraisers discusses the various types of documentation that currently exist in the field and how appraisers can use such information in the

valuation process. It examines environmental regulation from a historical perspective and then focuses on current government regulatory requirements and industry standards in evaluating environmental hazards. Includes extensive discussions of the ASTM Standard Practices for environmental site assessments and the Appraisal Institute's own Property Observation Checklist.

Title: *Coming Clean for Economic Development. A Resource Book on Environmental Cleanup and Economic Development.*

Source: Bartsch, C.; Collaton, E. Northeast-Midwest Inst., Washington, DC. Sponsor. Economic Development Administration, Washington, DC. Technical Assistance and Research Div., Nov 95, 164 pp.

Abstract: Economic Development practitioners increasingly confront environmental concerns and the added costs associated with site contamination. This report seeks to bring this knowledge to local officials who are struggling to increase economic activity in their communities. This guidebook offers detailed information on state and federal regulations and programs. It will help practitioners understand the problems, opportunities, and available tools needed to thoughtfully integrate environmental cleanup into the economic development process. The report is laid out in five parts. (1) Framing the Issue, (2) Environmental Considerations, (3) Financing Tools, (4) Environmental Program Tools, and (5) Success Stories.

5.11 Remediation References

Title: Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites.

Source: *Annual Book of American Society of Testing and Material (ASTM) Standards*, Designation: E 1739-95, ASTM, V. 11.04, November 1995.

Title: Changing the Focus of Brownfields Cleanups.

Author(s): Cichon, E.

Source: *Pollution Engineering*, April 1997, 29(4). pp.48-50.

Abstract: The goals of Brownfields redevelopment include speed, flexibility, compatibility and cost-effectiveness. This article discusses the Accelerated Remediation Process (ARP), soil remediation alternatives, groundwater remediation, and risk-based cleanup strategies.

Title: Soil Recycling Paves the Way for Treating Brownfields.

Author(s): Gladdys, R. (United Retek Corp., Milford, MA (United States)).

Source: *Environmental Protection*, February 1996, 7(2). pp.24, 32-33.

Title: *Market Opportunities For Innovative Site Cleanup Technologies. Middle-Atlantic States.*

Corporate Source: Environmental Protection Agency, Washington, DC (United States). Office of Solid Waste and Emergency Response, December 1995, Report No.: EPA/542/R-95/010, NTIS Accession Number: PB96-121637, 175 pp.

Abstract: The purpose of this report is to provide vendors and developers of innovative treatment technologies a resource to use in determining potential technology needs present in the Middle-Atlantic states in order to support them in developing marketing plans for the region. The main body of the report, Sections 2 through 7, provides detailed accounts of the potential markets for innovative hazardous waste remediation technologies in each Middle-Atlantic state. This report also contains four appendixes: Appendix A contains a list of DOD installations with two or fewer sites or estimated costs for cleanup of less than or equal to $1 million; Appendix B contains EPA-produced fact sheets concerning the Brownfields Economic Redevelopment Initiative; Appendix C contains information on various government contracts of potential interest to vendors of innovative remediation technologies; and Appendix D contains a list of references used to prepare this report. **Title:** Thermo Remediation Part of Major Utility Cleanup Contract.

Source: PR Newswire, May 9, 1996, pp. 509.

5.12 Risk Assessment References

Title: *Risk Assessment Guidance for Superfund*.

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 540/1-89/002, December, 1989.

Title: *Ecological Risk Assessment Guidance For Superfund. Process For Designing And Conducting Ecological Risk Assessments.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 540-R-97-006, June 1997.

Title: *Exposure Factors: Handbook Volume 2. Food Ingestion Factors.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA/600/P-95/002Fb, August 1997.

Title: *Exposure Factors: Handbook Volume 3: Activity Factors*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 600/P-95/002Fc, August 1997.

Title: *Soil Screening Guidance: User's Guide.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 540/H96/018 PB96-963505, April 1996.

Title: *Soil Screening Guidance: Technical Background Document.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 540/R-95/128, PB 96-963502, May 1996.

Title: *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons.*

Source: USEPA Office of Emergency and Remedial Response, Document # EPA 600 R-93/089, July 1993.

Title: Bankers, Developers, and New Investment in Brownfield Sites: Environmental Concerns and the Social Psychology of Risk.

Author: Yount, Kristen R.; Meyer, Peter B.

Source: *Economic Development Quarterly*, November 1994, 8(4). 338-344.

Abstract: The 1980 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), known as the Superfund Act, was passed to facilitate the cleanup of contaminated properties. The act holds the past and present owners liable for the cleanup, regardless of their responsibility for the damage. This has hindered efforts to renovate abandoned and underused lands and buildings on these properties. Potential investors, such as bankers and developers, may have distorted judgements concerning the level of risk associated with the sites. This article discusses some noneconomic factors shaping investor risk perception. The authors review risk characteristics such as uncertainty and uncontrollability, the working of the availability heuristic and social amplifications of risk. They have studied literature on property developers and financiers to better comprehend both their motivations and fears of Brownfield opportunities. Findings show that investors tend to remember the court cases and articles relating to the risk and liability of cleaning up the sites, as opposed to the success stories. Public sector involvement from the local to the federal government

levels is a solution for alleviating these fears and encouraging investments. The government units can implement new initiatives, such as buyer protection laws or mandating the investment in Brownfield sites as part of an institution's portfolio. Stimulating the economy and improving investment opportunities requires the joint effort of local, regional and state government units, private sector development agencies and partnership organizations.

Title: Risk Management: Reducing Brownfield Cleanup Costs.

Author(s): Graves, N.

Source: *Pollution Engineering*, August 1997, 29(8). pp 34-37.

Title: Hazardous Waste Management.

Author(s): LaGrega, Michael D., Philip L. Buckingham, Jeffrey C. Evans, and The Environmental Resources Management Group.

Publisher: McGraw-Hill, Inc., 1994, 1146 pgs.

Abstract: Provides a comprehensive overview of hazardous waste management. The chapters include case studies, example problems, and discussion topics and problems. Topics include fundamentals, an overview of landmark episodes of toxic contamination, definitions of hazardous waste, and environmental ethics, law, fate and transport, toxicology, audits, treatment and disposal, and site remediation.

5.13 State Program References

Title: Efforts to Redevelop Blighted Properties Pursued in All States.

Source: *Environ Report-BNA*, February 6, 1998, 28(39): p2086(7).

Title: Pennsylvania's Land Recycling Program.

Author: Klayman, Barry M.; Siskind, Ralph W., Wolf, Block, Schorr and Solis-Cohen, Philadelphia, PA.

Source: *Environ Regulation and Permitting*, Summer 96 (Qtr 3), 5(4): p27(7).

Title: Recycling Industrial Sites In Erie County. Meeting the Challenges of Brownfield Redevelopment.

Author: Berger, Robert S.; et al.

Source: *Buffalo Environmental Law Journal*, 1995, 3(1): pp. 69-127.

Abstract: This article attempts to identify the barriers to recycling minimally contaminated areas and possible means of removing the barriers in Erie County, New York. This is only the first step that will be taken to coordinate public agencies, private industry, community groups, and environmental advocates to understand the full reach of the problem and pursue solutions. This is an agenda that is to be used for further action on the part of this committee and contains various ways of financing or encouraging Brownfield redevelopment. The report gives background information on federal and New York legislation effecting Brownfields.

Title: The New York State Department Of Environmental Conservation's Voluntary Cleanup Program.

Author: Sullivan, Charles E. Jr.

Source: New York State Department of Environmental Conservation / Inactive Hazardous Waste Site Enforcement Bureau / Division of Environmental Enforcement, 1995, 6 pps.

Abstract: Paper gives the reason the voluntary cleanup program was established, defines who qualifies for the program and what sites are covered. The application process and the types on contractual agreements that are part of the program. The program involves the public and if a site is cleaned up according to the plan, a letter declaring it clean is given to the land owner. The letter is given with releases that cover natural resource damage with certain reopeners. The program will evolve as other states have enacted their voluntary cleanup programs and private enterprise increases development.

Title: Connecticut's Urban Site Remedial Action Program.

Source: Hartford, Connecticut. State Of Connecticut, Department of Environmental Protection, 1995, pps.2.

Abstract: The Connecticut program was developed to address the liability issue. The full program provides for expedited remediation of polluted properties. The paper lists the highlights of the program as well as the benefits for the environmental health, social and economic well-being of the community. There are five sites that are currently

undergoing remediation. The program has allocated $22 million of the $30 million to examine and remediate industrial sites since beginning in 1992.

Title: Michigan's Approach to Urban Redevelopment Involving Contaminated Properties.

Author: Swartz, Robert D.

Source: *Economic Development Quarterly*, 1994. 8(4): pp 329-337.

Abstract: Owners of contaminated property are liable for the cleanup, even when they are not responsible for the contamination. This creates a financial risk for prospective investors. They are avoiding investing in and redeveloping, polluted Brownfield locations. This article discusses the actions Michigan has taken to resolve this situation. Michigan has enacted legislation that allows the state to enter into a "covenant not to sue" (CNTS), with innocent purchasers of polluted sites (those not responsible for causing the contamination). The CNTS both protects the state's interest and decreases the investor's financial risk of reinvesting in Brownfield locations. Michigan also enacted a "Polluters Pay Law" which requires those responsible for the contamination to pay for the cleanup. Additionally, the state has a Site Reclamation Program, which provides grants or loans to governmental entities to cleanup contaminated sites. Funding is allocated only when there is a committed investor for the property. Michigan's legislation and programs are new and under examination, but they promote economic development and mitigate the risk and liability in redeveloping contaminated property. The article suggests that other parts of the country could implement similar legislation.

Title: Clean Sites Initiative Establishes Covenants to Ensure Cleanups, Prevent Future State Lawsuits at Hazardous Waste Sites.

Source: Commonwealth of Massachusetts, Executive Office of Environmental Affairs, Department of Environmental Protection, Boston, Massachusetts, 1995, 5 pages.

Abstract: Massachusetts has established a program to alleviate the cleanup liability for prospective buyers / tenants of contaminated properties. The Commonwealth enters into covenants with the prospective buyers / tenants who agree to ensure that known contamination of a property will be cleaned up as required by law. In return, the Commonwealth agrees that once the site is cleaned up, it will not sue the owner / tenant for response action costs or damages for contamination that is found later on the property. The Covenant holder also will not have to pay for contamination-related damage to natural resources on and around the site. There are restrictions. the owners / tenants can face damage claims from third parties and they are responsible for cleaning up new releases of oil or hazardous material that occur after the Covenant

takes effect. In addition to the provisions of the covenants, this fact sheet defines what projects are eligible, who is eligible, the application process, what happens once a Covenant takes affect and when a Covenant can be reopened. It also lists contacts for information, the Massachusetts Office of Business Development locations and the Department of Environmental Protection regional service center locations.

Title: Multi-site Agreements in Pennsylvania. Multiple Site Cleanup Opportunities for Federal Agency Land Owners.

Author: Pavetto, Carl S., US Army Environ Center.

Source: *Fed Facil Environ J*, Fall 1997, 8(3): p33(5).

Title: Voluntary Program Promotes Equitable And Expedited Remediation Of Contaminated Properties.

Author(s): Wolfenden, A.K.; Cambridge, M. (California Environmental Protection Agency, Sacramento, CA (United States). Dept. of Toxic Substances Control).

Title: Eleventh Annual Environmental Management And Technology Conference/West -- HazMat/West '95. Technical papers.

Conference Title: International Environmental Management And Technology Conference And Exhibition.

Conference Location: Long Beach, CA (United States) **Conference Date:** 7-9 Nov 1995.

Publisher: Duluth, MN (United States) Advanstar Expositions.

Publication Date: 1995, p 113-119 (597 p).

Abstract: In California, the California Environmental Protection Agency (Cal/EPA) has developed a more equitable and expedited approach for the redevelopment of sites contaminated with hazardous substances. Senate Bill 923 enacted in 1994, established the Expedited Remedial Action Program (ERAP) under Chapter 6.85 of the California Health and Safety Code. This bill responds to a nationwide demand to reform Superfund laws and promote the restoration of blighted and contaminated parcels--often referred to as Brownfields. The program was designed as an alternative to CERCLA, which has come under criticism for being inefficient, unfair and restricting opportunities for effective cleanups. Cal/EPA's Department of Toxic Substances Control will implement this pilot program. This pilot program, which will eventually comprise 30 sites, provides incentives for voluntary remediation by addressing key

economic issues associated with the remediation and redevelopment of contaminated properties.

Title: States Lead the Brownfield Charge.

Author: Sweeney, R. Michael

Source: *Scrap Process Recycl*, September – October 1995, 52(5): pp. 97(7).

Title: Report: State-By-State Survey Of Brownfield And Voluntary Cleanup Programs.

Source: *BNA National Environment Daily*, March 27, 1998.

Title: Around The States: Conn. Joins Brownfield Revitalization Trend With New London Campus Plan.

Source: *Hazardous Waste News*, Feb 16, 1998, 20(7): n.p.

Title: State by State Brownfields Report.

Author: Northeast-Midwest Institute.

Source: *Environmental Reporter*, Feb. 1998, 28(39): 2086-2092. (The Bureau of National Affairs (BNA), Washington, DC, 1998).

Abstract: This report includes a state by state list of financing programs, voluntary cleanup programs and assurances provided, and incentives to attract private investment to Brownfields.

Title: *Guide To Redeveloping Underutilized Industrial And Commercial Properties Under Maryland's "Brownfields" Law*.

Author: Kamlet, Kenneth S. Esq.

Publisher: N.W. Bernstein & Associates, 1997, EA Engineering, Science and Technology.

Abstract: This guide addresses the role of recently enacted Maryland legislation addressing the problem and challenge of "Brownfields." It includes background information, an overview of Maryland's program – including both the voluntary cleanup program and the financial incentives program, and procedural steps. Sponsored by Baltimore Gas Electric and Potomac Electric Power Co.

Title: *State of the States on Brownfields Programs for Cleanup and Reuse of Contaminated Sites.*

Source: Office of Technology Assessment, Washington, DC., June 1995, 33 pages, NTIS Accession Number. PB96-104195, Corp. Source Codes. 058574000, Report No.. OTA-BP-ETI-153, Journal Announcement GRAI9601.

Abstract: Brownfields consist of land and / or buildings that are abandoned or underutilized where expansion or redevelopment is complicated, in part, because of the threat of known or potential contamination. Federal and state laws governing the treatment of these sites may require remediation (cleanup) of property before redevelopment and can contribute to uncertain liability for property owners or users. Congress, in considering the reauthorization of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), commonly known as Superfund, is interested in the issue of Brownfields and in their potential return to productive use. As a result, the House Subcommittee on Commerce, Trade and Hazardous Materials of the Committee on Commerce requested the Office of Technology Assessment (OTA) to prepare a background paper on issues surrounding cleanup and redevelopment of Brownfields.

Title: State and Federal Initiatives on Brownfield Sites.

Author: Chalfant, Robert V.

Source: *New Steel*, March 1997, 13(3): p99(1).

Title: Brownfields Redevelopment Issues at the Federal, State, and Local Levels.

Author: Amekudzi, Adjo A., Florida International University, Miami; Attoh-Okine, N. O.; Laha, Shonali.

Source: *J Environ Syst*, 1996-1997, 25(2): pp. 97(25).

Abstract: The loss of a major industry can be economically devastating to a community, which can be exacerbated when the industry has occupied a significant amount of land. This phenomenon is examined in Michigan, where the remediation and redevelopment of Brownfields involve a significant cost burden to localities. A generic closure plan is developed for facilitating the redevelopment of similar abandoned sites, using abandoned foundries as an example. The procedure identifies the highest and best land use for the site, and then a generic site plan is developed showing maximum building size, percent coverage of impermeable surface / parking and driveway, and required landscape elements. Throughout the process, a complete picture of exposure pathways and durations is developed and maintained in order to calculate risk and to ascertain

whether acceptable exposure limits can be achieved given the barriers already required at the site.

Title: *Industrial Site Reuse, Contamination, and Urban Redevelopment: Coping with the Challenges of Brownfields.*

Source: The Symposium on the Relationship Between Environmental Protection and Opportunities for Inner- City Economic Development, December 12, 1994, 49 Pages, Washington, DC. Department of Housing and Urban Development.

Abstract: The effects on Brownfields of federal and state environmental legislation, is a portion of this report. Also included are case studies of redevelopment project in Minneapolis, Minnesota; New Haven, Connecticut; Commerce, California; and Abridge, Pennsylvania and profiles of the areas first selected for the EPA's Brownfields pilot program, Cleveland, Ohio; Bridgeport, Connecticut; and Richmond Virginia. Reporting on state and local initiatives in Michigan; Pennsylvania; Joliet, Illinois; and Erie County, New York. The part of the Department of Housing and Urban Development (HUD) in support of the reuse of Brownfields are. Community development block grants, Section 108 loan guarantees, Empowerment zones and enterprise communities, Community development banks, and prospective HUD programs for 1994. The three problems that the report state in impeding Brownfield redevelopment are: liability issues; the process owners and redevelopers follow for cleanup and help for establishing voluntary cleanup policies for states are unclear; and difficulty in finding adequate financing.

Title: Brownfields: Reducing Environmental Barriers to Industrial Redevelopment.

Author: Spracker, Stanley M.

Source: *Environmental Regulation and Permitting*, Summer 1996, pp.21-26.

Abstract: This article discusses federal and state initiatives to encourage cleanup and redevelopment of Brownfields. States and the federal government are developing creative approaches to expedite the redevelopment of former industrial sites. The threat of environmental liability and the uncertainty associated with environmental contamination has in many instances precluded redevelopment of these “Brownfields.”

Title: Fields of Dreams?

Author: Ruben, Barbara

Source: *Environmental Action*, Winter 1995, No.4, pp. 12-17, Takoma Park, MD.

Abstract: The new programs to clean up Brownfields, inner city sites that need environmental cleanup, but are less polluted than sites considered for Superfund, seem like the something on which developers and environmentalists can both agree. The reuse of an inner city facility improves jobs in the neighborhood, and restores the tax base. The reuse also prevents the development of woods and fields outside of the city, locations lead to increased driving and air pollution. However, issues such as using the Brownfields programs as a way to circumvent Superfund concern environmentalists. This article covers the history of Brownfields, some of the specific programs and projects, and some of the concerns associated with the programs.

Title: Testimony Before the U.S. House of Representatives Committee on Science, Space and Technology, Subcommittee on Technology, Environment, and Aviation on Reclamation and Reuse of Abandoned Industrial Sites.

Author: Bartsch, Charles.

Source: Washington, D.C.. Northeast Midwest Institute, Washington, D.C., 1994, pp. 6.

Abstract: This report given by Charles Bartsch, Senior Policy Analyst for Economic Development, states that the senior staff at the Northeast Midwest Institute and Northeast-Midwest Congressional Coalition have developed several policy options to address the barriers of Brownfield remediation. The barriers are. liability; the process of governing of voluntary cleanup is irregular; definition of "how clean is clean" for future land use; and financing the remediation. Congress and the federal government must develop framework for responsible site clean-up and rehabilitation of the facilities. The environmental cleanup standards need to be consistent and have standardized assessment procedures to provide congruity between state and federal governments that would enable developers to productively assess sites. National standardized procedure for evaluating and addressing contamination at the industrial site are needed. Governments, developers, purchasers, polluters and regulators need to reach a consensus on levels of liability of cleanups to further the site remediation. The government should provide more flexible financial assistance programs for state and local governments to use as incentives. These are just a few of the suggestions made by the report.

Title: Focus: Environmental Constraints to Brownfield Redevelopment.

Author: Leigh, Nancey Green.

Source: *Economic Development Quarterly*, November 1994. 8(4), Newbury, CA, pp. 325-328.

Abstract: This document is an introduction to four articles on the barriers to Brownfield redevelopment. These barriers result from state and federal regulations on the liability for the environmental contamination and cleanup of the sites. Investors are reluctant to redevelop these properties because they are liable for the cost of the cleanup, regardless of their responsibility. This "environmental redlining" also affects the development of contiguous sites and decreases the economic opportunities for their populations. Even when a site has been cleaned, it is difficult to find investors. The article cites the case of Johnson Controls Inc., a Milwaukee based firm which produces automotive batteries, automotive seating and plastic bottles. The company has been unable to find a buyer for one of its Atlanta sites, which manufactured lead acid battery. Johnson Controls completely cleaned the site and brought it back to greenfield condition, meeting state standards. Investors still want the company to warrant its work and be responsible for future environmental contamination problems. Another barrier to redevelopment is tax delinquency on the properties. Municipalities are hesitant to foreclose on the properties, because they would be liable for the cleanup. The owners have no incentive to pay their property taxes, which affects the economy of the municipality. The author states that without "significant policy intervention and redirection, American economic revitalization could come to a near standstill." The four articles in this focus section address different aspects of this issue, concentrating primarily on urban areas. The articles are "Michigan's Approach to Urban Redevelopment Involving Contaminated Properties"; "Bankers, Developers, and New Investment in Brownfield Sites. Environmental Concerns and the Psychology of Risk"; "Economic and Environmental Repair in the Shadow of the Superfund. Local Government Leadership in Building Strategic Partnerships"; which looks at Wichita, Kansas and "Potential for Redevelopment for Contaminated Brownfield Sites". (see 1037-EFIP to 1040-EFIP). While the emphasis is on urban areas, the author states that suburban areas can also be affected by environmental constraints. For example, local governments might not have the resources which are available to a large city, to cleanup a large industrial site.

Title: Three-Year Brownfields Tax Incentive Will Encourage Cleanups.

Source: *Hazard Waste Consultant,* 15(7): p211(5), Nov-Dec 97.

Title: Opportunity Beckons in Brownfields.

Author: Matic, Jelena; Shelley, Suzanne; Cooper, Cathy.

Source: *Chem Eng*, October 1997, 104(10). pp. 41(5).

Title: A Tale of Three Brownfields.

Author(s): Sweet, F.R.; Worthington, M.A.; Belli, E.; Hollands, G.G.; Lamoureux, S.M.; Kresge, M.W.; McMenemy, A.B.; Morse, C.A. (Fugro East, Inc., Northborough, MA (United States)).

Title: Hazwaste world, Superfund XVII. Conference Proceedings.

Conference Title: 17. Superfund Hazardous Waste Conference.

Conference Location: Washington, DC (United States) **Conference Date:** 15-17 Oct 1996.

Publisher: Bethesda, MD (United States) E.J. Krause and Associates, Inc.

Publication Date: 1996, p 287-293 (879 p).

Title: The South Wilmington Area remedial cost estimating methodology (RCEM) -- A planning tool and reality check for Brownfield development.

Author(s): Yancheski, T.B. (Tetra Tech, Inc., Christiana, DE (United States)); Swanson, J.E. (Tetra Tech, Inc., Fairfax, VA (United States)).

Title: Hazwaste World, Superfund XVII. Conference Proceedings.

Conference Title: 17. Superfund Hazardous Waste Conference.

Conference Location: Washington, DC (United States) **Conference Date:** 15-17 Oct 1996.

Publisher: Bethesda, MD (United States) E.J. Krause and Associates, Inc.

Publication Date: 1996, p 435-442 (879 p).

Title: Preparing for Change in the Local Economy. Industry-Specific Remediation Standards to Speed the Redevelopment of Brownfields When Industries Leave a Community.

Author: Wasserman, Arlin S., Environ Solutions Inc, Traverse City, MI.

Source: Natl Assoc Environ Prof Practical Environ Directions. a Changing Agenda, Conf p263(6), 1996.

Abstract: The loss of a major industry can be economically devastating to a community, which can be exacerbated when the industry has occupied a significant amount of land. This phenomenon is examined in Michigan, where the remediation and redevelopment of Brownfields involve a significant cost burden to localities. A generic closure plan is developed for facilitating the redevelopment of similar abandoned sites, using abandoned foundries as an example. The procedure identifies the highest and best land use for the site, and then a generic site plan is developed showing maximum building size, percent coverage of impermeable surface / parking and driveway, and required landscape elements. Throughout the process, a complete picture of exposure pathways and durations is developed and maintained in order to calculate risk and to ascertain whether acceptable exposure limits can be achieved given the barriers already required at the site.

Title: Brownfields. Reducing Environmental Barriers to Industrial Redevelopment.

Author: Spracker, Stanley M., Weil, Gotshal & Manges, Washington, DC.

Source: *Environ Regulation and Permitting*, Summer 1996 (Qtr.3), 5(4). pp. 21(6).

Title: Sparking Investment in Brownfield Sites.

Author: Iannone, Donald T., Cleveland State University.

Source: *Urban Land*, June 1996, v55(6): pp. 43(4).

Title: Brownfield Actions Continue Through EPA and Local Efforts.

Source: *Hazard Waste Consult*, March-April 1996, 14(2): p2.24(7).

Title: Risky Business.

Author: Amos, Bruce, ECS, Exton, PA.

Source: *Environ Prot*, March 1996, 7(3): p31(2).

Title: Brownfields Redevelopment: A Reality.

Author(s): Rosenberg, D.M. (Environmental Compliance Services Inc., Exton, PA (United States)).

Source: *Pollution Engineering (United States)*, October 1995, 27(10). pp 53.

Title: Site Recycling. From Brownfield To Football Field.

Author(s): Lee, C.; Haas, W.L. (HDR Engineering Inc., Charlotte, NC (United States)).

Source: *Environmental Protection (United States)*, July 1995, 6(7). p 24-26.

Title: Brownfields Initiatives Offer Few Incentives For Prospective Developers, Purchasers.

Author(s): Wesolowski, T.; Antol, S.M. (Babst, Calland, Clements, and Zommir, Pittsburgh, PA (United States)).

Source: *Environmental Solutions (United States)*, July 1995, v 8(7): pp. 32-33.

Title: Addressing Morality in Urban Brownfield Redevelopment. Using Stakeholder Theory to Craft Legal Process.

Author: Poindexter, Georgette C., University of Pennsylvania, Philadelphia, VA.

Source: *Environ Law*, Fall 1995, 15(1): p37(40).

Title: Environmental Review. Illinois Environmental Protection Agency 1970-1995, Building Partnerships for Environmental Progress.

Source: Illinois Environ Protection Agency Report DO/95-019 (35), June 95.

Title: Recycling Brownfields Back to Use.

Author: Sweeney, R. Michael, Institute of Scrap Recycling Industries, Washington, DC.

Source: *Scrap Process Recycl*, Jul-Aug 1995, 52(4). p87(8).

Title: Stigma Damages in Environmental Cases: Developing Issues and Implications for Industrial and Commercial Real Estate Transactions.

Author: Davis, Andrew N.; Longo, Santo, LeBoeuf, Lamb, Greene & MacRae, Hartford, CT.

Source: *Environ Law Report*, July 95, 25(7): p10345(5).

Title: The Brownfields Phenomenon: An Analysis of Environmental, Economic, and Community Concerns.

Author(s): Grayson, E. Lynn; Palmer, Stephen A. K., Jenner & Block, Chicago, IL.

Source: *Environ Law Report,* July 1995, 25(7): p10337(8).

Title: *Innovative Approaches to Cleanup-Voluntary Cleanups.*

Author: Gardner, Jane W., General Electric Company, Fairfield, CT.

Source: Am Bar Association 24th Annual Conference on Environmental Law, Keystone, CO, March 16-19, 1995: pp. 18(9).

Title: *The Challenge of Brownfields Redevelopment.*

Author: Bower, Jim D., EPA Region 5, Chicago, IL.

Source: Am Bar Association 24th Annual Conference on Environmental Law, Keystone, CO, March 16-19,1995, pp. 15(29).

Title: A Growing Role. Environmental Risk Management In 1998.

Author: Telego, Dean Jeffery.

Source: *Risk Management,* March 1998, 45(3): pp.19(3). *Also available online.*

Title: Incentives To Redevelop Properties Not Reaping Major Results, Attorney Says.

Source: *Brownfields, BNA Toxics Law Daily,* December 08, 1997, n.p.

Title: Rust Busters. Putting Idle Industrial Sites Back To Work (Includes Related Article On Brownfield Development).

Author: Fischer, William.

Source: *Public Management,* February 1997, 79(2): pp.18(4).

Title: Brownfields Redevelopment: Reality or a Theory?

Author: Nalbandian, Richard, Golder Associates Inc, Mt. Laurel, NJ.

Source: *ECON*, March 1996, 11(3): p28(4).

Title: The Brownfields Program: Reclaiming Inner-City Sites.

Source: *Waste Age*, October 1995, v26 (10): pp.135(5), Parker, Bruce, Environmental Industry Association, Washington, DC.

Title: Revitalizing Brownfield Sites. (Vacated Industrial Sites).

Author: Barnette, Curtis H.

Source: *New Steel*, June 1995, 11(6). p88(1).

Title: Improving the Environment In Urban Areas.

Author(s): Adamkus, V.V.

Source: Energy in the Urban Environment. Proceedings of the 22nd. Annual Illinois Energy Conference, Chicago, IL, November 16-17, 1994, Illinois Univ., Chicago, IL (United States). Energy Resources Center, pp.39-53 (283p), Report Number(s). DOE/CH/10623-1 CONF-9411261--, Order Number. DE96001827.

Abstract: The author discusses the need for improvements to the environment in urban areas, and efforts being made under the direction of the Environmental Protection Agency (EPA) to address these problems. The impact the new Clean Air Act can have on emissions from gasoline-powered autos, diesel-burning trucks, fixed-emission sources ranging from utilities to chemical plants, and consumer products like hair sprays and charcoal starters, will all work together to improve air quality in urban areas. The author also discusses Brownfields Economic Redevelopment Plan efforts being supported by the EPA in a coordinated plan to get municipalities involved in cleaning up areas with pollution, to remove the blight on the urban areas, provide new land for development, and promote additional jobs.

Title: *Effects of Environmental Hazards and Regulation on Urban Redevelopment.*

Author(s): Walker, C. ; Boxall, P. ; Bartsch, C. ; Collaton, E. ; Meyer, P.

Source: NTIS/Urban Inst., Washington, DC., Feb 1998, 106 pages. (Prepared in cooperation with Louisville Univ., KY. and Northeast-Midwest Inst., Washington, DC.).

Abstract: This report, jointly sponsored by HUD and EPA, provides insight into some of the most basic issues confronting Brownfields policy. the relative important of environmental risk versus neighborhood economic distress as deterrents to the

neighborhood redevelopment. The report address the significance of: (1) site contamination as a deterrent to Brownfield redevelopment, as compared to other factors retarding reuse; (2) which environmental development cost of uncertainty most deters investment in redevelopment; and (3) which types of State Brownfield clean up policies and programs are likely to be conducive to investment and redevelopment.

Title: *Cleaning Up the Nation's Waste Sites. Markets and Technology Trends. 1996, Edition.*

Source: NTIS Accession Number. PB97-196075, Environmental Management Support, Inc., Silver Spring, MD., Corp. Source Codes. 084428000. Also available online at http://www.epa.gov.

Sponsor: Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response., Report No.. EPA/542/R-96/005A, Apr 97, 32 pp.

Abstract: This report was prepared to aid those who are developing and commercializing new technologies to meet the future cleanup demand. It provides an overview of the market to help industry and government officials develop research, development, and marketing strategies. This report updates and expands a 1993 analysis that brought together for the first time valuable information on site characteristics, market size, and other factors that affect the demand for remediation services. To provide a realistic estimate of expected contracting opportunities, the demand estimates are limited to remaining cleanup work and do not include projects that are underway or completed. While the report considers a broad range of remediation services required in the future, its purpose is to provide insight into the potential application of new treatment technologies.

Title: *Tool Kit of Information Resources for Brownfields Investigation and Cleanup.*

Source: USEPA, Report No. EPA/542/B-97/001, 166 pages, 1997.

Abstract: The Tool Kit focuses on the site characterization and cleanup phase of Brownfields characterization and cleanup phase of Brownfields redevelopment. It introduces Brownfields stakeholders to the range of technology options and resources available to them. It also provides abstracts and access information about the variety of resources, including electronic databases, bulletin boards, newsletters, regulatory and policy guidance, and technical reports, that may be useful to Brownfields stakeholders, as they proceed through the cleanup process. The Tool Kit is intended to assist Brownfields stakeholders involved in the selection of technologies in assessing, and, if necessary, addressing contamination at their site.

Title: *Road Map to Understanding Innovative Technology Options for Brownfields Investigation and Cleanup.*

Source: Environmental Protection Agency, Washington, DC. Technology Innovation Office, 76 pages, 1997.

Abstract: The Road Map focuses on the site characterization and cleanup phase of Brownfields stakeholders to the range of technology options and resources available to them. The Road Map also provides a framework of the logical steps involved in the characterization and cleanup of a Brownfields site in order to link technology options and resources to each of those steps. The Road Map is intended to assist Brownfields stakeholders involved in the selection of technologies in assessing, and, if necessary, addressing contamination at their site.

Title: Superfund: Proposals to Remove Barriers to Brownfield Redevelopment.

Source: Guerrero, P. F. NTIS Accession Number. AD-A322 490/4, General Accounting Office, Washington, DC. Resources, Community and Economic Development Div., Corp. Source Codes. 010682026; 413437, Report No.. GAO/T-RCED-97-87, 4 Mar 97 7p, Journal Announcement GRAI9715.

Abstract: Over the past several decades, manufacturing has been declining in many of the nation's cities. When businesses closed, they often left abandoned and idled properties, commonly known as 'Brownfields.' These properties are sometimes contaminated with chemical wastes from manufacturing processes. Partly to avoid the costs of assessing and cleaning up these properties according to federal and state environmental laws, some new businesses have chosen to locate in uncontaminated areas outside cities known as 'greenfields.' This Committee asked us to provide it with information on the legal barriers that the Comprehensive Environmental Response, Compensation and Liability Act, commonly known as Superfund, presents for redeveloping Brownfields and types of federal financial support that states and localities would like to help them address such properties. This testimony summarizes the major findings from our June 1996 report on Brownfield redevelopment and information from an ongoing review for this Committee of states' voluntary cleanup programs. These programs substitute incentives for enforcement actions to encourage, rather than compel, private parties to clean up contaminated properties.

5.14 Periodicals/Newsletters

Title: *Brownfield News: The Source for the Distressed Property Market.*

Publisher: Brownfield News, Inc., Arlington Heights, IL. Website. http://www.Brownfieldnews.com.

Abstract: Monthly publication focusing on Brownfield issues, legislative updates, industry watch, technology listings, professional services listing, calendar of events, and Brownfield developments.

Title: *The Brownfields Report.*

Source: King Publishing Group, Washington, D.C., monthly publication.

Abstract: This semi-monthly newsletter covers legal, financial, regulatory, business and political aspects of Brownfields. It is the primary source for federal, state and local regulators, corporate and environmental attorneys, economic development officials, environmental bankers, and contractors and developers.

Title: *The Atlantic MGP Reporter.*

Publisher: GEI Consultants, Inc., Atlantic Environmental Division, Colchester, NY.

Abstract: A quarterly newsletter (approx. 4-10 pages) which discusses remediation technologies and developments at former MGP sites, as well as other environmental concerns related to the electric and gas utilities. Some sample article topics have included "Four Keys to Risk-Based Cleanups at MGP Sites," "Impact of LDRs on the Storage and Disposal of Hazardous MGP Waste," "The Case for Taking Action with 'Problem' Real Estate," and a question and answer column.

Title: *The Atlantic Compendium: Serving the Utility Environment.*

Publisher: GEI Consultants, Inc., Atlantic Environmental Division, Colchester, NY.

Abstract: A newsletter (approx. 2-4pages) distributed eight months of the year that focuses on a specific environmental subject with each issue and offers related, in-depth reports or articles for parties requesting them. Sample focus topics have included *Contaminated Property Transactions in Electric and Gas Utility Companies* that evaluated insurance as a means to facilitate contaminated property transactions; liability scenarios for MGP cleanup and the potential liability of holding companies for cleanup costs associated with CERCLA cleanups; and *Former Holding Companies And Their Responsibility To Contribute To The Cleanup Of Manufactured Gas Plant Sites.*

Title: *The Atlantic Siteline. A Focus on the Challenges and Successes of Adaptive Reuse for Our Economic and Environmental Health.*

Publisher: GEI Consultants, Inc., Atlantic Environmental Division, Colchester, NY.

Abstract: A monthly publication (approx. 4-6 pages) that focuses on the challenges and success of Brownfields and other adaptive reuse projects. Sample article titles have included “Brownfields Investment is Reaping Rewards,” "A Collaborative Approach to Action,” and “Avoiding Greenfields Exploitation.”

6

BROWNFIELD INTERNET RESOURCES

6.1 Basics

The Brownfields Center, http://www.ce.cmu.edu/Brownfields/

The Brownfields Center (TBC) brings together a variety of researchers from Carnegie Mellon University and University of Pittsburgh to study relationships among Brownfield development, urban infrastructure renewal, economic development and the quality of life, in order to support the process of returning idle industrial sites to productive uses. Site is useful only for those unfamiliar with Brownfields issues. Case studies are moderately useful. Bibliography is outdated.

Environment Canada maintained list,
http://www.wco.com/~rteeter/ermd/envlist.html

Large of environmental-related list servers, although its last modification date was June 1997. Includes international list servers.

WESTON's Brownfields page,
http://www.rweston.com/allenv/BROWN/welcome.htm

Environmental consulting firm's site is a good place to start learning. Has info about remedial technologies, risk assessment, and information about *The Brownfields Book* (co-authored with Jenner & Block). The Brownfields page contains in-depth discussions on Brownfields issues from both business and community perspectives. This site contains a comprehensive guide on the legal and financial tools available to business, government, and community leaders to profitably redevelop abandoned urban properties.

Brownfields in the Great Lakes Region, http://www.great-lakes.net/places/brownfld.html

Moderately useful for those seeking information about Brownfields in the Great Lakes area.

The Brownfield News, http://www.flash.net/~bfnews/bfnews.htm

Web site companion to the print publication. Moderately interesting. Doesn't offer a lot of information. Under construction at this point.

6.2 Case Studies

Carnegie Mellon - Brownfields Development,
http://www.ce.cmu.edu/Brownfields/NSF/ sites/index.html

NSF funded study w/6 PA case studies, photos, history, etc.

Wisconsin DNR – Case Studies, http://www.dnr.state.wi.us/org/aw/rr/

This site provides case studies, situations, and examples, as well as information about Brownfields Environmental Assessment Program (BEAP) information.

Pennsylvania DEP – Annual Land Recycling Progress Report,
http://www.dep.state.pa..us/dep/ depupdate/airwaste/wm/landrecy/Showcase/

Three years' (1996-1998) worth of statistics, numbers, contacts, and narrative about the state-funded cleanups. Good information.

EPA Brownfields Pilot Projects, http://www.epa.gov/swerosps/bf/pilot.htm

Press releases, maps, fact sheets, etc. on the EPAs pilot projects. Current and well-organized.

Brownfields EPA Pilot News, http://www.instrm.org/bfnews/pindex.htm

Offers articles on EPA pilot site issues and links to other information about pilot sites.

6.3 City Programs

City of Chicago Brownfields Program,
http://www.ci.chi.il.us/WorksMart/Environment/ Brownfields/

One of the leading cities in Brownfields redevelopment, read about Chicago's Brownfields initiatives, success stories, and the various financial options they utilized.

Pittsburgh RISES, http://info.pitt.edu/~prises/

Site evaluation and marketing system designed by the University of Pittsburgh and Carnegie Mellon University with support from the Heinz Foundation and National Science Foundation. Links to many useful sites in PA. Pittsburgh RISES maintains a centralized inventory of available industrial property in Southwestern Pennsylvania and provides the means to conduct custom physical, economic and environmental analysis so informed decisions and comparisons can be made by prospective developers, planning organizations, community development groups and policymakers

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City of Portland Brownfields Page, http://www.Brownfield.org/

Brownfields Online is the web site for the City of Portland, Oregon Brownfields Initiative. The Portland Brownfields Initiative is building a set of government, business and community-supported processes that will foster restoration and reuse of contaminated land, and promote revitalization of neighborhoods within Portland's North/Northeast Enterprise Zone, the Enterprise Community, and along the Portland waterfront. Good elementary learning source.

6.4 Comprehensive Sites

EPA Brownfields site, http://earth1.epa.gov/swerosps/bf/

Everything you ever wanted to know about Brownfields – background information, pilot profiles, regulation, financing issues, liability issues, downloadable documents, and links to other resources make this site one not to be missed. EPA has done a remarkable job of maintaining this site and making it indispensible for all interested parties. It has downloadable files of regulations, conference proceedings, papers, associations, Brownfield pilot program data, and many, many other useful tools. Consider it essential.

Northeast-Midwest Institute's Brownfields site, http://www.nemw.org/envqual.htm

This website has detailed information on the cleanup and redevelopment of contaminated industrial sites. The Institute’s database provides a unique source of Brownfield data and contacts. It includes on-line publications, including the popular *Coming Clean for Economic Development,* lists of state and EPA Brownfield contacts, case studies, and updates on congressional bills. The Brownfield information can be found under "Environmental Quality" on the Northeast-Midwest Institute's home page. NEMW has hosted forums since 1990, and has excellent publications including book entitled *Lessons From the Field,* a book of Brownfield case studies. An excellent resource for utilities. Not to be missed.

Consumers Renaissance Development Corporation,
http://www.crdc@consumersenergy.com/community/crdc/index.html

Consumers Renaissance Development Corp., a stand-alone, non-profit Michigan corporation, was formed in May 1996 to promote redevelopment of Brownfields throughout the state by Consumers Power. Although the website currently has little value, CRDC is an invaluable resource for utilities, and offers a sort of 'how to' Brownfields manual in a 3-ring binder. The manual is excellent; the website needs to catch up.

The Brownfields Non-Profit Network, http://www.Brownfieldsnet.org/index.htm

This is a network of non-profit organizations helping to promote the redevelopment of Brownfield properties. Web site's purpose is to assist community groups and other organizations to find out more about what they can do with Brownfields and where they can get help in their efforts. Limited value for utilities, unless involved in community relations and non-profits; however; questions not answered on the website can be emailed and a reply will be sent.

6.5 Federal Resources

EPA Region One Brownfields page,
http://www.epa.gov/region01/remed/brnfld/inforeso.html

Resources for those in New England, including Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

EPA Region Two Brownfields page,
http://www.epa.gov/r02earth/superfnd/brownfld/ bfmainpg.htm

Resources for those in NY, NJ, PR, VI.

EPA Region Three Brownfields page,
http://www.epa.gov/reg3hwmd/brownfld/hmpage1.htm

Resources for those in PA, DE, DC, MD, VA, WV

EPA Region Four Brownfields page,
http://www.epa.gov/region4/wastepgs/brownfpgs/ bfsiteas.htm

Resources for those in KY, TN, NC, SC, MS, AL, GA, FL.

EPA Region Five Brownfields page, http://www.epa.gov/R5Brownfields/

Resources for those in Michigan, Illinois, Indiana, Ohio, Wisconsin and Minnesota.

EPA Region Six Brownfields page,
http://www.epa.gov/earth1r6/6sf/bfpages/sfbfhome.htm

Resources for those in NM, TX, OK, AR, LA.

EPA Region Seven Brownfields page,
http://www.epa.gov/region07/specinit/brown/ Brownfields.htm

Resources for those in NE, KS, IA, MO.

EPA Region Eight Brownfields page,
http://www.epa.gov/region08/html/brownf.htm

Resources for those in MT, ND, WY, SD, UT, CO.

EPA Region Nine Brownfields page,
http://earth1.epa.gov/docs/region09/waste/brown/ brown.html

Resources for those in CA, NV, AZ, HI.

EPA Region Ten Brownfields page,
http://epainotes1.rtpnc.epa.gov.7777/r10/cleanup.nsf/ webpage/Brownfields

Resources for those in WA, OR, ID, AK.

National Conference of State Legislatures' Brownfields page,
http://204.131.235.67/programs/ esnr/bwnfield.htm

U.S. DOE Center of Excellence for Sustainable Development,
http://www.sustainable.doe.gov/

Information and services on how communities can adopt sustainable development principles and tools. Created by DOE's Office of Energy Efficiency and Renewable Energy, the Center helps communities design and implement strategies that enhance local economies, quality of life, as well as the environment.

6.6 Financial Resources

HUD's Brownfield Redevelopment Initiative,
http://www.hud.gov/progdesc/brownf.html

Brings together four different types of existing HUD assistance that communities can use to clean up and revitalize potentially contaminated sites. annual formula grants allocated to States and larger local jurisdictions through Community Development Block Grants (CDBG), lower interest loan guarantee authority available through the Section 108 Loan Guarantee program, accompanying competitive grants through the Economic Development Initiative program, and additional competitive grants provided through the Lead-Based Paint Hazard Control program. HUD's Empowerment Zone/Enterprise Community (EZ/EC) Investments page highlights different federal financial assistance mechanisms available to these specially-designated zones, many of which contain Brownfields. It also offers a guide to investment in EZ Communities.

Bank of America Brownfields Redevelopment,
http://www.bofa.com/community/env_p9.html

Articles and references about Brownfields from a large bank's perspective. Bank of America has been a leader in private sector financing of Brownfields cleanup and redevelopment. Their site includes information about environmental financing in general and specific information about financing Brownfields redevelopment. From their site, you can contact Bank of America's offices in Illinois and New York or their midwest regional manager for other Great Lakes states.

Environmental Bankers Association, http://envirolink.org/orgs/eba/index.html

The EBA is a U.S. non-profit corporation that addresses the environmental risks and opportunities related to the lending, trust and facility activities of their member institutions. Brownfields redevelopment is among EBA's priority issues. EBA has members institutions in each of the Great Lakes States equipped with trained staff to handle the added complexities often presented in Brownfields redevelopment. Contact EBA for more information about EBA members in your area.

An article prepared by the Northeast-Midwest Institute,
http://www.nemw.org/brownfin.htm

This article examines a few of the more promising Brownfield financing options, including tax incentives, capital attraction incentives and initiatives to support financing.

EPA's Env. Financial Advisory Board, http://www.epa.gov/efinpage/efab.htm

This site has a searchable database of information surrounding the topic of environmental finance. Also has a tool box of articles and panel discussions on financing. A more useful feature is the Environmental Financing Information Network database. This is a collection of abstracts representing publications and other relevant materials (articles, case studies, guides, legislation, handbooks, memoranda, reports, proceedings, surveys, papers) which deal with environmental financing. Current and recommended.

6.7 Insurance

EPA - Potential Insurance Products for Brownfields Cleanup and Redevelopment, http://www.epa.gov/swerosps/bf/html-doc/insurnce.htm

EPA'S environmental insurance survey - To better understand potential insurance products and their usefulness in Brownfields revitalization.

6.8 Legal Resources

Cooper, Fink & Zausmer, P.C, http://www.lawsite.com/Brownfields/

This page is for the collection and posting of information and ideas for redeveloping contaminated sites that are located in older urban industrial corridors. Includes state and federal laws, plus discussion center. The discussion center features online conversations organized by subject pertaining to concerns, policy developments and legislative initiatives concerning the Brownfields. The discussion page provides a guide to Brownfield laws and regulations at the federal and state levels, with a more in-depth look at Michigan laws and policies on Brownfields. Not very current at the moment; mostly pre-1998 information.

Jenner & Block, http://www.jenner.com/environ/brownfie.htm

Accepts legal questions and publishes newsletters and articles written by their environmental law department here. Co-authored *The Brownfields Book* with Roy F. Weston, Inc.

6.9 Nonprofit Sites

Institute for Responsible Management, http://www.instrm.org/

Nonprofit organization whose primary institutional goals and activities are charting and facilitating the Brownfields transformation. Central to that endeavor is its support

of, work with, and efforts to track the significance of EPA's Brownfields pilots. Has a good database of all pilot project data, including contacts, project titles, etc., broken down into categories.

Council for Urban Economic Development, http://cued.org/cued/

CUED was very much involved in helping local and regional economic development agencies to develop exporting programs as a way to help area companies to find new markets for their products and services. Utility companies had a particular interest in the exporting potential of the companies located in their service areas. Under contract to the Edison Electric Institute (EEI), CUED prepared two books designed to help utility companies and firms in their service areas to enter exporting. Together the two guidebooks comprised an export manual that utility companies could use to establish exporting programs as part of their corporate growth strategies. Site appears to be fairly current, and does have a searchable library of economic development reference sources. Web site resource list is a little outdated.

The Council of Great Lakes Governors, http://www.cglg.org

This is a private, nonprofit organization devoted to working cooperatively on public policy issues common to its eight member states. Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin. Their website, known as ROBIN, is an Internet consortium for sharing information and enhancing communication about Brownfields cleanup and redevelopment throughout the binational Great Lakes region. As one of the products of the CGLG Brownfields Project, ROBIN's development was overseen by the Project members, collectively referred to as BRAG, or the Brownfields Regional Advisory Group. Under the guidance of BRAG and in partnership with the Council, the Great Lakes Commission has designed and implemented ROBIN in a way that naturally highlights the important role the Great Lakes states and provinces play in the regional Brownfields arena. The site has useful links and site reviews on financing, liability issues, legislation, and local initiatives. It is also kept quite current, and is a good place to stop for information for companies located in the respective states.

Interactive Economic Development Network, http://www.iedn.com/iednonline/

Intended to provide a place in CyberSpace from which Economic Development Practitioners can congregate in a user-friendly and familiar environment. IEDN is creating this value-added, member driven, electronic community specifically designed to service the communication & information needs of the Economic Development Industry. This site claims to have "the most comprehensive list of economic development resources on the Web." Each of the over 2,500 listed web sites is categorized according to economic development related topic. Unfortunately, one

cannot know for sure because the site is restricted to members only ($119.50 per year, plus a one time $25.00 account activation fee).

6.10 Redevelopment issues

EnviroFLEX's Brownfields sites, http://www2.Brownfields.com/Brownfields/

Property listings.

Smart Growth Network,
http://www.smartgrowth.org/resources/redevelopment_res.html

Coordinated by the U.S. EPA's Urban and Economic Development Division (UEDD). The Smart Growth Network helps create national, regional and local coalitions to encourage development that is environmentally, fiscally, and economically smart. This page contains descriptions of documents, overview readings, topical readings, case studies, related organizations and links to related Internet sites all related to Brownfields and redevelopment.

6.11 Regulations

EnviroSense, http://es.epa.gov

Part of the EPA web site, EnviroSense is a clearinghouse for information on pollution control, remediation and enforcement issues. Case studies, databases, and strategies for remedying pollution problems are also available through this site. This site provides a single repository for pollution prevention, compliance assurance, and enforcement information and data bases. The search engine searches multiple web sites (inside and outside the EPA), and offers assistance in preparing a search.

Maintained by the U.S.EPA, http://www.epa.gov/enviro/html/ef_home.html

A relational database that integrates data extracted from five EPA program systems. EF AIRS/AFS, CERCLIS (Superfund data), PCS, RCRIS, and TRIS.

EnviroSources, http://www.envirosources.com/index.html

EnviroSources is a continually updated online subscription-based environmental reference system that provides you with a single interface for using Regulatory Information, Technologies, Chemical Information, Service Firms, Everyday Contacts, and More.

Brownfields-related Law and Regulations, maintained by the U.S. EPA, http://www.epa.gov/swerosps/bf/gdc.htm

An excellent resource. EPA does an excellent job of publishing virtually all of their Brownfield-related laws and regulations on this site, most the very month they are released. Downloadable in a .pdf or HTML format. Check this one frequently.

Bioremediation Discussion Group and website. http://biogroup.gzea.com/

The Bioremediation Discussion Group is moderated Internet mailing list hosted by GZA GeoEnvironmental, Inc. The BioGroup fosters a global forum for discussion of the technical aspects of bioremediation science/engineering. The website allows posting of bioremediation papers, which are then free to download.

U.S. EPA - Roadmap to Understanding Cleanup Technologies, http://www.epa.gov/swertio1/download/char/roadmap.htm

U.S. EPA's Roadmap to Understanding Cleanup Technologies provides a framework of the four basic phases of the characterization and cleanup of a Brownfields site—Site Assessment, Site Investigation, Cleanup Options, and Cleanup Design and Implementation—and links technology options and resources to each of those steps.

U.S. EPA's Hazardous Waste Cleanup Information (CLU-IN), http://www.clu-in.com/

This website provides information about innovative treatment technology to the hazardous waste remediation community. It describes programs, organizations, publications, and other tools for federal and state personnel, consulting engineers, technology developers and vendors, remediation contractors, researchers, community groups, and individual citizens. The site was developed by the U.S. EPA but is intended as a forum for all waste remediation stakeholders.

6.12 Remediation

Tech-Know – online database of technical solutions to environmental problems., http://www.gnet.org

Tech-Know is an on-line database which allows Internet users to share and receive technical solutions to environmental problems. TechKnow is a product of the Global Environment & Technology Foundation (GETF) and is built into GNET, the Global Network of Environment & Technology. With TechKnow, users can access the database for information, and can also enter data for others. The GNET website a great place for daily Department of Energy news updates.

USEPA's Environmental Technology Verification (ETV) database,
http://www.epa.gov/etv

This site, managed by the Office of Research and Development, contains a database list of technologies verified to-date, background information about ETV, as well as complete information on ETV Pilot Projects.

USEPA's Office of Solid Waste Management – Hazardous/Non-Hazardous Solid Waste Remedial Information, http://www.epaoswer/hazwaste/ca/index.htm

This site contains information about hazardous/non-hazardous solid waste cleanup including RCRA regulations and guidance. Documents are available for download.

U.S. Department of Energy, Office of Environmental Management,
http://www.em.doe.gov

Contains information about national programs, regulations and budget, waste management, environmental restoration, science and technology information, and public information and news items.

Remediation Technologies Screening Matrix and Reference Guide,
http://www.rfweston.com/allenv/etc/int2.htm

This document was prepared for the Department of Defense and other federal agencies participating in the Federal Remediation Technology Roundtable and is available as a downloadable file.

VISITT (Vendor Information System for Innovative Treatment Technologies – a Free Electronic Yellow Pages of Innovative Treatment Technologies and Vendors),
http://11207.86.51.66/visitt.htm

This page contains a user-friendly, downloadable database of innovative technologies provided by vendors. Contains vendor information and customized search capabilities for technologies applicable towards your site type.

US EPA's Office of Research and Development Alternative Treatment Technology Information Center (ATTIC), http://www.epa.gov/attic/index.html

Contains a comprehensive database providing up-to-date information on technologies. Provides access to several independent databases as well as a mechanism for retrieving full-text documents of key literature.

USEPA's Brownfields Tool Kit, http://clu-in.com/toolkit/index.htm

U.S. EPA's Brownfields Tool Kit is available on line the Tool Kit focuses on the site characterization and cleanup phase of Brownfields redevelopment. It introduces Brownfields stakeholders to the range of technology options and resources available to them. This Tool Kit provides abstracts and access information about a variety of resources, including electronic databases, bulletin boards, newsletters, regulatory and policy guidance, and technical reports, that may be useful to Brownfields stakeholders as they proceed through the cleanup process. It is a companion guide to the *Road Map to Understanding Innovative Technology Options for Brownfields Investigation and Cleanup.*

6.13 Risk

A Risk Assessment Primer, WESTON website,
http://www.rfweston.com/allenv/BROWN/siterisk.htm

Available on Weston, Inc.'s "All Things Environmental" web site. The primer assists in the conduct of risk analysis in support of a site remediation plan.

Developing Partnerships for Risk Management – featured on WESTON web site,
http://www.rweston.com/allenv/BROWN/propres.htm

Developing Partnerships for Risk Management is featured on Roy F. Weston, Inc.'s "All Things Environmental" web site discusses how corporations can create financial predictability through partnering arrangements with regulatory agencies and other private entities. These partnering agreements can manage risk by communicating and planning for environmental and economic benefits. The ultimate reward will be asset improvement, community revitalization and employment opportunities as a result of the redevelopment of environmentally impaired sites.

6.14 State Programs

Florida DEP Brownfields page,
http://www.dep.state.fl.us/waste/programs/brwnfld/index.htm

Delaware DNREC Brownfields page,
http://www.dnrec.state.de.us/air/sirb/Brownfield1.htm

Illinois Voluntary Remediation, http://www.epa.state.il.us

Illinois grant programs, offered by the Illinois Department of Commerce and Community Affairs (DCCA), can assist communities and firms with various stages of

Brownfields redevelopment, including infrastructure development, modernization of manufacturing facilities and processes, and employee training and retraining. Specific eligibility requirements apply for each program.

Indiana DEM Brownfields page, http://www.ai.org//idem/oer/bfieldst.html

Iowa DNR Brownfields page,
http://www.state.ia.us/government/dnr/organiza/epd/brown.htm

Kentucky's Brownfields page,
http://www.state.ky.us/agencies/nrepc/waste/programs/sf/ brownfie.htm

Maryland's Brownfields page,
http://www.mde.state.md.us/environment/was/Brownfields.html

Massachusetts' Brownfields page, http://www.state.ma.us/dep/bwsc/brownfld.htm

Minnesota's Brownfields page,
http://www.pca.state.mn.us/cleanup/Brownfields.html

New Jersey's Brownfields page, http://www.state.nj.us/dep/srp/bcr/st_reuse.htm

New Hampshire's Brownfields program,
http://www.state.nh.us/des/hwrb/hwrbbfld.htm

The Ohio EPA Voluntary Action Program,
http://www.epa.ohio.gov/derr/volunt.html

North Carolina's Brownfields page,
http://wastenot.ehnr.state.nc.us/sfhome/brnfld.htm

Oklahoma's Brownfields page, http://www.deq.state.ok.us/brownfie.htm

Oregon's Brownfields page, http://www.deq.state.or.us/wmc/cleanup/brn0.htm

Pennsylvania's Brownfields page,
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/ landrecy/default.htm

Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2) provides releases from liability for owners or developers of a site that has been remediated according to the standards and procedures in the Act. Act 3 (The Economic Development Agency, Fiduciary and Lender Environmental Liability Protection Act)

extends liability protection to financiers, such as economic development agencies, lenders, and fiduciaries. (Fiduciaries are those who act as a trustee, executor, or administrator for the benefit of another person.) These provisions are intended to reduce the liability concerns that may inhibit involvement with contaminated or abandoned sites.

Washington's Brownfields page.
http://www.wa.gov/ECOLOGY/tcp/brownfld/bf.html

6.15 Utility-Specific Web Sites

ElectricNet, http://www.electricnet.com

This is a commercial site, but a good one -- something of a Yellow Pages for the utility industry. If you're trying to find a company in the industry, this would be a good place to start.

EPRI, http://www.epri.com/

The best choice for Brownfield activities and issues as related to utilities.

Kilowatthour.com, http://www.kilowatthour.com/

A useful site, www.kilowatthour.com has everything you could possibly want to know about the U.S. electric utility industry. Well-designed, well-organized, and easy to navigate, the site has complete links to utilities, regulators, industry resources, power producers. National Power Management Company deserves praise and support for publishing such a beneficial, sensible, commercial-free site. Some environmental; refers users to EPRI if they cannot find info on a given topic.

Public Utilities Reports, Inc, http://www.pur.com

Public Utilities Reports, Inc., provides a publishing service by collecting the decisions and orders from all state public utility commissions and publishing them in full text in both print and electronic media. This publishing program began in 1915 and has produced four series of PUR Reports. In 1974, the *Public Utilities Reports, Fourth Series* commenced and continues in publication today.

This site, best known for the excellent Public Utilities Fortnightly publication, is a great source of information in a traditional format. books, conferences, periodicals. Specializing in the regulatory and business aspects of the industry. In a recent survey of American Assoc. of Utility Marketing Executives members revealed that Public Utilities Fortnightly is the most widely-read publication in the utility industry.

Energy Information Agency, http://www.eia.doe.gov

The Energy Information Agency of the U.S. Department of Energy is a superb on-line information resource about everything to do with electric power. The site itself has useful statistics, but the real key is the "List of Experts", complete with phone numbers, at the Department of Energy. Not as much environmental information here, but useful for other topics.

Global Network of Environment & Technology, http://www.gnet.org/

This site is the result of a cooperative agreement from the Federal Energy Technology Center (FETC) and the Department of Energy Office of Science and Technology (OST). All the latest news from an environmental/US Department of Energy standpoint. Has an excellent search engine covering news, write ups from their own staff, government documents. Definitely worth a visit. Updated daily.

Utility-info.com, http://www.utility-data.com/resources.htm

Utility-info.com has statistics and historical data on every utility. You might find it useful for doing competitive research, or justifying a marketing program. The link here is to a free part of their site; for a small fee, you can get access to even more detailed information, although the details seem to be oriented towards investors rather than marketers.

EnergyCentral, http://www.energycentral.com

You have to register for this site, and if you don't like "cookies" this isn't a site for you. But if you do choose to register, there's useful, up-to-date utility-related stories available to registered users, and an interesting e-mail daily newsletter. Worth glancing at daily.

The Utility Connection, http://www.magicnet.net/~metzler/index.html

The Utility Connection is an overwhelmingly complete set of links to every site that might have something to do with utilities. Stick to the electric utility / marketing links, and you won't get lost. Well-organized, with extensive lists of links to all sorts of information, including environmental. This is a good one!

Edison Electric Institute, http://www.eei.org/

Lobbying group, updated daily, searchable database of utility-related articles, newsletters, etc. For a fee, online subscription service for 'most timely way to access utility information.'

ElectricNet, http://www.electricnet.com/

Another 'one-stop shop' for the utility industry. Great lists of publications.