



INTERSTATE TECHNOLOGY & REGULATORY COUNCIL

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INTERSTATE TECHNOLOGY & REGULATORY COUNCIL



Regulatory Overview

Property Revitalization— Lessons Learned from BRAC and Brownfields



January 2006

Prepared by
The Interstate Technology & Regulatory Council
Brownfields Team

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January 2006

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EXECUTIVE SUMMARY

On November 9, 2005, the Base Realignment and Closure Commission's recommendations for the closure and/or realignment of U.S. Department of Defense (DoD) facilities throughout the United States became law. Known as Base Realignment and Closure (BRAC), these recommendations are intended to reduce duplication in military operations, improve efficiency and operational capabilities, and therefore yield cost savings to the federal government. The 2005 BRAC recommendations represent the most aggressive BRAC round ever proposed and will affect more than 800 installations. Of the 800 installations affected, the Commission recommended 22 major installation closures. As a result of this law, DoD has until September 15, 2007 to begin closing and realigning the installations (Miles 2005). The BRAC process must be completed by September 15, 2011.

Since 1988, more than 387 installations nationwide have been closed or realigned, with an estimated \$6 billion being spent on the cleanup of these sites. Some of these properties have been redeveloped into viable industrial, commercial or residential developments. Still many remain undeveloped. The primary impediment to transferring the remaining property involves environmental cleanup (GAO 2005).

Many parties are affected when a BRAC installation is closed. Certainly, there are the military and civilian personnel who face the loss or relocation of jobs. The communities in which BRAC installations are located face equal and in some cases more serious challenges. The loss of military personnel and supportive local industries can lead to a drain on the local economy. In addition, the negotiation of land transfer, cleanup, and redevelopment of these properties can be a foreign process to communities who once thrived due to the installations' existence.

Brownfield sites also pose challenges to communities. Brownfields are defined as abandoned or underutilized industrial and commercial facilities where expansion or reuse is complicated by suspected or known environmental contamination. Typical brownfield sites include former industrial properties, old gasoline and service stations, vacant warehouses, dry cleaning facilities, landfills, scrap yards, and other properties that may have been impacted by hazardous substances, hazardous wastes, or petroleum products. Brownfield sites may have negative impacts on a community by reducing local property values, decreasing tax revenue and impeding economic development. The presence of a brownfield site can erode a community's image. In turn, this stigma can discourage developers, businesses, and homeowners from investing in the community.

The closure of a military base requires the implementation of distinct processes that involve many stakeholders, including federal, state, tribal, and local government regulators and officials, as well as the local community in which the base is located. Similarly, the cleanup and revitalization of a brownfield site requires the implementation of processes that may involve subsets of the same stakeholders. While the processes may differ from one another, they share the same goal of cleaning up sites so that they are safe for human health and the environment and to return these properties to productive reuse.

With regard to BRAC and brownfield programs and processes, many site cleanup and revitalization issues are similar. Most notably, both types of properties may be contaminated with similar substances, whose cleanup requires similar solutions. In many cases federal and/or state oversight is required for cleanups to ensure the protection of human health and the environment.

The revitalization of BRAC installations and brownfield sites can help a community to experience an economic resurgence, providing a range of housing, commercial, industrial, and transportation options that can help to reduce or eliminate the ongoing trends of blight. Accordingly, BRAC and brownfield case studies are included throughout this document to demonstrate revitalization successes due to partnerships, interparty communication efforts, and available financial incentives.

This document provides the following:

- an overview of the BRAC process;
- an overview of the brownfield program and associated incentives;
- an overview of the redevelopment process and property constraints;
- a discussion of environmental considerations and cleanup processes;
- an evaluation of competing interests between economic, environmental, and social impacts when analyzing reuse options; and
- a discussion of the various solutions and techniques available for the cleanup and reuse efforts.

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1. INTRODUCTION

The Interstate Technology & Regulatory Council's (ITRC) Brownfields Team prepared *Property Revitalization—Lessons Learned from BRAC and Brownfields* in partnership with the U.S. Department of Defense (DoD) and the U.S. Environmental Protection Agency (EPA). This document evaluates the processes used to cleanup, transfer, and revitalize properties affected by Base Realignment and Closure (BRAC) and properties affected by contamination, commonly known as “brownfields,” including various financial, legal, technical, and administrative tools and processes used on both types of properties. The information in this document is meant to inform federal, state and local government agencies about how successful concepts in either the BRAC or brownfield setting may be used to increase the efficiency of site cleanup and reuse. In addition, other interested stakeholders in the BRAC process, such as communities and local reuse or redevelopment authorities (LRAs), will also find this document useful. It is the hope of the ITRC that all parties involved in site cleanup and reuse will see the opportunities presented for the revitalization of contaminated properties and join in the discussion and planning for their reuse.

Property Revitalization—Lessons Learned from BRAC and Brownfields provides an overview of incentives and tools used to accelerate the cleanup and reuse of brownfield and BRAC sites. It includes case studies to illustrate the use of these tools and incentives. The goal is not to merge the BRAC and brownfield programs but to highlight tools and incentives that have worked on both brownfield projects and BRAC closures that may be used to facilitate the future revitalization of these properties. There are established tools for both processes—not all are interchangeable, but many concepts can be used to facilitate cleanup and reuse.

Base closures and realignments can have a large impact on the communities within which they are located. Often, these bases are the engines that support the economy of the surrounding community. This support comes from jobs at the installation and from military personnel supporting local industries that contribute to the local tax base. Upon closing or realignment of a military installation, the loss in jobs and population can create a substantial void in the local economy. Additionally, DoD activities on the base may have affected the property's environmental condition that may result in the need to perform environmental assessments and cleanup. Conducting an environmental assessment of the installation helps DoD, the regulators, and the communities evaluate remediation alternatives and provide information communities need to determine the best future use of the site. The public's perception of the environmental condition of the installation may also impact the community's planning and reuse efforts.

Brownfield sites also pose challenges to communities in much the same way as BRAC installation closures. The existence of brownfields within a community may pose not only environmental, but also legal and financial burdens on communities. Left vacant, these properties can diminish the value of surrounding properties and potentially threaten the community's economic viability. Like BRAC sites, the public's perception of the contamination that may exist on a brownfield may impact planning and reuse efforts. In addition, the stigma that exists can discourage developers, businesses, and homeowners from investing in the community.

However, both BRAC and brownfield properties can result in opportunities to communities. The closure of a DoD installation can make available large tracts of property that can be used for a variety of purposes, including residential, recreational, conservation, industrial, and commercial activities that meet the ever-changing needs of a community. These new uses typically create new jobs, increase the tax base, expand recreational opportunities, and improve the quality of life of the citizens. At some BRAC sites, local economies have improved after base closure.

Careful evaluation of all environmental and economic factors associated with the reuse of properties can increase the likelihood of successful redevelopment and economic stability. There are many federal programs available for use at BRAC installations for reuse efforts. Similarly, there are also many brownfield incentives and programs at the federal, state, and local levels. There are also state, municipal, and private incentives that can be used to leverage incentives provided by DoD and other federal government agencies. Selecting and applying the best tools and incentives from both the brownfield and BRAC processes can expedite and support the transition from military base/abandoned property to supporting a thriving reuse of the property. Many of the case studies presented in Appendix C illustrate the use of the tools and incentives that are available for site reuse.

2. BRAC PROCESS OVERVIEW

BRAC properties are military installations that are being closed or whose military functions are being realigned by DoD. BRAC can result in the availability of property for use by local government, businesses, and citizens. This chapter provides an overview of the BRAC property disposal and transfer process, legislative requirements, the key stakeholders involved in the cleanup and reuse of these properties and the environmental considerations of the BRAC process.

2.1 Property Disposal Under BRAC

As the Cold War ended, the United States Government determined that the number of active DoD military installations exceeded its needs and was too costly to continue to operate. Therefore, in the late 1980s and early 1990s, Congress passed two laws to downsize and reduce costs: the Base Closure and Realignment Act of 1988 and the Defense Base Closure and Realignment Act of 1990. In addition to closing or realigning these “BRAC” facilities, the laws required that DoD comply with a variety of laws, including the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, also known as “Superfund”) to address any contamination issues and allow for the disposal of real property at the installations. Figure 1 illustrates the excess acreage affected by each round of BRAC installation closures.

CERCLA Section 120(h)(3) requires that, before the United States transfers any federal property on which any hazardous substance was stored for one year or more, known to have been released, or disposed of, it must provide a covenant warranting that all remedial action necessary to protect human health and the environment has been taken.¹ This law was amended in 1997 to

¹ CERCLA §120(h)(3), 42 U.S.C. §9620.

provide for Early Transfer Authority to allow a federal entity to transfer property before the property is cleaned up, as long as additional assurances are given that the property will be cleaned up (see box). In addition, CERCLA also mandates that the United States is liable for any contamination for which the government is responsible that is discovered after the date of transfer.²

Once a BRAC installation is approved for closure, DoD begins to determine what portions of the installation are considered “excess property.” First, DoD considers whether there are other military services that have a use for the property. If not, the property is determined to be excess

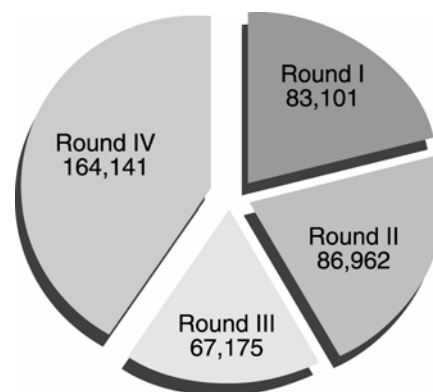


Figure 1. Excess BRAC acres by round Source: DoD 2001.

property and is offered to other federal agencies or tribal governments for their use or to the U.S. Department of Housing and Urban Development (HUD) for homeless assistance pursuant to the McKinney Act.³ Thereafter, any property that remains is considered surplus and can be planned for community reuse by the LRA (see box).

After the DoD identifies surplus property, the LRA develops a “reuse plan” for the installation to outline a new use for the property. This plan identifies the LRA’s overall reuse strategy for the installation, including time frames and cleanup requirements and costs. Before developing the reuse plan, the LRA considers notices of interest for the property, environmental and natural resource issues such as soil and groundwater contamination, endangered or threatened species and habitat, and cultural and historical requirements. It is critical for the LRA to have an understanding of the extent of the property’s contamination before developing its reuse plans. Without such information, reuse plans may be adopted that are incompatible with existing site conditions. In addition, LRAs must also adequately balance the local community’s interests and economic development needs (DoD 1995b). Therefore, reuse plans are generally developed in consultation with local stakeholders, including affected community members, members of the economic

Early Transfer Authority: To be considered for early transfer, the agency or department transferring the property must demonstrate the following:

- The new owner will use the property in a manner suitable for the site, and the new land use will not pose an unacceptable risk to human health and the environment.
- The deed or agreement contains certain assurances with regard to response actions.
- The federal agency provides public notice on the proposed transfer, allowing the public time to provide comments.
- Early transfer will not substantially delay any cleanup actions on the property.

Additional information on early transfer authority can be found in *Department of Defense Early Transfer Authority: A Guide to Using ETA to Dispose of Surplus Property*, October 2004.

The Local Reuse or Redevelopment Authority is an entity, usually convened by the local government, consisting of business interests and/or local citizens who are concerned about the reuse of the BRAC installation. The LRA is responsible for planning for the installation’s reuse.

² See CERCLA §120(h)(3)(ii)(II); 42 U.S.C. §9620.

³ Stewart B. McKinney Homeless Assistance Act of 1987. (Title V of the McKinney Act imposes requirements on federal agencies to identify and make available surplus federal property, such as buildings and land, for use by states, local governments, and nonprofit agencies to assist homeless people [<http://www.nationalhomeless.org/mckinneyfacts.html>].)

community, and the Restoration Advisory Board (RAB), local elected officials, and other interested stakeholders (see box). If a reuse plan is not received from the LRA within nine months from the closure date, DoD consults with the governor and heads of local government and proceeds with the disposal of the property according to applicable laws and regulations.

A **Restoration Advisory Board** is composed of representatives of the community, the installation, local government, and regulatory agencies. It provides a regular forum for its members and the public to provide input to the installation about its cleanup program and decisions. It is an advisory group, not a decision-making group.

Once the LRA completes and submits the reuse plan to DoD, DoD develops a plan for disposing or conveying the property. Thereafter, the LRA begins implementing the reuse plan as DoD completes the property transfer or conveyance actions.

2.2 BRAC Property Transfer Process

BRAC surplus property may be transferred through a variety of means:

- public benefit conveyance for such purposes as airports, education, parks and recreation, and homeless assistance
- economic development conveyance to generate jobs and/or revenues
- conservation conveyance to nonprofit organizations
- public or negotiated sale

Depending on the transfer method used, DoD may or may not receive payment for the property. For example, property transferred for a public benefit is often transferred at discounted or no cost. While awaiting the transfer of property titles, DoD uses several techniques, such as interim leasing or leasing in furtherance of conveyance (LIFOC), to return the property to active use. Prior to leasing or transferring by deed any property, DoD must demonstrate that the property is suitable for its intended reuse. Such demonstrations must be completed in accordance with CERCLA.

The National Defense Authorization Act for Fiscal Year (FY) 2000 allowed DoD to transfer property at no cost to BRAC-affected communities for the purpose of economic development. In contrast, the National Defense Authorization Act for FY 2002 requires DoD to seek fair market

Leasing Considerations at BRAC Installations

Where the leasing of BRAC installation property would facilitate state and local economic efforts and not interfere with or delay property disposal, DoD may enter into an interim lease or LIFOC. Generally, an interim lease is a short-term lease that makes no commitment to the lessee for future use or conveyance of title to the property to the lessee upon its disposal. It is entered into for consideration at or below the estimated fair market rental value for the leasehold. An interim lease is usually entered into before final disposal decisions are made by DoD. Interim leases generally terminate at the time that the final reuse and disposal decisions are implemented. An environmental condition of property (ECP) and a finding of suitability to lease (FOSL) are generally required for an interim lease. The restrictions and lease conditions associated with environmental conditions that are identified in the ECP and FOSL must be incorporated into the lease. When an installation property cannot be transferred due to environmental remediation issues and early transfer is not feasible, a LIFOC provides immediate possession of the property to the entity identified in the disposal decision.

value (FMV) for property transferred in the BRAC 2005 process. However, the FY 2002 Act also authorizes property transfers without financial consideration if circumstances warrant. Historically, these low- or no-cost economic development conveyances were the most common method used to transfer property to nonfederal entities. The primary factors that may impact FMV or property valuation are environmental, social and economic issues and are discussed in Section 6 of this document.

BRAC CASE STUDY FACT**Former Chicora Tank Farm, U.S. Department of the Navy, North Charleston, South Carolina**

The Former Chicora Tank Farm site is an excellent example of DoD seeking FMV for a former military facility. This 23.9-acre site was marketed by the U.S. General Services Administration (GSA) and put up for auction. The site was thought to have little real estate value (\$100,000) and was originally expected to receive very limited interest by the development community. The site ultimately sold for \$1.1 million and is leading a redevelopment surge in this once blighted area of town. Additional information on this case study can be found in Appendix C.

2.3 Early Transfer and Privatization

A privatized early transfer of a BRAC installation can accelerate redevelopment and broadens the spectrum of applicable tools. As previously described, CERCLA 120(h)(3)(c) allows the military to transfer property prior to the cleanup being completed, referred to as “early transfer.” In some cases the property transfers by deed to the LRA and other entities, but the military retains the cleanup responsibility. In other cases, the military transfers the property by deed to the LRA or other entities together with the cleanup responsibility. In these cases the military provides funding for the LRA to complete the investigation and cleanup. These cases are referred to as “privatized early transfers.”

Some LRAs have found these privatized early transfers to be very attractive. Many times the LRA will team with a developer and contractor to integrate the cleanup with the development of the installation. This approach allows LRAs to prioritize the cleanup work to match the development plan or to implement a “one-dig” approach to both cleanup and the redevelopment. Through this effort, the cleanup can be fully integrated with the redevelopment. For example, if an LRA is responsible for cleaning up and redeveloping an area that is known to have contaminated soil and the same area will need to be excavated to dig foundations for structures, it may implement the one-dig approach. That is, the LRA may remove the contaminated soil and excavate the foundations; dispose of the contaminated soil appropriately; and ready the property for construction. This approach avoids duplicative mobilization and cleanup costs.

To privatize the cleanup on a BRAC installation, DoD enters into a number of contractual or legal agreements. The most commonly used contract is an Environmental Services Cooperative Agreement (ESCA). The ESCA is used to establish the obligations between DoD and the property recipient. With an ESCA, the military service generally pays the property recipient (or deducts from the sale price) the amount of the expected cost to clean up the facility. Environmental insurance may be purchased to cover costs that exceed the estimated costs of the cleanup. Once the insurance proceeds are spent, DoD will be responsible for the cleanup and costs for remaining contamination. Even in these cases, ultimate liability for the contamination remains with the federal government.

Generally speaking, to complete a privatized early transfer of BRAC installations, several documents must be modified or developed. These documents vary among states and jurisdictions but may include a Finding of Suitability for Early Transfer (FOSET) and covenant deferral application or covenant deferral request, the Federal Facility Agreement (FFA), enforceable agreements, ESCA, and remediation agreements. Some states even require that the property recipient enter into additional formal cleanup agreements or orders with the state environmental regulatory agency as part of the privatization effort. Privatized early transfer also allows the LRA and other parties to use many of the brownfield tools that cannot be used when the military retains the cleanup responsibility.

2.4 Environmental Cleanup in the Property Disposal Process

Many of the BRAC installations slated for closure or realignment in the first four rounds of BRAC had significant environmental contamination that needed to be addressed before DoD could transfer the property to nonfederal entities. CERCLA requires DoD to determine whether the base property is contaminated before any transfer decisions are made. The process of identifying whether an installation property or portions of an installation property are contaminated is set forth in the Community Environmental Response Facilitation Act (CERFA)⁴, an amendment to CERCLA.

CERFA requires that the federal agency with jurisdiction over a property identify the clean parcels of land within the facility or installation. The CERFA investigation must be conducted to “determine or discover the obviousness of the presence or likely presence of a release or threatened release of any hazardous substance or petroleum products.”⁵ CERFA identification and regulatory concurrences must be made no later than 18 months after the property is slated for closure.⁶

In BRAC Rounds 1–4, to make clean parcel determinations and discern areas where environmental contamination might be found, an Environmental Baseline Survey (EBS) was conducted. An EBS is a basewide study that summarizes historic and current storage, release, treatment, or disposal of hazardous substances or petroleum products. An EBS identifies contaminated and/or uncontaminated parcels at the installation (in accordance with CERFA) and determines whether any parcels are suitable for transfer or lease. Though each DoD service has its own policy for conducting EBSs, the surveys generally follow the process outlined in *Standard Practice for Conducting Environmental Baseline Surveys* (ASTM 2005). This is similar to ASTM Phase I Environmental Site Assessments commonly conducted at non-DoD facilities (ASTM 2000). EBSs also provide pertinent details to the LRA/RAB for use in developing the reuse plan, such as the square footage, utilities and construction materials of individual structures on the installation.

⁴ Community Environmental Response Facilitation Act (Pub. L. 102-426) (October 26, 1992). CERCLA § 120(h)(4), 42 U.S.C. § 9620(h)(4).

⁵ See CERCLA § 120(h)(4), 42 U.S.C. § 9620(h)(4).

⁶ CERCLA § 120(h)(4)(C), 42 U.S.C. § 9620(h)(4)(C).

It should be noted that in the fifth round of BRAC occurring in 2005, DoD will be preparing environmental condition of property (ECP) reports rather than the traditional EBS described above. It is expected that ECPs will not contain significantly different information from EBSs. ECPs will rely on historical environmental investigations that have already been conducted by DoD rather than reinvestigating the entire installation. However, if the historical environmental data and information are determined to be outdated, DoD will update them.

After the EBS/ECP, CERFA process, and local reuse plans are completed, DoD obtains concurrence with the state environmental regulatory agency and EPA to determine whether the property is suitable for lease or deed transfer. Property transfer may occur once DoD announces that the property is environmentally suitable for the future use of the property in one of the following documents: a Finding of Suitability to Lease (FOSL); Finding of Suitability for Transfer (FOST); or FOSET. If a portion of the installation is identified as uncontaminated, that portion can be immediately transferred.

BRAC Cleanup Team

Currently a BRAC Cleanup Team (BCT) is established for each installation to make, plan, and direct cleanup activities. BCTs were created under DoD's Fast Track program for BRAC installations to expedite cleanup by involving regulators throughout the process. The team reviews the status of all installation environmental programs and prioritizes all environmental cleanups. In addition, the BCT serves as each agency's point of contact for environmental issues related to BRAC. It should be noted, however, that DoD is always the lead agency for conducting the cleanup at an installation. According to DoD policy, the BCT consists of three or more members:

- A representative from the DoD military service branch—the "BRAC Environmental Coordinator"
- One or more representatives from the state environmental regulatory agencies
- One or more representatives from the regional office of the EPA

In addition, it is suggested that representatives from the LRA should attend BCT meetings, as appropriate. The LRA's participation will provide the LRA with critical information about the cleanup and in turn provide the BCT with information about the LRA's reuse parcel priorities.

2.4.1 FOSL—Finding of Suitability to Lease

A FOSL indicates that the DoD believes the environmental condition of the property is compatible with the proposed property use under lease. The FOSL assures the lessee that DoD will remediate any contamination on the base property if necessary to protect human health and the environment.⁷ DoD is required to consult with EPA prior to making the determinations required, and if DoD plans to lease a property that is on the National Priorities List (NPL) and the lease will extend beyond the termination of DoD operations on the site, DoD must notify the state's environmental agency before entering into a lease.⁸ A property can be leased to the LRA or other entity prior to cleanup.

⁷ See CERCLA §120(h)(3)(b), 42U.S.C. §9620(h)(3)(B).

⁸ See CERCLA §120(h)(5), 42U.S.C. §9620(h)(5).

2.4.2 FOST—Finding of Suitability to Transfer

In a FOST, DoD determines that conditions on the property are protective of human health and the environment for the intended use. A FOST is DoD's statement that the property is suitable for transfer. DoD is required by Section 120(h)(3) of CERCLA to meet certain requirements before it may transfer any federal property on which "any hazardous substance was stored for one year or more, known to have been released or disposed." One of the requirements is to prepare a deed notice. A deed notice notifies the new property owner of hazardous substances found on the property and describes remedial actions taken, if any.⁹ In part of the deed notice known as a "covenant," DoD commits to complete cleanup activities and requires future access to the property should additional remedial or corrective action be required after the transfer.¹⁰ For property identified as uncontaminated, the property may be transferred with a covenant indicating that the DoD will be responsible for and remediate any contamination found after the date of transfer and includes an access agreement.¹¹ A property can be transferred by deed when it is clean or has been cleaned up with or without the implementation of land use controls. The state and EPA often review the FOST documents. If they do not agree with the FOST, DoD policy requires that the military attach any unresolved comments to the final document.

2.4.3 FOSET—Finding of Suitability for Early Transfer

Originally CERCLA §120(h)(3) required DoD to complete all cleanup activities before transferring a property. Because cleanup activities can take many years, some installations that were closed as part of the earlier BRAC rounds were slow to be turned over to LRAs for reuse. In 1996, to expedite BRAC property transfers, Congress amended Section 120(h)(3)(B), allowing the government to transfer by deed contaminated federal property before cleanup was complete or the remedy was in place or operating¹². This amendment is commonly known as an "early transfer authority" or "covenant deferral," meaning that the property may be transferred without the CERCLA covenant mentioned above. Under this provision DoD assesses the property to determine what type of contamination is present and where it is located. DoD includes the results of the environmental assessment in a deed notice and agrees to properly remediate the contamination to protect human health and the environment. Typically, land use restrictions are required to protect human health and the environment during cleanup. If the facility is on the NPL, EPA may determine that the property is suitable for early transfer upon receiving concurrence from the governor of the state. If the facility is not on the NPL, the governor of the state in which the facility is located determines whether the property is suitable for early transfer. A property can be transferred by deed before the cleanup has been completed. This transfer can happen in two ways. Either the military retains the cleanup responsibility, or the military can transfer the cleanup responsibility, along with funding, to the LRA or other entity.¹³

⁹ The remedial action has been taken if construction and installation of an approved remedial design has been completed and demonstrated to EPA to be operating properly and successfully. See CERCLA §120(h)(3)(B), 42 U.S.C. § 9620(h)(3)(B).

¹⁰ See CERCLA §120(h)(3)(A), 42 U.S.C. § 9620(h)(3)(A).

¹¹ See CERCLA §120(h)(4)(D), 42 U.S.C. § 9620(h)(4)(D).

¹² See Section 2833 of the National Defense Authorization Act for 1996, 10 U.S.C. 2667 (Pub. L. 104-106, 106 Stat. 186) and Section 2834, 42 U.S.C. § 9620 (Pub. L. 104-106, 106 Stat. 186).

¹³ See CERCLA §120(h)(3)(C) for additional information on early transfer authority.

2.4.4 The Use of Institutional Controls in Property Transfers

When land use restrictions are required to protect human health and the environment during or after cleanup the information is provided in the deed. Deed restrictions in the form of institutional controls (ICs) are considered administrative and legal controls used to minimize the potential for human or ecological exposure to contamination and protect the integrity of the interim or long-term remedy. ICs are used to guide human behavior by providing information about the contamination that remains on the property and place limits on how the property can be reused. This information is essential to developers, planners, and communities in determining future land use activities and to ensure that the public is not exposed to contamination.

2.5 The Roles of Environmental Laws in the BRAC Process

The Base Closure and Realignment Act of 1988 and the Defense Base Closure and Realignment Act of 1990 require DoD to comply with a variety of environmental laws during the property disposal process. The primary federal laws that govern the investigation and cleanup of BRAC installations are the Resource Conservation and Recovery Act (RCRA) and CERCLA. RCRA established processes to deal with the creation, transport, use, cleanup, and storage of hazardous waste and is designed to prevent contamination problems at currently active facilities. CERCLA was intended to locate, investigate, and clean up the worst waste sites nationwide that were a result of previously common practices such as the dumping of chemical wastes directly onto the land. The National Environmental Policy Act (NEPA) also has requirements that must be met anytime the federal government funds a project that changes the use of a property.

At the federal level, the cleanup of contaminated sites may be governed by either RCRA or CERCLA, depending on such factors as the source and cause of the contamination, whether the facility is on the NPL, and whether the facility has sought or is seeking a RCRA permit for generation, treatment, storage, disposal or release or management of hazardous wastes or has been issued an order from EPA or state regulatory agency. RCRA and CERCLA share the goal of protecting human health and the environment, and any procedural differences between the laws generally do not affect the outcome of remediation. This concept of parity between the two

BRAC CASE STUDY FACT

Mare Island Naval Shipyard, Vallejo, California

This installation case study is an example of an early transfer. The local community near this former shipyard had an ambitious reuse plan for the facility that could not fully commence while the Navy still owned the property. Rather than waiting for the Navy to complete a full cleanup, the city pursued early transfer. This arrangement allowed the city and its developer partner to obtain title to the property while both completed the cleanup. Portions of the property with limited contamination were made available through interim leases that provided revenue to continue redevelopment of the island. The cleanup targeted high-priority development areas first to get them into reuse sooner. The early transfer streamlined the cleanup because the developer had more information and control over the specifics of the reuse than during a normal transfer process, enabling remediation and redevelopment to be conducted concurrently in many cases. For example, if soil needed to be excavated to remove contamination, it provided an opportunity to save time and money to use the open excavation to begin constructing new infrastructure. Additional information on this case study can be found in Appendix C.

programs is outlined in EPA’s policy entitled “Coordination between RCRA Corrective Action and Closure and CERCLA Site Activities” (September 24, 1996).

2.5.1 Comprehensive Environmental Response, Compensation and Liability Act

In the 1970s, landmark cases such as Love Canal in New York and Times Beach in Missouri brought the issue of uncontrolled releases of contaminants into public view. These situations elevated public concern regarding environmental contamination and the threat to public health posed by the improper storage, handling, and disposal of hazardous substances. These cases led to the development of two important statutes: RCRA in 1976 and CERCLA in 1980. CERCLA requires that hazardous substance sites be identified, establishes procedures to assess sites for their risk to human health and the environment, and provides a site remediation process. CERCLA establishes a set of protocols for assessing and addressing site contamination problems. The basic steps involve assessing the site, involving the public in decisions regarding the cleanup process, evaluating site cleanup options, and deciding on a final site remedy (see Figure 2). This process was developed to manage sites affected by uncontrolled releases of hazardous substances that directly affect human health and the environment.

As originally enacted in 1980, CERCLA did not specifically include provisions for the environmental restoration at DoD sites, though DoD sites were regulated under the original act. This situation changed in 1986 with the passage of the Superfund Amendments and Reauthorization Act (SARA). SARA provides that all federal facilities “shall be subject to, and comply with this act in the same manner and to the same extent, both procedurally and substantively, as any non-government entity.” In addition, SARA provides for meaningful participation by states at federal facilities, including consideration of state environmental laws and regulations. SARA also requires that DoD enter into an “interagency agreement,” also known as “federal facility agreements.” FAAs outline the role of EPA and the state in the cleanup, establish a cleanup schedule, provide dispute resolution, and allow EPA to issue stipulated penalties if the agreement is violated. Pursuant to Executive Order 12580, DoD serves as the lead agency for cleanup at DoD remediation projects. DoD has delegated its lead agency status to the individual military departments. Typically, EPA and the states serve as the lead agency on private sector CERCLA sites.

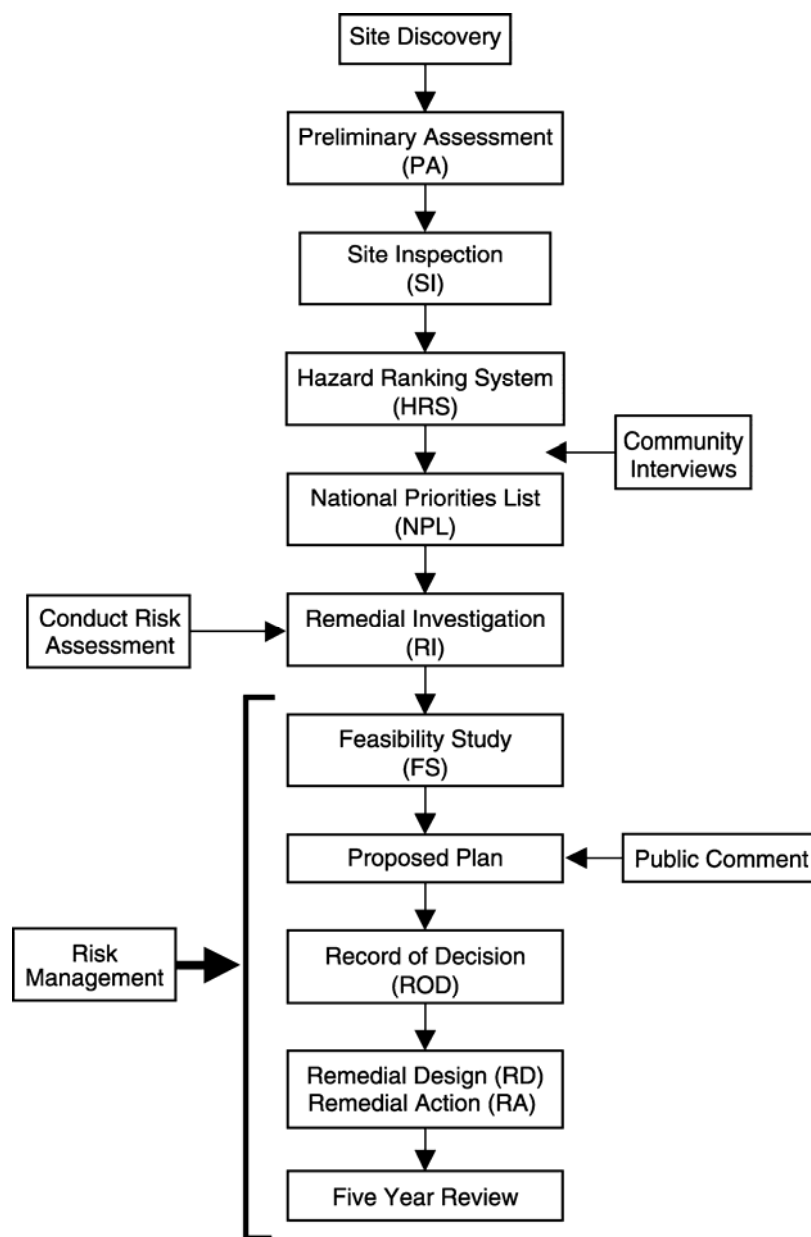


Figure 2. The CERCLA process

2.5.2 Resource Conservation and Recovery Act

Enacted in 1976 as an amendment to the Solid Waste Disposal Act, RCRA provides a comprehensive legislative framework for a cradle-to-grave hazardous waste management program. RCRA establishes requirements for hazardous waste generators and transporters and for hazardous waste treatment, storage, and disposal (TSD) facilities. RCRA protects human health and the environment by regulating operating facilities and requiring good management practices when generating, transporting, treating, storing, or disposing of hazardous wastes. In addition, RCRA requires TSD facilities to clean up accidental spills or releases of hazardous wastes. EPA uses the term “RCRA Corrective Action” to refer to cleanup activities required by

this statutory authority. EPA or states mandate corrective action at TSD facilities primarily through permits and orders.

Originally, the RCRA statute provided limited authority to EPA and the states to require cleanup at hazardous waste facilities. Only releases that presented an immediate and substantial danger to human health and the environment or that originated from regulated units such as landfills, surface impoundments, and waste piles were subject to cleanup requirements. The term “corrective action” applied only to cleanups at sites with groundwater contamination. However, in 1984 the Hazardous and Solid Waste Amendments (HSWA) amended RCRA by greatly expanding the government’s authority to require corrective action for releases of hazardous waste and hazardous constituents at TSD facilities. This expanded authority allows EPA and the states to require corrective action for all releases of any solid waste, including hazardous wastes or constituents, from any solid waste management unit at a TSD facility seeking or renewing a hazardous waste permit; require corrective action beyond a facility’s property boundaries where necessary to protect human health and the environment; and require cleanup of soil, sediment, surface water and groundwater.

Many BRAC installations are subject to RCRA regulation. While compliance with the RCRA regulations may have been a normal and vital part of daily activities at an operating installation, ongoing RCRA corrective action compliance requirements can add complexity to a BRAC installation cleanup and reuse effort. If a BRAC installation subject to CERCLA regulation had a RCRA permit, RCRA corrective action liability may exist. The installation or the future owner may consider the termination of the corrective action permit to remove this liability.

When a RCRA-permitted hazardous waste management operation ceases, the RCRA permit requires that the operation be properly closed to protect human health and the environment. In addition, the RCRA permit provides cleanup standards that must be met by the closing facility. The installation must work with the appropriate environmental regulatory agency (state or EPA) to determine the cleanup standard that is suitable for the site.

In summary, under both CERCLA and RCRA a “residential standard” for cleanup requires that the property be sufficiently cleaned to safely allow people to live or use the property for normal residential uses like housing, day care centers, or hospitals. An “industrial standard” for cleanup is less stringent than the residential standard and requires the property to be sufficiently cleaned for industrial uses. The completion of an environmental risk assessment helps determine whether a property can be cleaned up to meet industrial or residential standards. BRAC installations are often divided into parcels based on the past use of the property, and each parcel is assessed individually. For example, areas of the BRAC installation that were previously used for residential purposes often can easily meet residential standards. However, it can be more difficult and expensive to clean up areas of the property that were previously used for industrial activities to unrestricted use. It may be sufficiently protective of human health and the environment to allow those industrial parcels to be cleaned up to meet industrial standards if future activities on the parcel are going to remain the same. Often industrial standards are protective of other uses, such as light commercial and some recreational uses. State-specific cleanup standards should be consulted. It should be noted that additional cleanup or land use controls may be necessary to

permit an alternative use. An environmental risk assessment is also required to determine whether cleanup is required to protect ecological receptors.

It is important for potential future owners of BRAC property and for the LRA to be aware of which cleanup standard will be applied to each parcel on a BRAC installation. Potential future uses should be carefully matched with property that is or will be sufficiently clean for that planned use. Parcels of property that easily meet residential standards often can be released rapidly for a variety of reuses. Properties that are cleaned to meet industrial standards should be cautiously matched with their future uses.

2.5.3 National Environmental Policy Act

Established in 1969, NEPA is a national law requiring that potential impacts to human health and the environment be assessed when the federal government funds a project that changes the use of a property. NEPA analyses must be completed for base realignments, disposal and reuse, and interim reuse decisions on BRAC installations such as leases. The NEPA process requires documentation demonstrating compliance with other environmental laws, regulations, and plans; disclosure of the environmental impacts of the proposed action; and environmental consequences of the proposed decision. For additional information on the NEPA process, see <http://www.epa.gov/compliance/nepa/>.

To comply with NEPA for the disposal of installation property, DoD must comply with regulations in 40 CFR 1500-1508 developed by the Council on Environmental Quality and Service-specific NEPA regulations. These regulations define the NEPA process for examining the potential impacts to the environment that may result from federal actions. In this case, DoD examines the potential impacts of the decision to dispose of BRAC installation property and facilities to either public or private users. In preparing these analyses, reasonable reuse alternatives are identified and characterized and must include the reuse found in the LRA's reuse plan for each BRAC site. Environmental impacts associated with each alternative are determined, and a preferred alternative is selected. This disclosure analysis typically occurs through the development and finalization of an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). Some specific, generally minor, projects are categorically excluded from the NEPA process.

NEPA law for BRAC installations requires expedited production of any disposal and reuse EA or EIS within 12 months of receipt of a community's final reuse plan. This policy, along with other DoD NEPA procedures and responsibilities, is discussed in *DoD Guidance on Accelerating the NEPA Analysis Process for Base Disposal Decisions* (https://www.denix.osd.mil/denix/Public/Library/Cleanup/CleanupOfc/Documents/BRAC/brac_nepa.html).

In addition to the property disposal requirements of CERCLA, RCRA, NEPA, and BRAC, DoD is also required to follow both federal and state statutes and regulations as they apply to federal facilities, including but not limited to state environmental laws, the Toxic Substances Control Act,¹⁴ the Clean Water Act,¹⁵ the Clean Air Act,¹⁶ the Safe Drinking Water Act,¹⁷ the Federal

¹⁴ 15 U.S.C. §§ 2601–2692.

Facility Compliance Act of 1992, underground storage tank statutes, and petroleum statutes. The requirements of any cleanup regulation or statute the installation was under as an active base, such as listing on the NPL or regulation under RCRA, must be satisfied at the base before issuing a FOST/FOSET and the CERCLA covenant indicating that all remedial actions are in place.

2.5.4 The Role of Environmental Regulators

While EPA is generally the lead agency for cleanup on most Superfund or NPL sites contaminated by the private sector, Executive Order 12580 delegated lead agency authority for Superfund cleanup on military installations to DoD. EPA remains an active participant in BRAC cleanup decisions and provides input and review of documents critical to completing the cleanup. EPA and state regulators must concur with DoD's chosen cleanup remedy at BRAC installations listed on the NPL. The state's role at NPL sites varies depending upon a number of jurisdictional factors, including but not limited to the applicability of a valid RCRA or state hazardous waste order or permit in place and ensuring compliance with applicable, or relevant and appropriate requirements (ARARs). In addition, DoD and EPA have established a memorandum of understanding that outlines each agency's responsibilities for site cleanup. DoD provides funding to EPA to enhance EPA's resources for supporting cleanup at BRAC installations. It is important to note that EPA is generally the regulatory lead for cleanup on NPL sites, while the state regulatory agency is also involved in the process. For non-NPL sites, the state regulatory agency is normally the lead for cleanup oversight activities.

The Defense and State Memorandum of Agreement (DSMOA) program establishes partnerships between DoD and states, territories, and the District of Columbia.¹⁵ A DSMOA allows DoD to reimburse a state, territory, or the District of Columbia for its costs to review and provide regulatory oversight into the DoD cleanup program at DoD installations. After signing a DSMOA, DoD and the state enter into a two-year cooperative agreement that outlines the activities the state will perform at the installation and the funding it will require. State regulatory agencies also require compliance with parallel state and local environmental laws that are incorporated into the cleanup plans for a BRAC installation.

Specifics of how agencies interact on the cleanup and approval process are spelled out in multiagency agreements. For NPL sites, an FFA is often used. DoD, EPA, and sometimes states and/or tribes are the signatory parties. For non-NPL sites, a variety of other site-specific state oversight agreements explain the roles for the DoD and the state. These agreements include but are not necessarily limited to specifying regulatory authorities, document submittal review and approval, and the process for dispute resolution.

¹⁵ Federal Water Pollution Control Act, 33 U.S.C. §§1251–1387.

¹⁶ 42 U.S.C. § 7401 et seq. (year).

¹⁷ See Public Health Service Act §§ 1401–1451 (42 U.S.C. §§ 300f–300j-26) and the Safe Drinking Water Act Amendments of 1996, 42 U.S.C. §§ 300f–300j-18.

¹⁸ The DSMOA program was established in 1986 pursuant to Section 211(B) of SARA.

2.6 Summary

To facilitate the closure of military bases, the BRAC process was formulated from existing federal laws and includes the completion of specific tasks and processes. The process includes the identification of parcels for property disposal and reuse, evaluating the environmental condition of the property, developing a reuse plan that considers environmental and reuse options, and cleanup pursuant to applicable federal and state regulations. The process also includes the formation of a BRAC Cleanup Team (BCT), LRA, and RAB to facilitate various components of closure, environmental remediation, and redevelopment of a BRAC installation. The success of the process can be highly dependent upon the work of and interaction among these groups. As described within this section there are many techniques from the BRAC process that can be used such as early transfers to facilitate the reuse of these properties.

3. STATE AND FEDERAL ENVIRONMENTAL PROGRAM BROWNFIELD INITIATIVES

3.1 Background

Brownfield sites are suspected or are known to be contaminated and sit idle or are underused because of the potential cleanup costs, liability concerns, or site location. This description applies to a wide variety of sites, including industrial properties, old gasoline and service stations, vacant warehouses, former military installations, former dry cleaning facilities, other related commercial services, landfills, scrap yards, and other properties affected by the release or suspected release of hazardous substances or petroleum products.

Established in 1980, CERCLA enabled the government to address some of the most highly contaminated sites in the country. It provided money to address cleanup and created a broad liability net to hold owners and responsible parties responsible for the cleanups. While this legislative initiative was critical for protecting public health and the environment in this country, the associated liability issues and mandated procedures created barriers to the reuse of these properties. Liability for cleanup was so extensive that virtually anyone associated with a contaminated site (the party that generated the waste, disposed of it or arranged for its disposal, or transported it, as well as the disposal site owners, operators, and financial partners) was liable for a site's cleanup. This broad liability provision was meant to minimize the financial burden of these cleanups on state and federal governments, while appropriately seeking payment from those responsible for the contamination.

However, in the early 1990s there came a recognition that, while the CERCLA law was working to clean up the most contaminated sites, its liability provisions might be preventing the cleanup of less contaminated sites. The liability provisions originally intended to ensure cleanup by the responsible party were

What Is a Brownfield?

The "Small Business Liability Relief and Brownfields Revitalization Act" defines brownfields as "real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant."

found to discourage developers from acquiring, and lenders from lending on, contaminated sites because of the threat of potential liability. This unintended consequence led to many sites being abandoned or underutilized. This new class of sites became known as “brownfields,” sites not contaminated enough to be addressed by CERCLA but still subject to the liability laws in place. Addressing brownfields requires more than just site cleanup. Issues such as quality of life, livable communities, creation/loss of jobs, and economics are important. These issues came to define brownfields.¹⁹

Brownfield sites can negatively impact communities by reducing local property values, decreasing tax income and other revenue, creating potentially dangerous or hazardous environments due to contamination and abandoned structures, and creating a stigma that further diminishes potential economic development and reuse of the property and properties in the surrounding area.

EPA became increasingly aware of community concerns over brownfield conditions, particularly in many urban areas that were affected by blight and joblessness. Cleanup uncertainty, problems with financing, and the inability to proceed with redevelopment quickly prevented communities, developers, and investors from reusing or restoring these contaminated properties. Cleanup and reuse of brownfields could not compete with the relatively cheaper and available land (“greenfields”) at the urban fringes. To promote redevelopment of brownfield sites, the federal government, states, and many local governments have developed a variety of initiatives and incentives to encourage the reuse of these properties.

In 1993, EPA launched a brownfields initiative that started with a \$200,000 grant to complete a brownfield pilot project in Ohio. This pilot project allowed EPA to partner with state and local officials to develop a nationwide model for revitalizing urban areas across the nation. The funds were used as “seed” money that ultimately led to leveraging \$4.5 million for environmental cleanup and other improvements.

In 1994, EPA funded another 50 pilot projects that in turn developed techniques to revitalize inner-city neighborhoods by empowering state, tribal, and local government; encouraging strong public-private partnerships; and promoting innovation and efficiencies to assess, cleanup, and redevelop brownfield sites. The goal of the program was to provide assistance to support the implementation of local solutions to local problems. These solutions would act as a catalyst to revitalize the local economy. By 1997, the EPA developed policy guidance and

BROWNFIELD CASE STUDY FACT

Cleveland, Cuyahoga County, Ohio

The City of Cleveland was the first municipality to receive a \$200,000 EPA Brownfield Pilot grant. This money was used to leverage additional investment for cleanup and redevelopment. With this grant and other public and private support, the county launched a brownfields technical and financial assistance program. This initiative created 180 new jobs, increased the payroll tax base, and provided \$1 million to the local economy. Due in part to the success of this Brownfield Pilot project, EPA continued to fund other pilots and helped the brownfield program grow into the program that it is today.

¹⁹ While some federal and state regulatory agencies prefer the term “revitalization” over the term “brownfields,” the ITRC Brownfield Team agreed that “brownfield” would be applied throughout this document since it is considered an industry term of art regarding the remediation and reuse of contaminated properties.

regularly funded state and local approaches to overcome the impediments that had discouraged the private sector from investing in or cleaning up brownfields (EPA Environmental Financial Advisory Board. 1997).

In January 2001, the Small Business Liability Relief and Brownfields Revitalization Act was signed into federal law. This act amended CERCLA and created a new environmental program to assist with redevelopment activities at brownfield sites. The act, which authorized Congress to appropriate \$250 million per year through FY 2006 for implementation, provides financial and legal incentives to reduce the risks and burdens regarding liability for these sites. It should be noted that the law omits potential responsible parties (PRPs) and federal agencies from the definition of what is considered a brownfield property. The law provides funding through loans and grants, clarifies liability, and supports the development of state response programs. Over 550 grants have been awarded for the assessment of over 4,000 sites, with an investment of nearly \$700 million. The program is estimated to have leveraged \$5.09 billion in public and private sector funds to conduct cleanups and redevelopment activities. It is estimated that the program has created more than 24,920 jobs (EPA 2004c).

The capability of federal and state governmental agencies to address contaminated sites has grown markedly. Congress has created separate programs under Superfund, RCRA corrective action, underground storage tanks, and brownfields, each with a slightly different focus. At the state level, a wide variety of regulatory and voluntary programs have been established. In addition, many tribes and local governments have developed cleanup programs to address the needs within their jurisdictions.

3.2 State Voluntary Cleanup Programs

Many states have established programs that promote the cleanup and reuse of contaminated properties. These programs, commonly called Voluntary Cleanup Programs (VCPs), were developed to provide a mechanism for nonresponsible parties to assess and clean up properties in preparation for redevelopment of those properties. Prior to clarifying the limits to CERCLA liability, the federal government had to rely on states to develop a process for providing regulatory oversight for cleanups conducted voluntarily by parties not responsible for the contamination. VCP programs vary in their requirements from state to state; however, the overall intent is the same; to encourage the cleanup and reuse of contaminated properties. A VCP helps the states work with motivated parties, including future property owners and developers, to clean up these properties. Advantages of VCPs include timeliness and flexibility. Some states have developed programs that offer “covenants not to sue” and “prospective purchaser agreements” to minimize a purchaser’s and/or a developer’s liability. In many instances this process allows the cleanup to happen while the development is also taking place, enabling the developer or property owner to “dig once” in pursuing the redevelopment efforts being undertaken, thereby saving time and costs.

State VCPs typically include requirements for eligibility, cleanup standards, provisions for agency oversight of the cleanup and limitations on liability. Most of these programs rely on the VCP program participants to propose a cleanup plan, with the state agency typically reviewing and approving the plan. While each state has established its own eligibility criteria, in general

these sites are excluded from VCPs: sites listed on the NPL, sites being investigated or cleaned up under federal or state RCRA program, and sites that are being cleaned up under a state's superfund or regulatory cleanup program. Today 49 states have active VCPs.²⁰

The relationship between the authority of the states and that of the federal government is sometimes complicated during the implementation of the VCP. For example, an entity may be complying with the state VCP and still be liable under Superfund. To reduce these liability concerns, EPA encourages its 10 regional offices to enter into Superfund Memoranda of Agreements (SMOAs) assuring the states assurances that EPA will not take regulatory actions against someone that is performing cleanup in compliance with the state's VCP.

3.3 RCRA Brownfields Prevention Initiative

In June 1998 EPA established the RCRA Brownfields Prevention Initiative to identify any impediments to property reuse created by the RCRA process and to encourage the reuse of potential RCRA brownfields. By encouraging cleanup and long-term sustainable reuse of potential RCRA brownfield sites, the initiative has contributed to the increase in the number of new and preserved green spaces, cleaned contaminated sites, and revitalized communities that were previously blighted by brownfields.

EPA has undertaken several efforts that enhance its RCRA Brownfields Prevention goals. Many of these projects are presented on the EPA's Web site, including information on the RCRA

BROWNFIELD CASE STUDY FACT

Dean DiCarli Waterfront Square, Stockton, California

An example of a property that has participated in a state voluntary cleanup program is the former "Weber Block" property that is located in the center of downtown and became symbolic of Stockton's decline. This historic waterfront area once was an essential transportation port during California's Gold Rush and later during the World War II ship building era. In the 1950's, a portion of the Channel was covered with asphalt cap and supported by creosote pilings to be used as a gas station, automotive repair facility and parking lot. When the services closed, the site was abandoned and posed an eyesore to the community. The City valued the location and knew that this underutilized property would be best served as a public meeting place. The City used a variety of brownfield initiatives including obtaining technical oversight from the California Department of Toxic Substances Control (DTSC) through their Voluntary Cleanup Program. DTSC assisted with the environmental studies that determined that the contamination was caused by the creosote pilings that supported the cover as well as the leaking underground storage tanks. Addressing the contaminated soil and removal of the creosote pilings was necessary in order to open up the water course area and redevelop the property into an attractive open space with a fountain, step seating and public meeting space that has attracted businesses and investors to the area. More importantly, this revitalization project was designed to connect the waterfront area to the central business district, events center, service building, hotel and Cineplex. The project won EPA's prestigious Phoenix Award for brownfield revitalization efforts in 2002.

BROWNFIELD CASE STUDY FACT

Las Vegas Armory, Las Vegas, Nevada

Tank and heavy equipment maintenance took place on this site, home of the Nevada National Guard, which was cleaned up under the Nevada VCP. Cleanup included the removal of 460 cubic yards of contaminated soil. The site is now being developed into the East Las Vegas Senior Community Center. Additional information on this case study can be found in Appendix C.

²⁰ Bartsch, C. "Brownfields Backwards and Forward," presented at the Phoenix Conference, May 13, 2004.

Brownfields Pilots, RCRA Targeted Site Effort Projects, a calendar of events, recent papers and presentations, guidance, fact sheets and other sites. For more information, see <http://www.USEPA.gov/swerosps/rcrabf/index.html>.

3.4 Superfund Redevelopment Initiative

The Superfund Redevelopment Initiative reflects EPA's commitment to consider possible future land uses when making remedy decisions at Superfund sites. The safe, productive reuse of Superfund sites can provide significant benefits to local communities, including increased employment opportunities, property values, and other redevelopment. Other benefits include enhanced day-to-day attention to the site, which can result in improved maintenance of the remedy and continued protection of human health and the environment. Moreover, the enhancement of these degraded properties may also lead to improved quality of life for the surrounding community.

3.5 Summary

Brownfields are properties suspected or are known to be contaminated and sit idle or are underutilized because of the potential cleanup costs, liability concerns, or location of the property. Brownfield properties in communities negatively impact the local economy and quality of life. Federal, state, and local governments have developed financial incentives and voluntary cleanup programs to facilitate the cleanup and redevelopment of these properties. Information on additional incentives and techniques that can be used to facilitate the cleanup of brownfield properties can be found in Section 7.

4. REDEVELOPMENT PLANNING OVERVIEW

Redevelopment planning for BRAC and brownfield sites offers some special challenges; however, the planning process for these sites is essentially the same as any development project.

Although the redevelopment process varies from state to state and even municipality to municipality within a region, the typical development process includes the following:

- vision/market studies
- preapplication conferences
- consideration of environmental issues
- site planning, preliminary, and final site plan approvals
- financing
- local permits
- zoning

Typically, land use laws are the first issue that the development community must address. If the planned development meets the local zoning requirements, other predevelopment reviews are typically conducted by the local government or land use authority. It is important to note that many BRAC facilities do not have any zoning in place by the local government because they

have been under the jurisdiction of the federal government for many years. This section summarizes some of those important steps in the land redevelopment process.

In addition to the evaluation of land use laws, defining redevelopment goals can guide the development of remediation plans and may reduce cleanup costs. An understanding of the extent of contamination is important in determining any limitations on the desired end use. For example, cleaning up to residential standards may be cost- or time-prohibitive at some sites when compared to cleaning up to industrial standards in conjunction with using engineering controls to mitigate exposure to site contaminants. Additional information regarding the environmental issues that may be found on a property is addressed in Section 5.

4.1 The Participants in the Planning and Redevelopment Process

Local development includes an interaction of several groups of interested and/or authorized individuals. An explanation about the participants in the development process is found in E. J. Kaiser and D. R. Godshalk's "Development Planning" (in ICMA 2000):

The major participants in the development game are market players, government officials, and advocates of community and private interests. Market players include landowners, developers, builders, financiers, businesspeople, and others seeking to profit from development by selling and buying land or financing, building, and marketing houses and business facilities. Government officials include elected and appointed officials at the Federal, state, regional and local levels, who frame laws, invest public funds, administer regulations, and make decisions on plans and projects while seeking to maintain their power bases and appointments. Advocates of community and private interests include representatives of neighborhoods, environmental organizations, economic development organizations, farmers' groups, taxpayers' organizations, and associations promoting various social and political goals (including racial equality), all of whom view development in light of their groups' particular values and seek governmental decisions on development that will support their aims. (pp. 152–53)

According to Kaiser and Godshalk, each of the groups maintains some protection and rights under the law, but no group has a monopoly on power with each group having some mutual needs and goals. A goal in redevelopment is to reach a fair, mutually agreeable compromise that is in accordance with local land use and other applicable laws, allowing for development, accomplishing local goals, and promoting some benefit to all parties.

For BRAC site reuse efforts, it is important that the LRA and the BCT communicate frequently during the planning process. This interaction allows the LRA to understand the extent and location of contamination and to avoid situations where the future land use is not compatible with the proposed cleanup. Also, the LRA should provide the BCT with information on the intended reuse as well as the priorities and timing for the transfer of parcels of the site.

4.2 Preapplication Conferences and Meetings

Real estate development is a local issue, and land use decisions are made at the local level. In most cases, local government authorities control the development of their respective municipalities. However, any piece of real estate may include some regulatory land use or development authority by county, state, federal governments, or other entities whose authority may supersede local authority. The existence of state and/or federally regulated waterways, wetlands and specially designated areas, coastal areas, county roads, and other features may have more than just local interest, and legal protection may require reviews, approvals, and/or permits by state and federal government agencies.

It is worth noting that individual governments or government agencies are not necessarily obligated to know or tell potential developers about permits or other requirements of other jurisdictions. Therefore, it is recommended that preapplication meetings be held with any government entity that may have land use, permit or development authority. Many state governments have implemented “one-stop shops” for regulatory permits and hold preapplication meetings with representatives from regulatory agencies that have potentially applicable regulations.

Most local governments conduct and recommend preapplication meetings. The meetings aid applicants with the submission of applications and plans as well as minimize review and approval time. Local preapplication meetings typically include local representatives with planning and/or zoning experience; inspectors authorized to enforce building, plumbing, fire, and electrical codes; local utility companies; and engineers. In these meetings, developers can learn about local requirements and other issues and often find that the area staff has important information about a brownfields property.

At BRAC facilities, the preapplication process can be more complex: Traditionally, BRAC installations may not have been required to conform to local land use laws and may not have previously been subject to modern building codes or subdivision codes. This preapplication meeting can assist in informing the participants of these local land use laws and the potential need for infrastructure upgrades. It is suggested that DoD facilities engineers, public works, and real property staff meet with municipal officials early in the BRAC process, before operational closure, to discuss facility conditions, operational status, and maintenance lay-up of the buildings and utilities until the transfer takes place.

4.3 Zoning, Planning, and Subdivision

Ordinances for zoning, planning, and subdivision are the key laws enforced by local government that regulate type and intensity of land use in specified areas within a community. In most cases, state legislation empowers local governments to enact local land development ordinances to regulate land use. The power to interpret these land use ordinances is often assigned to the local planning and/or zoning board. These boards often have the authority to grant relief from the local ordinances in the form of variances. Land use laws vary among states and communities and should be thoroughly researched prior to attempting to get approval of restricted, nonconforming uses or inappropriate uses.

BRAC installations may present a unique situation for local planners and others with authority on land use and development, the redevelopment community, community advocates, and private interests. BRAC installations often represent large properties that may have not been regulated by land use authorities for decades or generations because they were under the jurisdiction of the federal government. Planners see these large blank slates as rare and tremendous opportunities for new community planning and attempt to use the knowledge of past planning errors to “get it right.” However, political and local influences may have an effect on the process of community planning. In some cases, environmental and community advocates have recommended the return to land uses such as agricultural usage that existed prior to the establishment of the military base. Often this is difficult to achieve, given the need and desire for these properties to contribute to the local economy and provide a return on community investment. Additionally, these facilities are often like a small city developed by a master plan that focused on the military mission. This layout and design may be incompatible with the surrounding development. In implementing the reuse plan, the LRA should be a strong advocate in coordinating with planning and zoning boards.

4.4 Site Plan Approval

Site plan approval is a key goal in completing a redevelopment project. Plans for development are typically completed and approved in three phases: conceptual, preliminary, and final. Conceptual plans are a relatively inexpensive way for developers to get their vision on paper and can be developed from several options with varying configurations, densities (intensities), and land uses. The conceptual plan also gives the governmental land use authorities a first opportunity to make suggestions or point out potential areas of concern to be addressed in subsequent planning phases. A conceptual plan should be attractive and professionally prepared (first impressions are critical); include structures, roads, and open spaces; and give some idea as to landscaping and streetscaping. Conceptual plan approvals are typically informal, pending receipt and review of subsequent plans that are formally reviewed, critiqued, and potentially approved. Development and coordination of the conceptual plan can be completed in conjunction with the LRA’s development of the base reuse plan.

4.5 Land Use Laws

As noted earlier, land use is typically regulated at the local government level, although in some cases land use determinations are made at all levels of government. In many instances, multiple levels of land use regulations may apply to a particular piece of real property or a particular geographic area. Site development typically requires local approvals and conformance with local zoning and other land use laws. However, additional requirements at the county, regional, state, interstate, and federal level may also apply. In addition, quasigovernmental agencies are often created in some areas based on special historic, archeological, environmental, cultural, geographic, ecological, economic, or other significance and are given broad, sometimes highly restrictive, authority over land use.

Local land use and zoning laws designate allowed, conditional, or restricted uses for a property. These designations are typically done in the context of a local plan that defines areas for

development for industrial, commercial, residential, mixed use, recreation, conservation, and other specified uses. Property values are affected by these designations. The respective values often relate to three primary areas of land valuation, including income potential; local market and replacement cost; and the relative scarcity, utility, demand, and transferability. In addition, other local land restrictions and requirements that may affect value include density, setbacks, buffers, impermeable surfaces, parking requirements, and the requirements of special use and historic districts.

4.6 Summary

Redevelopment planning for BRAC and brownfield sites offers some special challenges; however, the local review process is essentially the same as any other type of development project. Due to the nature of the redevelopment and planning process as detailed within this section, communication among all parties is critical throughout the process. In the instance of the reuse of BRAC properties, the LRA provides a crucial role in the planning, zoning, and permitting process and the overall redevelopment of the property.

BRAC CASE STUDY FACT

Naval Air Station, Memphis, Tennessee

The Naval Air Station (NAS) project represents a good example of the collaboration of several groups of interested parties, including an airport authority and an economic development corporation, to concur on redevelopment goals resulting in a success story. The NAS was realigned in 1998 and the initial investigations identified 74 sites where soil and groundwater were contaminated with pesticides, metals, solvents, and petroleum regulated under a state RCRA permit. The redevelopment planning and implementation were a partnering effort involving the LRA, the State of Tennessee, EPA, the Department of the Navy, the Base Commander, and the local community. Approximately 640 acres of the former NAS were cleaned up and transferred to the LRA for commercial/industrial development and also included recreational areas for the public. Additional information on this case study can be found in Appendix C.

5. ENVIRONMENTAL CONSIDERATIONS

Generally speaking, the most common contaminants found at BRAC sites will also be the same contaminants that are found at brownfield sites, with a few exceptions such as unexploded ordnance (UXO). Also, BRAC and brownfield sites are governed by many of the same technical requirements and regulatory programs. Therefore, the fundamentals of a site investigation and cleanup of the property are the same for DoD installations and brownfield sites. The goal to address contamination at either property is to characterize pollution on site and take the appropriate remedial action to allow for the expedited transfer and reuse of the property while protecting human health and the environment.

Redevelopment of BRAC and brownfield sites requires the completion of an environmental assessment that adequately summarizes past and current uses and characterizes current site conditions with respect to environmental impact. This information is an integral part of the reuse planning and redevelopment of the property.

As previously stated, BRAC installations and brownfield properties may contain similar types of contaminants that require regulatory oversight and documentation, including such things as deed notices and/or deed restrictions to address contamination and changes in reuse (see Figure 3).

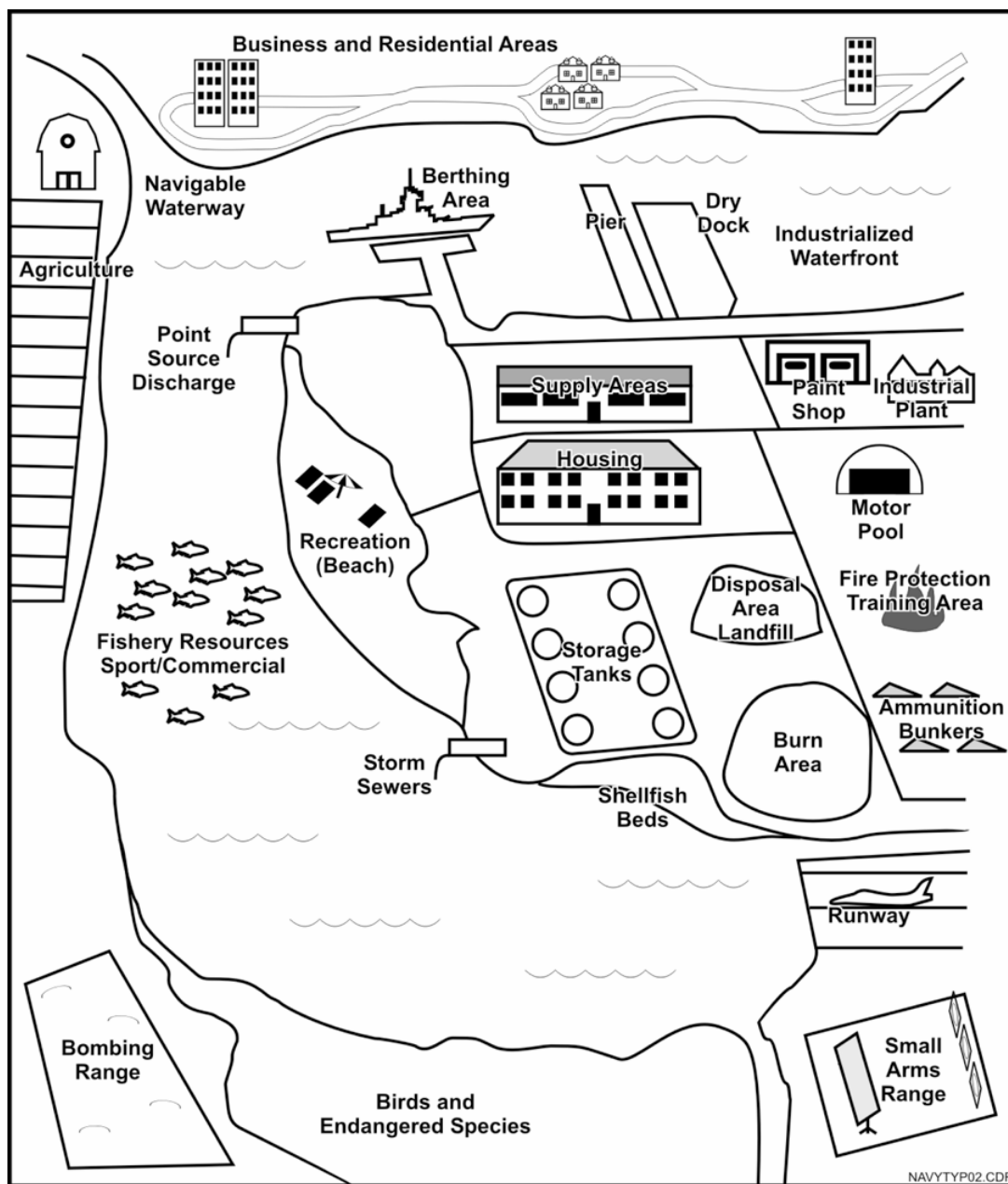


Figure 3. Typical Navy facility

Adapted from U.S. Navy, Marine Environmental Support Office

BRAC and brownfield sites are governed by many of the same regulatory requirements, processes, and programs. Some of the cleanup activities being undertaken at installations are being conducted to the levels corresponding with current use of the installation. However, there are some instances where cleanup activities being conducted at some installations are taking into consideration future reuse plans. A brownfields cleanup by a private nonresponsible party shares this same goal. Even though the cleanup may be conducted in a similar manner, there are some differences in the process undertaken to complete the assessment and cleanup between BRAC sites and brownfields sites.

BRAC sites can often be much larger than even the largest nonmilitary, brownfield site. DoD installations can easily be the size of a small city and, in fact, often contain the range of facilities and services one would expect in a small city, including gas stations, hospitals, offices, and residential areas. Some DoD installations have been in operation for over 100 years and have served a wide variety of missions. Consequently, there may be a wider variety of contaminants at a BRAC site than is typical at brownfields sites. Many cleanups at BRAC installations deal with the same types of contaminants that are common at industrial facilities: fuels, solvents, asbestos-containing materials, pesticides, paints, and metals. However, there are certain types of environmental contaminants that are more likely to be associated with DoD activities than nonmilitary facilities, including military munitions and munitions-related chemicals, propellants, rocket fuels, and chemical warfare materiel, though these are less common and only account for about 5% of BRAC sites. Moreover, usually more than one media (soil, groundwater, or air) has been affected and must be addressed. Figure 4 shows the most common contaminants located on a DoD installation.

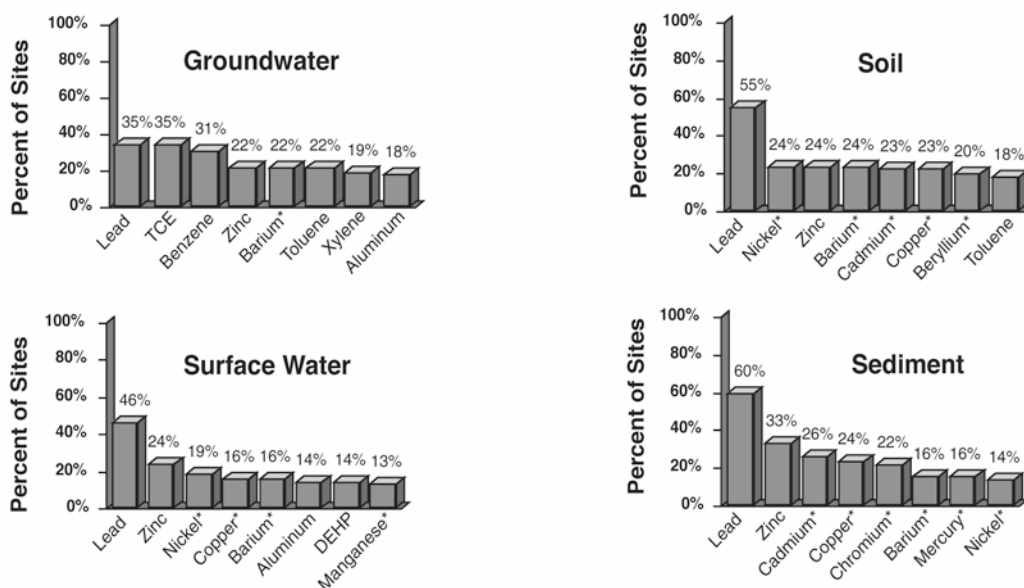
In addition to the physical differences, the regulatory oversight process at a BRAC site can be quite different from that at a private brownfield site. DoD installations are more likely to have involvement from multiple oversight agencies (state and federal), have a defined federal process for much of the cleanup and transfer of the property, and have some uniformity in the cleanup approach. When DoD conducts a cleanup, the military may know the general reuse plan for the property but may have little knowledge of the specific development plan for the site. For example, while the cleanup may proceed for an industrial reuse, the specific industry that will use the site (and its construction requirements) may not be known. Cleanup of brownfield sites usually follows a more streamlined regulatory process that includes VCPs. State VCPs may have flexible program elements that adapt to the scope and

BRAC CASE STUDY FACT**Volunteer Army Ammunition Plant, Chattanooga, Hamilton County, Tennessee**

This facility illustrates how a large military facility can be the size of a small city whose closure benefits the community with commercial/industrial development and public recreational opportunities. Approximately 8600 acres in size, this facility formerly manufactured TNT for ammunition and represents one of the largest BRAC closures in Tennessee. A variety of contaminants have been identified in soil sediments and groundwater, resulting in a challenge in implementing the cleanup. Environmental cleanup operations are currently in progress for 40 sites comprising 2000 acres. The bulk of the site, approximately 5000 uncontaminated acres, has been transferred to the county industrial development office. Approximately 3500 acres will be provided to the community to serve as a “passive recreational buffer” between site development and nearby residences. Additional information on this case study can be found in Appendix C.

BRAC CASE STUDY FACT**Eaker Air Force Base, Blytheville, Arkansas**

This former Air Force base demonstrates the various types of environmental concerns and related contaminants that may exist on a BRAC installation. The installation, established in 1945 as an Army airfield, consists of 3771 acres. A wide variety of contamination sources was identified on this site, including underground storage tanks, petroleum spillage sites, arms firing range, fuel storage system, oil water separators, landfills, fire training areas, and multiple storage areas. These sources contributed to widespread contamination of soil and groundwater with a multitude of contaminants. Approximately 3400 acres were successfully cleaned up and transferred to the LRA by 1999. Additional information on this case study can be found in Appendix C.



Notes: TCE = Trichloroethylene; DEHP = Bis (2-ethylhexyl) phthalate

* Also includes compounds.

Percent of 3,212 sites with data. 2,290 had contaminated groundwater; 2,452 had contaminated soil; 613 had contaminated surface water; and 189 had contaminated sediment.

Figure 4. Frequency of the most common contaminants by matrix at DoD sites needing cleanup – Source: DoD, Office of the Deputy Under Secretary of Defense (Environmental Security), Restoration Management Information System, November 1995

complexity of the specific cleanup to be conducted on the property. Additionally, brownfield redevelopers usually know the details of the redevelopment and construction plans for a site. This information can make cleanup planning easier at a brownfield site and enable cleanup and development to happen simultaneously. Therefore, it is important that DoD, the LRA, and the BCT work closely and communicate often regarding the cleanup and redevelopment activities that will take place on the installation.

DoD is currently using brownfield techniques to expedite the transfer process to allow cleanup by the private sector, including environmental insurance and guaranteed fixed-price remediation (GFPR) contracts, to be discussed further in Section 7. The use of these products is facilitated through the provisions of the Early Transfer Authority that transfers the property into the private sector before the cleanup by the DoD is complete.

5.1 Environmental Contamination

Investigation and remediation of the environmental contamination is usually a concern in BRAC and brownfield redevelopment. Some of the BRAC installations closed in earlier rounds remain unused and undeveloped due to the magnitude and type of environmental contamination found at the former military installation. While a portion of the property may appeal to the surrounding real estate market, the environmental contamination has not been sufficiently addressed to allow for its proposed reuse, whether commercial, industrial, or residential. Depending on the type and extent of the contamination or the available technologies to address the contamination, as well as budget constraints, cleanup may not occur for quite some time.

Like these BRAC sites, some brownfield sites remain abandoned, underutilized, and undeveloped due to the scope and type of environmental contamination found at the site, as well as liability concerns. Identifying and delineating environmental contamination on a BRAC or brownfield site can, at times, be a lengthy process. Schedules controlled by federal, state, and local regulatory requirements may impact the reuse process and the schedule of the redevelopment.

BRAC sites that have been fully characterized and cleanup actions that have already been initiated under cleanup programs provide an incentive for reuse plans to be initiated. At most DoD installations, the Defense Environmental Restoration Program (DERP) has provided policy and funding for environmental cleanup for over 15 years. To highlight this point, as of September 2001, the Navy had identified 3656 contaminated sites at active facilities and 1020 sites at BRAC facilities. Of these sites, about 60% (2797 sites) were classified as “response complete,” meaning either that no further action is required or that a remedy has been selected and implementation is planned (U.S. Navy 2002). This classification indicates that the property is available for reuse without any additional considerations of environmental issues. At those BRAC installations where environmental investigatory or remedial work was performed pursuant to the DERP program, information regarding the environmental contamination and remediation is available for public review as part of the Administrative Record for the installation. The DERP program has many requirements for public disclosure and notification such as the administrative record, the RAB, and the development of a formal community relations program.

As previously stated, while most DoD cleanup sites involve contaminants similar to those found on brownfields sites, professionals and the public most commonly associate DoD cleanups with specialized wastes, particularly UXO. Significant progress has been made in the cleanup of specialized waste. However, if there is a specialized waste on a BRAC property, such as munitions and munitions constituents, then the future reuse of that property needs to be carefully planned. Congress has funded the Unexploded Ordnance Technology Demonstration Program to establish baselines for technologies used to remediate UXO. Demonstrations were conducted in 1994 through 1996, and additional work on UXO assessment technologies was undertaken in 1998 and 1999. ITRC has worked with DoD on establishing protocols for UXO remediation and assessment technologies.

BRAC CASE STUDY FACT

Fort Ord, Monterey, California

This facility occupies over 28,000 acres and is an example where unexploded ordnance needs to be addressed prior to reuse. Much of the facility was used as either ordnance training ranges or maneuver areas, leaving many thousands of acres contaminated with munitions and explosives of concern (MEC). Common MEC items at Fort Ord include artillery projectiles, rockets, hand grenades, land mines, pyrotechnics and bombs. Sites known to contain munitions are posted with warning signs and are off-limits to unauthorized people. The Army has agreed to clean up MEC under the FFA, pursuant to the CERCLA process. To date, using the CERCLA process, over 3,000 acres have been evaluated or investigated and found not to contain MEC. In other areas, the Army has performed MEC removals, and these parcels are awaiting final CERCLA decision. In the fall of 2005 the BCT is working on a privatized early transfer that would transfer the land and the cleanup responsibility to the LRA, the Fort Ord Reuse Authority. (www.fortordcleanup.com/cleanupprgrm/oepprogram.asp)

Please see <http://www.itrcweb.org> for more information on these technologies. In addition, Congress has established the Military Munitions Response Program funding the cleanup of closed munitions sites in accordance with the CERCLA processes and other regulatory programs.

5.2 Addressing Environmental Contamination

Appropriate and diligent inquiry into historical use is needed for both BRAC and brownfield sites. Under the DERP program, military installations are required to follow the CERCLA process for the assessment and restoration of its sites. At installations with RCRA permits for corrective action requirements for solid waste management units, DoD, EPA, and states have generally agreed that satisfying the RCRA requirements for cleanup meets the intent of the DERP requirements to follow the CERCLA process. The process begins with parcel delineation and assessment activities and includes remediation, if needed. Brownfield sites in state VCPs may not require the specific Superfund process steps and can proceed along an equivalent, often expedited track based on the regulatory requirements of that state. Tools such as a Phase I Environmental Site Assessment or a Preliminary Assessment are often used to begin investigation at brownfield sites and direct further investigation or cleanup because little is known about the operations, history, or environmental contamination at a brownfield site.

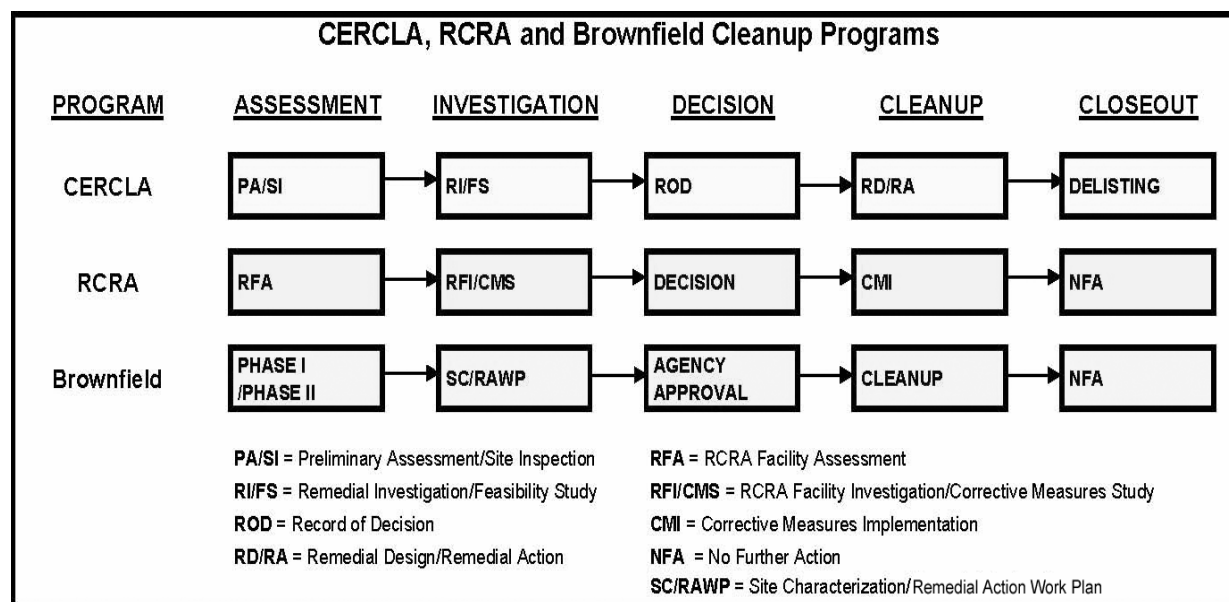


Figure 5. CERCLA, RCRA and Brownfield cleanup programs

Whether collecting new information at a brownfield site or continuing the cleanup program at a DoD installation recently listed by BRAC, the general steps that the cleanup process may include are listed and described below. The assessment and the remediation of BRAC and brownfield properties follow similar processes (see Figure 5). However, terminology used to describe these processes may differ.

5.2.1. Preliminary Site Assessment

Preliminary site assessments, or Phase I environmental site assessments, are performed to determine whether there has been a release of a hazardous substance that would have an impact on human health or the environment. These assessments are used to gather the site-specific data required to determine what, if any, environmental concerns exist on a property. These assessments involve research on the current and past uses of a property to determine the potential for environmental contamination. If the results of the site assessment indicate a potential for contamination, sampling is required to confirm the presence or absence of the contamination. The amount of data required and the cost of the assessment is often based on the type of activities conducted on the property, number of previous activities, and how long the activities were conducted on the property.

An **Environmental Baseline Survey** is a basewide study providing a summary of historic and current status of the storage, release, treatment, or disposal of hazardous substances or petroleum products on installations. An EBS is used to determine the potential environmental conditions on the installation. It is also used to identify the uncontaminated properties at the installation in accordance with CERFA and to determine whether any property is suitable for transfer or lease.

The American Society for Testing and Materials (ASTM) has developed a guide for conducting Phase I environmental site assessments (ASTM 2000). ASTM standards do not apply to wetlands or to sites contaminated with asbestos or lead-based paint, but they are applicable to many brownfield sites. Phase I environmental site assessments are extremely important because they can protect investors from liability if they are conducted prior to purchasing a contaminated property. If nothing suspicious is uncovered during a Phase I environmental site assessment, the site investigation will recommend that “no further action” is necessary.

Site assessment documents are known under CERCLA as “preliminary assessment/site investigation,” under the brownfield program as a “Phase I environmental site assessment,” and under the RCRA program as a “RCRA Facility Assessment” (RFA). The BRAC property transfer program uses an Environmental Baseline Survey for this purpose. The EBS contains additional environmental information regarding concerns such as asbestos and lead-based paint in structures and housing.

5.2.2 Define Nature and Extent of Contamination

Once contamination is confirmed, it is necessary to determine the extent and nature of the contamination. This process includes the evaluation of the various media (soil, groundwater, sediments, surface water, and air) by taking samples and analyzing them for hazardous constituents to determine nature and extent of existing contamination. This phase also entails estimating the potential threat to public health and/or the environment posed by contaminants present on the property and provides an assessment of risk associated with those contaminants usually based on the most reasonably expected future use of the site.

The results of this step are documented under the CERCLA program as a remedial investigation (RI). Under the brownfield program this step is known as a “Phase II environmental assessment” and under the RCRA program it is called a “RCRA Facility Investigation” (RFI). Under the

brownfield program, similar activities are undertaken to define the nature and extent of any contamination that may exist on the property.

5.2.3 Evaluate Cleanup Alternatives

Once the contamination assessment is complete, the identified remedial alternatives that can be used to address the contamination must be evaluated to ensure that the remedy will be protective of human health and the environment. Cleanup goals and remedial objectives are established at this step of the remedial process. The development of cleanup goals is typically based on the findings of the risk assessment conducted during the site investigation phase. Deciding on future land use restrictions and determining which treatment technologies are applicable are also undertaken. The possible use of innovative technologies is also evaluated. Some of these remedial technologies and strategies can be found on the ITRC Web site (www.itrcweb.org).

BRAC CASE STUDY FACT

Naval Surface Warfare Center, Louisville, Kentucky

The former Naval Surface Warfare Center is a typical example of the use of site assessments to determine the presence and extent of contamination across the site. The assessments conducted at this facility indicated solvents, paints, metal particles, plating wastes, acids, caustics, lubricants, fuels, PCBs, pesticides, coal ash, and the specialized waste of explosives as contaminants located on the property. All of the assessments were conducted under RCRA guidance, with site risks being evaluated using CERCLA guidance. These assessments determined the necessary contaminant removal and remedial actions to ensure the site is protective of human health and the environment. Additional information on this case study can be found in Appendix C.

The results of this step are documented under the CERCLA program as a Feasibility Study (FS). Under the brownfield program this step is part of the Phase II environmental assessment, and under the RCRA program is called the “RCRA Corrective Measure Study” (CMS).

5.2.4 Choose a Remedy

Based on the evaluation of the cleanup alternatives, a remedy (no further action, cleanup, engineering/institutional controls) to address the contamination on the property is chosen that is protective of human health and the environment. This remedy selection decision document is known under CERCLA as a “record of decision” (ROD). Under the brownfield program this step varies state by state based on applicable state guidance and/or regulations. This decision document under RCRA program is called a “RCRA Corrective Measures Decision,” “RCRA Statement of Basis,” or “permit modification.”

5.2.5 Design the Cleanup Remedy

Once the cleanup remedy is chosen to address the contamination present on the property, the design of the cleanup remedy is undertaken to ensure that the property is protective of human health and the environment. This step is typically outlined in a work plan which documents how the remedy will be implemented on the property. There is much variability in the detail and the process for documenting cleanup design. In the brownfield program the design is often scheduled to be implemented during the construction of the redevelopment. This approach is also possible in a BRAC cleanup, particularly if the LRA works closely with the BCT or if the cleanup is

privatized with early transfer. This document is known under CERCLA as a “remedial design.” Under the brownfield program this document often varies state by state based on applicable state guidance and/or regulations. Under the RCRA program this document is called a “RCRA Corrective Measures Implementation” (CMI) Plan.

5.2.6 Implement the Chosen Cleanup Remedy

Construction and implementation of the remedy is known under CERCLA as a “remedial action.” Under the brownfield program the implementation of the remedial action varies state by state based on applicable state guidance and/or regulations. This decision document under the RCRA program is called a “RCRA Corrective Action Complete” determination. The construction and implementation of the selected or chosen remedy is known as the “RCRA CMI plan.” Once the remedy is implemented, ongoing operation and maintenance and monitoring may be required.

It is important to note that RCRA, BRAC, and CERCLA cleanup programs require various levels of communication with the public at each step of the remedial process outlined above. Specific communication information related to working with environmental justice communities and Native American population is discussed in Section 6.

5.3 Innovative Techniques and Technologies

There are many sources of information on the design, testing, and application of innovative techniques and technologies to characterize and remediate and/or treat contamination that impacts sites. Information on some of these technologies can be located on the ITRC Web site (www.itrcweb.org). It is interesting to note that many assessment and cleanup methods currently used in brownfield remediation were originally field-tested at DoD installations. These include bioventing, solvent extraction, and monitored natural attenuation (intrinsic bioremediation). Table 1 shows the innovative remediation technologies in use at BRAC installations and brownfield sites that were developed or tested at DoD facilities.

Table 1. Contaminants, sources, and technologies having military development

Contaminant	Military source	Civilian source	Technology
Dense, nonaqueous-phase liquids (trichloroethylene, tetrachloroethylene)	Machine degreasing	Dry cleaning	<ul style="list-style-type: none"> • Cosolvent flushing • Zero-valent iron barrier • Intrinsic bioremediation
BTEX (benzene, toluene, ethylbenzene, and xylene), kerosene components	<ul style="list-style-type: none"> • Fuel storage/transfer • Refueling operations 	<ul style="list-style-type: none"> • Gas stations • Refineries • Fuel storage/transfer 	<ul style="list-style-type: none"> • Bioventing • Intrinsic bioremediation
Complex mixed waste (solid and liquid)	Air Expeditionary Force applications (solid and medical waste)	<ul style="list-style-type: none"> • Landfills • Steel mills • Coal ash (power plants) • Wastewater treatment 	Catalytic hydrothermal conversion
Perchlorate, nitrate	<ul style="list-style-type: none"> • Solid rocket motors • Munitions 	<ul style="list-style-type: none"> • Fertilizers • Pharmaceuticals • Fireworks • Matches 	Biotreatment

Source: Hayworth and Anderson 2000.

Innovative technologies and techniques can increase the efficiency and decrease the cost of site investigation and cleanup. Summarized below are some examples and overviews of a few of these techniques and technologies that may be considered when conducting an assessment and/or cleanup of a contaminated property.

5.3.1 Site Characterization

Standard site characterization activities under federal and state programs typically require specific methods of sample collection and laboratory analysis. New site characterization methods have been very successful at reducing costs and allowing for faster sample collection and contaminant characterization. For example, the standard methods of collecting soil and groundwater samples often relied on the use of large drill rigs to conduct soil borings and the installation of permanent groundwater monitoring wells. Innovative methods can replace drill rigs with smaller, faster, and cheaper direct-push technology and equipment that will collect real-time data. The use of field analytical methods, including mobile laboratories, x-ray fluorescence, immunoassay test kits, field gas chromatographs, and other screening tools, can provide significantly more data, in real time and at a lower cost, than conventional sample collection and laboratory analysis.

A flexible (dynamic) work plan is one innovative site characterization strategy that combines on-site sampling and analysis to increase the efficiency of the site characterization process (EPA 2001a). This strategy allows sampling plans to be changed on site, where the data is collected and analyzed. Flexible sampling strategies, including the implementation of a dynamic work plan, can at times reduce the time and expense typically associated with data collection and can accelerate cleanups. For example, the Triad Approach is a site characterization approach developed by EPA to optimize site characterization and uses a combination of field-generated data, systematic project planning, and dynamic work plan implementation. Sources of information on the Triad Approach and other methods to optimize data collection include the *Technical and Regulatory Guidance for the Triad Approach: A New Paradigm for Environmental Project Management* (ITRC 2003a), and the *Brownfields Technology Primer: Planning for Streamlined Investigation and Monitoring and Improving Confidence in Decisions* (EPA 2001a). Both of these publications reference additional sources of information and case studies.

5.3.2 Remediation

As compared to other scientific and engineering disciplines, environmental science and environmental engineering are fairly new fields of study, yet numerous remedial technologies have been designed to be more effective and efficient methods for contaminant recovery and treatment. Contaminant treatment technologies have evolved to include those that can destroy, neutralize, stabilize, or otherwise render a hazardous contaminant into a nonhazardous material, thereby eliminating the need for disposal. In addition, technologies are being developed that treat, destroy, neutralize, or stabilize hazardous contaminants in place, including enhanced bioremediation technologies that use indigenous or introduced microorganisms in a controlled environment to increase their efficiency in contaminant metabolism.

It is important to evaluate the various technologies to be used to address contamination on a BRAC installation or brownfield property based on the contamination identified and the specific site conditions that are present.

5.3.3 Sources of Information on Innovative Technologies

DoD is a significant supporter of research and development of innovative techniques and technologies. These technologies are researched and developed to minimize costs and reduce the time necessary to cleanup and reuse former military installations and other properties. DoD supports and develops innovative technologies and techniques through multiple organizations:

- Air Force Center for Environmental Excellence (AFCEE)
- National Defense Center for Environmental Excellence
- National Environmental Technology Demonstration Program
- Naval Environmental Leadership Program (NELP)
- Groundwater Remediation Field Laboratory (Dover AFB)
- Environmental Security Technology Certification Program (ESTCP)
- Air Force Small Business Environmental Database (AFSBED)
- U.S. Army Corps of Engineers (USACE)
- Interstate Technology & Regulatory Council (ITRC)

In addition to DoD, support for innovative technologies and techniques is also provided by other federal agencies and departments, including the EPA, Department of Commerce, U.S. Small Business Administration, and U.S. Department of Energy. ITRC works with all of these agencies in the research, development, and deployment of innovative technology and guidance documents.

The federal government, several state agencies, academia, and the private sector support and fund the development of innovative techniques and technologies. In the *Innovative Treatment Technology Developer's Guide to Support Services* (EPA 2000b), EPA lists available federal and state financial and other support services and programs for potential developers of innovative technologies.

EPA's Office of Superfund Remediation and Technology Innovation (OSRTI) also provides support services by encouraging the use of innovative, cost-effective technologies to characterize and clean up contaminated sites. OSRTI works with representatives of multiple departments of the federal government and private industry to identify more effective and efficient options for characterization and cleanup. An important source of information provided by OSRTI is the *Road Map to Understanding Innovative Treatment Options for Brownfield Investigation and Cleanup, Second Edition* (EPA 1999), which includes a brief but informative guide to contaminants that may be found at specific existing or former industrial and commercial facilities or contaminants associated with specific industrial processes and lists the recommended site characterization tools and potentially effective remedial options to address the contamination. Most of the information provided in the OSRTI document is directly applicable to the cleanup of BRAC installations.

EPA's Office of Solid Waste and Emergency Response provides another important source of information on innovative technologies. The CD-ROM *Innovative Remediation and Site Characterization Technologies Resources* (EPA 2002b) provides information to help evaluate site assessment and cleanup alternatives by providing access to resources on innovative technologies and associated cost and performance information. Other sources of information on innovative technology contractors include *Brownfields Technology Primer: Requesting and Evaluating Proposals That Encourage Innovative Technologies for Investigation and Cleanup* (EPA 2001a) and *Assessing Contractor Capabilities for Streamlined Site Investigations* (EPA 2000a).

BRAC CASE STUDY FACT**Naval Training Center, Orlando, Florida**

This case study provides an example of the use of innovative technologies conducted to clean up an installation. The former Naval Training Center contained a dry cleaner and warehouse operations. Twenty-one acres at the site were designated for public auction but required remediation of soil and groundwater contaminated with dry cleaning solvents. Innovative technologies including permanganate injections, phytoremediation, air sparging, and enhanced biodegradation have been used to reduce and/or eliminate the contaminants present in the groundwater. The implementation of these technologies partnered with the work of the involved stakeholders is leading to a successful commercial reuse of the property. Additional information on this case study can be found in Appendix C.

The Federal Remediation Technologies Roundtable (FRTR) works to build a collaborative atmosphere among federal agencies involved in hazardous waste site cleanup. FRTR was established in 1990 to bring together top federal cleanup program managers and other remediation community representatives to achieve several aims:

- share information and learn about technology-related efforts of mutual interest
- discuss future directions of national site remediation programs and their impact on the technology market
- interact with similar state and private industry technology development programs
- form partnerships to pursue subjects of mutual interest.

Since its inception, collaborative efforts among FRTR member agencies have led to technology development and demonstration partnerships with private developers, a more consistent and unified federal approach to technology evaluation and regulatory acceptance, and a variety of technology transfer tools and other information resources. FRTR has developed important tools to assist users in evaluating and selecting time- and cost-effective innovative technologies to characterize and clean up hazardous waste sites, including the following:

- The Remediation Technologies Screening Matrix
- The Field Sampling and Analysis Technologies Matrix
- The Decision Support (Software) Tools (DST) Matrix

5.4 Presumptive Remedies

To expedite both BRAC and brownfield site cleanups, presumptive remedies may be used. Presumptive remedies are “preferred technologies” or “preferred response actions” that are often used in the Superfund program to streamline site investigations and speed up selection of cleanup actions at sites that are similar to one another. For example, a presumptive remedy could be used at a particular type of site like a wood treatment facility or could be used at multiple sites with similar contaminants such as volatile organic compounds in soil. Through the use of past experience, common strategies, and historical patterns of remedy selection, instead of “reinventing the wheel” for each cleanup, the implementation of a presumptive remedy can assist to expedite, streamline, and standardize the cleanup remedy at similar types of sites.

EPA has developed guidance for various presumptive remedies. Such guidance includes presumptive remedies for municipal landfill sites, sites with volatile organic contamination in soils, wood treatment facilities, sites with groundwater contamination, sites with metals in soil, and military landfills (EPA 1996). For more information regarding the implementation and use of presumptive remedies please see *Presumptive Remedies: Policy and Procedures* (EPA 1993), which outlines and addresses issues common to all presumptive remedies, and “Presumptive Remedies and NCP Compliance,” a June 14, 1995 memo from Costello and Wyeth to CERCLA branch chiefs, which explains their use in the context of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, see 40 CFR 300).

5.5 Institutional Controls

Brownfield and BRAC sites are cleaned up to protect human health and the environment as well as support a variety of end uses. The goal of a cleanup is to return a site to a condition where it can be used for any purpose or a particular reuse. Sometimes it is not possible or practical for a site to be cleaned up for any purpose. When a site is not completely cleaned up and the chosen remedy results in some residual contamination left in place, institutional controls and engineering controls may be needed to ensure the site is protective. ICs are legal and/or administrative mechanisms that restrict the use of or access to the site and may include certain actions (e.g., monitoring, maintenance) that need to be performed as part of a remedial action. Some examples of ICs include easements, covenants, zoning, administrative or judicial orders, or permits. ICs provide information that modifies or guides human behavior at sites with residual contamination.

It should be noted, however, that it can be challenging, as well as costly, to maintain and enforce the terms of ICs over time. For example, maintaining knowledge of ICs over time is difficult because records may be lost, project managers may leave, more urgent matters will take priority over monitoring or enforcing ICs, or new owners or tenants may not be aware of the ICs. In addition, the environmental regulators that required the implementation of an institutional control as part of a given remedial decision may not be involved in the land use development process. Similarly, local land use authorities are rarely involved in the environmental remediation processes and may not have reason to know of the ICs in place with respect to a property. Therefore, local land use authorities are encouraged to participate in the remediation process.

Ensuring that ICs are maintained and properly monitored is a recurring issue for parties involved in remedy selection, implementation, and enforcement at contaminated properties. Accordingly, a number of innovative measures for tracking ICs have been developed. These include publicly accessible geographic information systems (GIS) database systems, regular inspections by state regulatory oversight agencies, and financial assurances to maintain controls. These controls and techniques are equally applicable to BRAC and brownfield sites, and successful implementation at one type of site may be a potential approach for other sites with similar residual contamination issues.

The four categories of institutional controls include governmental controls, proprietary controls, enforcement and permit tools with IC components, and informational devices:

Governmental controls are usually implemented and enforced by a state or local government and may include zoning restrictions, ordinances, statutes, building permits, or other provisions that restrict land or resource use at the site:

- *Zoning*: Legal authority used by local governments to regulate land use for specific purposes.
- *Federal, state, or local ordinances or permits*: Outline specific requirements before authorizing an activity (examples are building codes, drilling permit requirements) or restrict or control certain land uses.
- *Tailored ordinances*: Local government controls placed on access to or use of certain areas.
- *Ground water use restrictions*: Limit or prohibit certain uses of ground water including drinking and/or irrigation/dewatering (example: ground water management zones).

Proprietary controls have their basis in real property law and are unique in that they may create legal property interests that restrict or affect the use of the property, relying on legal instruments placed in the chain of title for the property. Proprietary controls can be implemented without the intervention of any federal, state, or local regulatory authority and require the sale or transfer of a property from one entity to another party before the restriction can be enforced. Some examples of proprietary controls are listed below:

- *Easements*: The property owner allows access by a nonlandowner to a property or imposes use limitations.
- *Covenants*: Agreement between landowner and others that can be used to establish an IC when remediated property is being transferred to another party.
- *Equitable servitude*: Closely related to covenants to restrict property use.
- *Reversionary interest*: When a land owner deeds property to another, but the deed specifies the property will revert to the original owner under certain conditions.
- *State use restrictions*: State statutes providing owners of contaminated property with the authority to establish use restrictions.
- *Conservation easements*: State statutes establishing easements to conserve property and natural resources.

Enforcement and permit tools include permits, administrative orders, and consent decrees that are enforceable by state and/or federal agencies. Permits and orders may include requirements that restrict future land use. Most enforcement agreements are binding only on the signatories,

and the property restrictions are not transferred through a property transaction. Some examples include the following:

- *Administrative order*: Issued by an environmental regulatory agency, directing the property owner to perform certain actions. The order may require compliance with statutory or regulatory provisions that may affect the use of the property. If violated, the matter may be referred to a judicial court for further enforcement.
- *Consent decree*: Documents the settlement of an enforcement case filed in court, specifies actions to be taken by the responsible parties, and is approved by a judge. Consent decrees may have penalties attached to them for noncompliance.
- *Permits*: Implemented by environmental regulatory agency and may require compliance with a statutory or regulatory provision that may impact the reuse of the property.

Informational devices provide information about risks from contamination and generally are not legally enforceable. Examples include deed notices, state registries of hazardous waste sites, advisories and tracking systems:

- *Deed notices*: Documents filed in public land records with the property deed, that conveys information about potential health risks from contamination left on the property to the future buyers or other interested parties.
- *State registries of hazardous waste sites*: These registries contain information about contaminated properties. Some state laws provide that the use of the registered property cannot be changed without state approval.
- *Advisories*: Warnings to the public of potential risks associated with using contaminated land, surface or groundwater, usually issued by public health agencies.

BROWNFIELD CASE STUDY FACT

Arkwright Mill Site, Spartanburg County, South Carolina

The 16-acre Arkwright Mill site is an example of the use of institutional controls to protect public health. Operations at the former textile mill resulted in potential impacts to the soil and groundwater. Currently, the assessment of the site is incomplete, but an institutional control in the form of a deed restriction prohibits the use of the groundwater from beneath the Arkwright Mill Site. Additional information on this case study can be found in Appendix C.

5.6 Engineering Controls

Engineering controls consist of physical measures designed to minimize the potential for human exposure to contamination by limiting direct contact with contaminated areas, reducing contamination levels, or controlling migration of contaminants through environmental media. Some examples of engineering controls are signage, fencing, capping, containment, slurry walls, extraction wells, and treatment methods that minimize the spread of contamination.

5.7 Layering of Controls

Institutional controls are often used in combination with engineering controls, a strategy often called a “layering of controls.” Layering several controls or implementing them in a series can increase the overall effectiveness of the implemented remedy.

5.8 Long-Term Stewardship

“Long-term stewardship” (LTS) describes the responsibility of ensuring that institutional and engineering controls continue to protect human health and the environment from residual contamination. LTS generally includes the establishment and maintenance of physical and nonphysical controls, accountability mechanisms, information and data management systems, and resources necessary to ensure that sites with residual contamination provide acceptable protection over a period of time. The implementation, monitoring, and enforcement of these controls are one of the most difficult issues affecting contaminated property cleanup and redevelopment. At BRAC sites, DoD is implementing its LTS responsibilities through a variety of mechanisms, from retaining the institutional/engineering control inspections, monitoring, and certifications to completely privatizing these responsibilities via various methods. These privatization methods include the use of ESCAs with insurance requirements, GFPR contracts, and requirements in the transfer deed for the new property owner to take on the LTS responsibilities.

In August 2003, the National Conference of Commissioners of Uniform State Laws developed and approved the Uniform Environmental Covenants Act for usage in all states. This act outlines a standard process for creating a covenant or agreement by the owner, the agency, and holder that, in turn, describes the land use restrictions on the property and any monitoring or reporting requirements that are necessary to ensure the ICs’ protectiveness. Other items that can be included in a covenant are the notification of the change of ownership or use of the property and access rights for various parties. Some states have adopted the Uniform Environmental Covenants Act or developed similar statutory environmental covenant programs to ensure that environmental covenants, including ICs, are enforced over the long term.

5.9 Summary

Redevelopment of BRAC and brownfield sites requires the completion of an environmental assessment that adequately summarizes past and current uses and characterizes current site conditions with respect to environmental impact. This information is an integral part in the reuse planning and redevelopment of the property that incorporates human health and environmental concerns.

BRAC installation and brownfield properties may contain similar types of contaminants that require regulatory oversight and documentation, including such things as deed notices and/or deed restrictions to address residual contamination and changes in reuse. BRAC and brownfield sites are governed by many of the same regulatory requirements and programs. The goal to address contamination at either property is to characterize pollution on site and take the appropriate remedial action to allow for the reuse of the property while protecting human health and the environment.

BRAC and brownfield properties can be successfully remediated through the use of innovative technologies, presumptive remedies, institutional and engineering controls, and other instruments that can be implemented to address contamination and ensure the safe reuse of the property.

Section 7 contains additional information, including program management, insurance, financial instruments and contracting mechanisms that can be used to facilitate the environmental process.

6. LIABILITY, ECONOMIC, AND SOCIAL ISSUES FOR CONSIDERATION

Discussed in this section are some of the additional considerations that need to be evaluated for a successful cleanup and redevelopment of a contaminated property—liability, economic, and social issues are important criteria that may have an impact on property values as well as the overall cleanup and redevelopment of both BRAC and brownfield properties.

6.1 Liability Issues

Liability, a type of obligation from one party to another, as a very broad term. There are several types of liability. In this document, “liability” generally means statutory and/or strict liability.

- *Statutory liability* is a direct violation of a state or federal law or statute.
- *Strict liability* is imposed by law or statute on an individual without proof of fault. Many state and federal environmental statutes, including CERCLA, are strict liability statutes. Under CERCLA, previous owners and operators of a site as well as others (current owners of a facility, those who arranged for or transported or disposed of the hazardous substances) may be held liable for environmental cleanup, regardless of who caused the contamination.

One of the most common issues that arise regarding the reuse of BRAC installations is the contamination may be left at the installation. Additionally, communities frequently are concerned that, if additional contamination is found, the military or federal government will not return to clean it up, despite the requirements of CERCLA 120(h). Moreover, developers and communities may worry about future liability for third-party claims for injury or damage or for cleanup of contamination found after the transfer of property. Because contamination can migrate beyond property boundaries, another issue of concern is the potential third-party liability. Third-party liability may result when someone who is not the property owner takes legal action against an owner of a contaminated property, claiming that the contamination has negatively impacted surrounding properties and public health or the environment.

These same liability concerns are also at the forefront of a typical brownfield property transaction. Prospective purchasers and lenders are reluctant to acquire contaminated property for fear they will be held liable by law and thus by regulatory agencies to pay for the cleanup of the site or other third-party claims even though they in no way caused or contributed to the contamination. It should be noted at BRAC installations, liability such as this will not be imposed because the DoD is liable for the contamination it creates regardless of when it is found so long as the new property owner is not a PRP.

States can provide liability relief to developers of brownfield sites through a variety of mechanisms, such as prospective purchaser agreements or covenants not to sue. Some of these mechanisms provide protection to the buyer or nonresponsible party by outlining that they will not be held liable for any previously unknown contamination, injury to third parties, or changes

to the scope of cleanup due to a discovery that more contamination exists than previously known. These mechanisms provide protections based on various applicable state and federal laws. However, these same mechanisms may not be directly applicable at BRAC installations.

BRAC properties have a different liability framework. The federal government by law retains liability to clean up its pollution in perpetuity. This is the same liability scheme imposed upon potentially responsible parties at a brownfield property. This liability does not apply to the typical brownfield developer or property owner who is *not* a PRP. The assurances provided in federal law ensure that, at a BRAC installation, DoD, the party responsible for the pollution, will complete cleanup of any of its wastes—both known and unknown at the time of transfer. Therefore, entities receiving a BRAC property have an inherent additional assurance that cleanup will be completed or otherwise paid for by DoD.

However, as previously outlined in this document, it is possible for DoD to transfer the responsibility for cleanup to another party under a privatization or early transfer agreement. Environmental Services Cooperative Agreements spell out the contractual obligation between DoD and the property recipient or party responsible for cleanup. Generally speaking, ESCAs place cleanup obligation on the recipient. However, even in these cases, ultimate liability for pollution remains with the federal government. With an ESCA, the Service generally pays money to the property recipient (or deducts from the sale price) the amount of the expected cost to clean up the facility. Environmental insurance is often used to cover costs exceeding the expected cleanup cost. Yet, since the insurance policies do have a maximum value and limited term, costs beyond insurance would be borne by DoD or the property owner, depending on the structure of the ESCA. In the case where the recipient becomes insolvent or otherwise unable to complete the cleanup obligations, DoD can return to complete the cleanup. In this case, DoD may require the return of the property to government control. Additional information regarding insurance as it relates to environmental issues can be found in Section 7.

6.2 Economic Considerations of Contaminated Property

It is generally agreed that BRAC installations and brownfield properties are essentially real estate transactions with the addition of an environmental component. Assessing and, if necessary, addressing this environmental component has become standard procedure for most real estate development projects and is typically one of the preliminary stages of any redevelopment project. Today, most lenders require some level of environmental assessment on most types of real estate to reduce the potential risks to the lender in becoming the owner of a property with negative value and potentially responsible for the associated environmental liabilities.

Many contaminated properties are abandoned and/or “mothballed” due to liability or public health concerns. Other considerations undertaken when evaluating abandoned and/or mothballed property are the real or perceived notion that environmental or other ancillary project costs exceed the value of the property and may prevent the property from redevelopment. Those cases where environmental costs exceed the value of the real property are considered “upside down,” that is, possessing a negative value or worth. In such cases, development typically can only occur with some government incentive or other subsidy.

Except for the significant property sizes often common in BRAC installations, and possibly the magnitude of unknowns at some former military installations, there is little to distinguish a BRAC site from other more typical brownfield projects. However, the guarantees offered by the federal government on BRAC installations may actually provide more assurance to the redevelopment community than for a brownfield.

6.2.1 Property Valuation

In private sector transactions, sellers can ask their price and hope to find a buyer who will pay it. Often, the final purchase price is “what the market will bear” and provides a local benchmark for other sites. Redeveloped properties provide economic development, tax rates, jobs, housing and/or other benefits to the local communities in which these properties are located. Nevertheless, in governmental transactions, contaminated property may be sold for less than FMV because the government is a motivated seller who does not necessarily have to make a profit. Seller and buyers in both instances rely on professional assessments, valuations, and appraisals in an attempt to identify FMV as a means to initiate negotiations of the base purchase price.

The term “value” has many meanings. Within the realm of real estate, “value” has different meanings to buyers, sellers, lenders, operators, and insurers. For example to an operator, the term includes income potential as a significant portion of value; to an insurer, value is primarily defined as the replacement cost of a particular piece of real estate and its appurtenances, such as buildings and equipment. It is easy to envision several types of largely subjective values, such as cash, replacement, exchange, tax, income, sentimental, and historic for a property; however, only one objective value can exist based on market conditions and the basic principles of supply and demand. Property valuation attempts to derive an objective value that would be expected to closely approximate the worth of a particular property based on certain economic and legal characteristics, specifically, a property’s utility, scarcity, demand, and transferability (Ring 1972).

Property valuation often takes three differing approaches:

- Cost approach—Value based on the replacement cost.
- Market approach—Value based on comparable sales. This approach is often considered to be the simplest and the most likely to approximate actual market value given the existence of appropriate, ample, and qualified data.
- Income approach—Value based on the worth of future income.

Each of these three approaches may be the most appropriate in a specific instance of property valuation. In terms of BRAC installations, where real estate is often limited to land and depreciated or devalued buildings and other appurtenances, the market approach to valuation is most likely to be used. Since cost data for comparable sale prices is generally not available for BRAC installations, the cost approach can be used to assign value of existing buildings and appurtenances taking into account depreciation costs for structures and equipment. The income approach is not appropriate in most cases, except perhaps in instances where operating facilities

such as motor pools, warehouses, and equipment maintenance facilities are being transferred for similar, private-sector use. In the best cases, each of these approaches may be implemented for correlation purposes, thereby adding some confidence in the derived values.

DoD follows the General Services Administration (GSA) policies and rules to sell real property for “cash, credit, or other property.” When DoD sells BRAC property, it is required to deposit the net proceeds in a special account in the U.S. Treasury that can be used, subject to appropriation, for facility maintenance and repair or environmental restoration by the military department that reported that property excess. GSA’s policy regarding valuation of such property is through appraisals set forth in the *GSA Handbook Appraisal of Excess and Surplus Real Property* (GSA 1994a) at Chapter 2(4)(a)(4) and the *GSA Handbook of Excess and Surplus Real Property* (GSA 1994b). As defined in these handbooks, value comprises both cash and/or financial arrangements comparable to cash.

Landowners of brownfield properties typically rely on the professional property assessment and appraisal to establish a baseline asking price for a property. An appraisal is the estimation of property by an authorized real estate appraiser. A professional appraiser uses maps, sales records, and local statistics to derive a value for a property. Sales records are of primary importance for an accurate market approach estimate referred to as comparable sales. Location, zoning, utilities, and other maps often provide data to support and refine valuations derived from comparable sales. Local statistics such as vacancy rates, population, income, poverty, crime, and employment are also used in the appraisal process in each of the three valuation approaches.

Property value is affected by many factors. Variations in configuration and physical characteristics from one piece of real property to another, and all of the variations based on location, adjacent land uses, restrictions on land use, site history including previous uses, and environmental and legal restrictions as well as other factors all affect value. It is worth noting that the appraised value of a property often does not account for variables, such as environmental liabilities, legal matters, ongoing litigation, title problems, bankruptcies, deed restrictions, and liens. These are factors that can negatively impact a property’s value and are usually discovered as part of subsequent due diligence activities, title and lien searches.

6.2.2 Factors Affecting Property Value

In addition to those restrictions imposed by governmental and other regulatory agencies, property values are also affected by a multitude of characteristics inherent in the land:

- *Size*—A direct correlation can be made between land cost or value and lot size based on typical valuations in terms of cost per acre. Local land use laws that regulate minimum lot sizes could also affect land value. The value of land is affected if the lot size is insufficient for its intended use.
- *Shape*—Irregularly shaped lots may possess unusable or marginally useful areas as compared with traditionally shaped lots where effective usable space is maximized.
- *Ability to expand*—The existence and availability of adjacent parcels for future expansion can increase the cost/value of a specific piece of real property. Conversely, a negative impact value may be realized by those properties adjacent to developed land or properties restricted

from expanding due to zoning, existing easements, environmental restrictions, or other restrictions.

- *Percentage of usable space*—Relating to the above-listed factors, the percentage of a specific parcel available for development may be restricted by numerous naturally occurring or manmade features, including water bodies; wetlands; mandated buffer areas or setbacks; and areas of historical, archeological, or natural significance.

Other characteristics that affect property values include existing conditions associated not necessarily with the land but with the local area:

- *Easements*—Easements commonly include public utilities, rail lines or sidings, conservation areas, and conveyances to allow access to other properties. Although easements can negatively affect value by potentially limiting use or reducing usable space, the proximity of public utilities, transportation features, and other features requiring easements can add value.
- *Neighboring properties*—The use and/or condition of neighboring properties can significantly affect value. Nuisances such as vacant properties, illegal dumpsites, high-profile contaminated sites, poorly maintained junkyards/scrap yards, abandoned mines, and other properties with marginal uses and/or potentially unsafe conditions are significant potential liabilities as well as value reducers. Residential areas adjacent to planned or existing industrial operations are problematic in limiting expansion, increasing liability and being subject to approval by a concerned residential community.
- *Public utilities*—The lack of utilities reduces value in that the cost to the owner/developer of expanding local utilities is more often borne by the developer and not the utility. In some cases, utility companies may provide access to utilities at no cost based on the cost-benefit to the utility of providing services. However, restricting the expansion of local utilities is one principle of “smart growth” and is being embraced by communities and state governments to limit urban sprawl.²¹
- *Access to transportation corridors*—Landlocked properties or those that depend on easements for access will possess lower relative value than those with direct access to public roads, rail, and other conveyances.

Additional factors affecting property value through potential site-specific liabilities associated with past use and/or existing manmade conditions include the following:

- *Financial/legal*—Existing or prior legal matters associated with real property can include liens, existing or pending litigation, bankruptcies, and various problems with title. These issues are typically identified during due diligence activities and/or title searches and can often be resolved, although conditions that provide potential future legal liabilities must be considered.
- *Environmental liabilities*—Several types of demonstrated or perceived potential environmental conditions or related factors could affect value. These include prior site use; demonstrated or potentially existing residual site contamination; physical site conditions such as soil type and geology/hydrogeology that can significantly enhance contaminant transport, reduce contaminant recovery, and affect cleanup costs; history of prior releases to the

²¹ <http://www.smartgrowth.org>.

environment or potential for unreported releases; the existence of nearby environmentally sensitive areas that can be impacted by prior operations; and existing environmental operation and maintenance requirements such as active contaminant recovery and/or remediation and other treatment systems and institutional and/or engineering controls.

6.2.3 Ownership/History

Military installations closed during the BRAC process generally have a more simplified ownership history than brownfield sites because the DoD was often the sole property owner since the site was initially developed, whereas brownfield sites often have a history of multiple owners and property uses. The simplicity of one owner at a BRAC installation is likely to be offset by the challenging nature of assessing the specifics of past operations. BRAC installations were charged with maintaining national defense, and, as a result, adapted quickly during periods of conflict. New maintenance procedures, industrial processes, and entirely new missions were often implemented with little notice. In addition, though a BRAC installation may have had only one entity responsible for the base, the troops and servicemen living and working at the installation changed frequently, and there was a lack of continuity of historical base knowledge.

Consequently, it can be difficult to find documentation of specific changes to base mission and operations that occurred over the years and how hazardous materials and substances were managed and disposed of during those years. For example, areas that are currently used for military housing may have been used for industrial activities in the past and would warrant investigation for past environmental releases. Historical uses of BRAC installations can often be identified through installation historical records, military construction plans, aerial photographs, and interviews with past workers. However, these records and historic aerial photographs are often difficult to obtain or inaccessible. These documents should be obtained and closely examined for each BRAC installation to better understand how the installation was used and what hazardous materials and substances were used and potentially disposed of at the installation. Like BRAC installations, brownfields sites are likely to have had several uses throughout their history. Thus, the historical records for a site, the construction plans, aerial photographs, and interviews with past workers are also useful in discerning what uses and potential contamination resulted at a brownfield site.

Another issue that may need to be considered while investigating and researching the owner and history is the evaluation of the potential reuse of historic buildings or structures. Many states and municipalities have active historic boards that may affect whether these historic

BRAC CASE STUDY FACT

Bennett Army National Guard Facility, Bennett, Colorado

This case study is an example of how the location of the property can impact its ultimate reuse. The Bennett Army National Guard Facility was listed on the first round of BRAC Base Closures in 1988. This 242-acre facility houses a former Titan 1 missile silo complex and was also used for helicopter maneuver and troop training. It is in a remote location on the rural eastern plains of Colorado, surrounded by large tracts of uncontaminated land. In the 17 years since Bennett was added to the Base Closure list, there has been little or no significant progress towards redevelopment, productive reuse, or developer interest. Many believe that this lack is due to its remote location in an area of uncontaminated property. Additional information on this case study can be found in Appendix C.

structures may be demolished or renovated. It should also be noted that in some instances, if the buildings or structures are considered historically “valuable,” there may be federal and/or state financial incentives available to the LRA or developer to offset the cost associated with historic preservation.

6.2.4 Location

The real estate mantra “location, location, location” is ever present in the reuse of these environmentally challenged properties. Like brownfields, the redevelopment of a BRAC installation may be more difficult in areas where the local economy is depressed or where the location of the base is not favorable for redevelopment. Areas with weak economies, sites that do not inspire interest from the local development community, and areas where the best reuse of such property may be inconsistent with community needs will be difficult to redevelop. Some BRAC installations are located in areas where the local real estate market is already flooded with large tracts of uncontaminated land and building space. The availability of such land makes it very difficult to attract developers to contaminated parcels at BRAC installations. Additionally, BRAC installations are often located in remote areas outside of the main population center and away from public transportation and other services.

BRAC CASE STUDY FACT

Mather Air Force Base, Sacramento, California

This case study is an example of the reuse of a property being impacted by its favorable location within the state. This installation served 1918–1993 as a flight school. Following the cleanup, most of the 5800-acre property was transferred or leased to various entities, primarily the County of Sacramento. The central location of the facility helped in its redevelopment. A 2600-acre portion is now a cargo airport. Another 1400 acres was developed into the Mather Regional Park, consisting of open space and a public golf course. The remaining land consists of housing, a business park, the Veterans Administration Medical Center, and the Federal Aviation Administration’s Northern California TRACON facility. Additional information on this case study can be found in Appendix C.

6.2.5 Infrastructure Investment

As previously mentioned location is one of the primary considerations of real estate sales, marketing, and development. Whether the development is industrial, commercial, residential, or mixed use, the questions that the development community must answer about a potential reuse is “Will it work here?”, “Can it be sustained here?”, or “Is there a better location?” This can be a real dilemma at many BRAC installations, where the base may be located in a remote area.

Despite the remote location, and some perceived lack of infrastructure some type of connection was generally maintained between the military facility and the outside world. It may have been by road, rail, or even navigable waterways, but such transportation infrastructure generally existed and can now be adapted and used by the new development and the community. Just like military installations, industrial developments often need access to rail, highway, or navigable waterways to transport freight or other goods and services resulting from their industrial operations. The infrastructure available at a BRAC installation may present a prime opportunity for industrial reuse of the same infrastructure.

Commercial developments require easy, sustainable access for potential consumers. In residential development, road networks are important for a variety of reasons, including access to work, schools, retail, recreation, and basic needs. Before any development project will receive local approvals for construction, traffic studies and plans are generally needed to address access and capacity issues. Although BRAC installations may have had some infrastructure, they may not have sufficient road networks to accommodate the planned redevelopment taking place. Therefore, there may need to be infrastructure investments to make redevelopment feasible at these sites. Similar infrastructure studies, plans, and investment may be necessary at brownfield sites.

In considering the reuse of BRAC installations and brownfield properties, infrastructure upgrades may require a substantial investment yet may be overlooked in establishing cost estimates and development requirements. Existing facilities on the property may need to conform to local building codes; buildings and older infrastructure may need to be demolished or upgraded; and the base property may need to be linked to the local utility, water, and road networks. Therefore, redeveloping and/or reusing a closed BRAC installation for nonmilitary purposes may require a significant investment for infrastructure needs by the local community.

BRAC CASE STUDY FACT

Ogden Defense Depot, Ogden, Utah

This case study represents the type of infrastructure investment that may be necessary on a BRAC installation. The depot was transferred to the City of Ogden in 1997. The city then partnered with the Boyer Company, the developer of the depot. To turn the depot into a premier business park, the developer and the city realized infrastructure upgrades were necessary. To date, approximately \$25 million has been spent on creation of new roads and upgrades to existing roads, telecommunications, electrical grid, parking, water, sewers, and storm sewers. As a result of these upgrades, the installation is now the Business Depot Ogden, with plans to expand for retail space and a hotel. Additional information on this case study can be found in Appendix C.

6.3 Social Considerations

Social considerations are important criteria that impact the overall cleanup and redevelopment of both BRAC and brownfield properties. Inclusion of the community and consideration of the interests of all stakeholders are critical as early in the process as possible for the successful completion of a reuse project.

6.3.1 Competing Interests

The LRA, community, DoD, elected officials, regulators, and developers may have competing interests in how the BRAC installation is reused, just as with brownfield sites. These competing goals can cause delays in the redevelopment process. For example, a community may want to see the property redeveloped as a park, while a developer may want to build residential housing or commercial buildings and the DoD may want the property to remain industrial. These competing interests are heightened when it concerns the closing of a cornerstone of the local economy. As illustrated by Figure 6, the developer's goals, the community's reuse goals, and the cleanup and

liability issues associated with the reuse must be balanced to ensure that an appropriate reuse of the property can occur.

6.3.2 Community Perception

Community perception can often be an issue to overcome in the redevelopment of a BRAC installation. For example, to support the base mission at some sites, the installation may have been surrounded with security fences and guards limiting public access for years. Security and secrecy may have been necessary for an active military installation; however, this atmosphere may raise concerns within the surrounding community about what happened within those fences.

Similarly, brownfield properties may develop a stigma regarding what may have been left behind at an abandoned property that sometimes discourages the private sector from being interested in redevelopment. A community may react to the abandoned or unused property with fear based on the unknown environmental concerns and past uses associated with the property. However, once assessed, many of these properties may have limited areas of concern that require cleanup.

6.3.3 Environmental Justice

For BRAC and brownfield redevelopment projects located in areas of high minority or poverty populations, issues such as public health, economic development, and community impact are likely to be raised.

It is recommended that these and other potential environmental justice issues be addressed proactively at the earliest stages of project planning and design.

EPA further requires that no group shall bear a disproportionate share of negative environmental consequences from operations, programs, or policies of governmental agencies or the private sector. Environmental justice policies provide for significant, if not unlimited, community and individual participation in any decision-making process regarding any activity that may affect their environment and/or health. On February 11, 1994, President George H. Bush signed an Executive Order 12898 to focus federal attention on the environmental and human health



Figure 6. Triangle of competing interests

BRAC CASE STUDY FACT

Marine Ocean Terminal, Bayonne, New Jersey

This BRAC installation case study is an example of how political leadership played a role in the reuse process. The installation closed in 1995 and, through strong local political leadership, was promptly put back into reuse through interim leasing until final reuse plans were developed. The Mayor of Bayonne, a leader and strong proponent of the cleanup and ultimate reuse of this property, worked closely with the community to identify their interests in how to reuse the installation and with the developers to determine how to best implement the vision of the community. The installation now has a cruise port terminal and a film studio. There are plans for residential housing and a ferry service to New York City. Additional information on this case study can be found in Appendix C.

Environmental justice is the “fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies” (EPA 2005b).

conditions of minority and low-income populations. As a result, EPA has developed a strategy to address the following major environmental justice areas:

- public participation and accountability, partnerships, outreach and communication with stakeholders
- health and environmental research
- data collection, analysis, and stakeholder access to public information
- American Indian and indigenous cultures
- enforcement, compliance assurance, and regulatory reviews

A proactive approach to address these environmental justice concerns can be extremely valuable for any redevelopment project, especially in areas with high minority or poverty populations. Proactive approaches increase community acceptance, allowing for community input and potentially protecting the community and the redeveloper from placing an inappropriate industrial facility, especially in areas where existing facilities may already impact local public health and the environment.

BRAC CASE STUDY FACT

Hunter's Point Naval Shipyard, San Francisco, California

Hunter's Point Naval Shipyard is located in an economically distressed area of San Francisco. The community surrounding the former shipyard faced an environmental justice issue relating to the potential pollution from a number of industries in the area, including the shipyard itself. The local residents' concerns, including that the cleanup implemented would not be protective, led to the passage of a ballot initiative requiring the cleanup of the entire site to specific cleanup standards. These concerns have complicated the property transfer and reuse planning for the site despite its desirable location on the waterfront and high property values. Recent efforts to improve community outreach have allowed the first property transfer from the Navy to the LRA. Additional information on this case study can be found in Appendix C.

BRAC CASE STUDY FACT

Former Naval Air Station, Alameda, California

The local community had a strong interest in ensuring the reuse of this former Naval facility would assist the residents. The resulting "Alameda Point Collaborative" is a 34-acre neighborhood of nearly 500 formerly homeless adults and children residing in 239 housing units. The direct conversion of military housing to civilian use streamlined the reuse process for this area. In another example of ensuring local residents benefit from redevelopment, the Navy constructed a community garden where new residents and their neighbors can benefit from organic farming. Stakeholder involvement in the planning effort allowed consideration of environmental justice issues at an early stage. These stakeholders included: the LRA, RAB, existing commercial and residential tenants, the Homeless Collaborative, and the Alameda Point Advisory Committee. Additional information on this case study can be found in Appendix C.

6.3.4 Native American Lands and Other Cultural Resources

Native Americans, including American Indians, Native Alaskans, and Native Hawaiians, maintain strong interests in places where their people have lived. In the United States, the federal government currently holds some of these places as military property. Native Americans are interested in working with DoD to identify and protect these places. As both citizens and

members of recognized independent nations within the United States and as original occupants of lands that are currently held by the DoD, Native Americans have a special cultural relationship with these military lands.

The term “cultural resources” generally refers both to places and to objects and activities associated with those places. Cultural resources are any real or personal property, record, or lifeway that can be defined as follows.

- *Historic real property*, including any archaeological or architectural district, site, building, structure, or object, including monuments, landscapes, or works of engineering that meet criteria for inclusion in the National Register of Historic Places or any other property that meets the criteria for inclusion in an equivalent register maintained by a tribal, state, or local government.
- *Historic personal and related property*, including any prehistoric or historic artifact, relic, piece of equipment, weapon, article of clothing, flag, work of art, movable object, or other item of personal property to which historical or cultural significance may be ascribed through professional evaluation of historical associations to persons, events, places, eras, or with military organizations. Personal property includes the archaeological materials associated with prehistoric artifacts, such as associated records and earth and biological samples.
- *Historic records*, including any historical, oral historical, ethnographic, architectural, or other document that may provide a record of the past, whether associated with real property or not, as determined through professional evaluation of the information content and significance of the information.
- *Community resources and lifeways*, including any resource to which a community, such as a neighborhood or Native American group, or a community of interest, such as a preservation organization or veterans’ group, may ascribe cultural value. Such resources may include historic real and personal property, such as natural landscapes and cemeteries, or have references to real property, such as vistas or viewsheds which may help define a historic real property, or may have no real property reference, such as aspects of folk life, cultural or religious practices, language, or traditions.

BROWNFIELD CASE STUDY FACT

Bay Street Project, Emeryville, California

This case study reflects the need to evaluate the concerns of Native Americans. The Bay Street Project consisted of commercial/residential redevelopment. During the course of the demolition of the dilapidated building, workers discovered remnants of the Emeryville Shellmound, a prehistoric Ohlone Indian site, previously thought destroyed by the building of the industrial plant in 1924. Cleanup of the hazardous materials and future development of the site would have resulted in the destruction of a valuable cultural resource which was approximately 350 feet in diameter. To address this issue, the City of Emeryville Redevelopment Agency sponsored an archaeological excavation. Additional information on this case study can be found in Appendix C.

6.4 Summary

Liability, economic, and social considerations are important issues that impact the overall cleanup and redevelopment of both BRAC and brownfield properties. Sites will be affected to different degrees by these issues, but all of them need to be evaluated for a successful project to be completed. Competing interests—including developer's reuse goals, the community's reuse goals, and the cleanup and liability issues associated with the reuse—must be balanced to ensure that an appropriate reuse of the property can occur in a timely and efficient manner. Section 7 provides the potential solutions and techniques that can be deployed to address many of these concerns.

7. SOLUTIONS AND TECHNIQUES AVAILABLE TO ADDRESS ISSUES SURROUNDING THE REDEVELOPMENT OF BRAC AND BROWNFIELD PROPERTIES

This section provides some of the potential solutions and techniques that can be implemented to address many of the issues and concerns that have been illustrated throughout this document. Many federal, state, and local programs and incentives have been developed to address these issues and concerns. These programs are often geared to streamline processes, provide predictable outcomes, and encourage partnering with the applicable agency in the development of the environmental strategy to address the cleanup of a contaminated property.

7.1 Liability Protection and Relief

Some states provide liability relief to developers of brownfield sites through a variety of mechanisms, for example, prospective purchaser agreements and covenants not to sue. These mechanisms are based on various applicable state and federal laws and include providing protection to the buyer or nonresponsible party.

While BRAC installations have a similar liability framework to that of a brownfield property where a responsible party retains liability for contamination, what is key is that the federal government retains liability in perpetuity to address contamination resulting from its activities. The assurances provided in federal law ensure that DoD or the party responsible for the contamination will complete cleanup of the property. Therefore, entities receiving a BRAC property have additional inherent assurances. For example, CERCLA 120(h) requires DoD to complete the cleanup and provide a covenant that it will return to conduct the remediation of any additional contamination found in the future. In addition to the CERCLA 120(h) protection, which does not address personal injury or property damage, federal law also provides another protection. Under section 330 of Public Law 102-484, the National Defense Authorization Act for FY 1993, DoD indemnifies transferees and lessees of base closure property from legal action for releases or threatened releases of hazardous substances resulting from DoD activities. The Section 330 indemnification provision is limited to personal injury and property damages. Used in concert with one another, the CERCLA 120(h) and Section 330 protections described above may help to alleviate some real estate developers' liability concerns with acquiring a BRAC installation.

Another mechanism used to provide liability protections and quantify remediation costs is the use of a Guaranteed Fixed-Priced Remediation Contract. GFPR is a type of performance-based contracting that is now employed at contaminated properties. Performance-based contracting provides financial incentives for cleanup contractors to develop and implement expedited and efficient approaches to achieve the established environmental cleanup goals at a site. These mechanisms have been used most recently at BRAC facilities as well as active military installations. The GFPR contracting method obligates the contractor to achieve the customer's environmental remediation objectives in accordance with a detailed work plan. GFPR is becoming more popular because it alleviates uncertainty associated with remediation cost overruns. Typically, these contracts also establish a cleanup schedule that can be used when planning the redevelopment project.

GFPR contracts generally rely on incentives, fixed prices, and less government involvement in day-to-day decision making to get the cleanup completed. The contractor is given more flexibility in choosing and implementing a remedy and may not be subject to many of the constraints inherent in government contracting and oversight. At BRAC installations the contractor is given latitude as to how it arrives at a cleanup decision, so long as the cleanup decision meets the criteria of DoD and state and federal environmental regulators. Essentially, DoD establishes the cleanup goals but does not mandate the path to reach those goals. The contractor's payment depends on successful completion of the project goals. A contractor usually uses insurance to protect against cost overruns. In addition, instead of shouldering the burden of performance risk associated with a chosen remedy, DoD is able to transfer the performance risk to the contractor.

GFPR contracts may be particularly attractive for a number of reasons and provide a number of advantages over traditional contracting at BRAC installations. There is an increased need to redevelop BRAC installations quickly and efficiently due to the drain on the local economy caused by the base closing. In addition, as stated earlier, many BRAC installations have had significant environmental investigation, characterization, and remediation prior to base closure. This knowledge helps to limit the scope of the GFPR contract and to avoid cost overruns. GFPR may be a very useful tool at smaller installations or used on a portion of an installation where contamination is well documented and well understood and a remedial alternative has not been selected. This information reduces the number of "unknowns" in the contractor's bidding and cost estimation of a GFPR contract, while also allowing the contractor to have maximum flexibility in establishing a site cleanup.

However, there are certain challenges to using this tool in a BRAC setting. One is the limited number of contractors that have the capability to deal with DoD-specific waste streams, such as UXO or radiological waste. This limited competition can increase site remediation costs. Also, GFPRs typically contain reopeners that limit contractor liability if additional contamination is found during the cleanup process. Such an occurrence could severely impact redevelopment schedules. Additional information on GFPRs can be found in a white paper entitled "A Guide to Performance-Based Environmental Remediation" at www.astswmo.org.

For brownfield sites the Small Business Liability Relief and Brownfields Revitalization Act, which amended CERCLA in 2001, provides an additional layer of liability protections for future property owners. One of the most significant benefits is that transferees or new brownfield property owners can obtain bona fide prospective purchaser status as long as they conduct appropriate due diligence into the previous use and history of the property and identify all areas where environmental contamination may be present, following the all appropriate inquiry guidance issued by EPA. Additional information on the all appropriate inquiry guidance can be found on the EPA Web site at www.epa.gov.

BRAC CASE STUDY FACT**Charleston Naval Complex, North Charleston, South Carolina**

A Guaranteed Fixed Priced Remediation Contract was used in the cleanup of the Charleston Naval Complex, a 3069-acre facility. The cleanup covered closure of approximately 200 RCRA solid waste management units and over 200 areas of concern and the removal of 100 underground storage tanks. The redevelopment of this former naval complex included securing a GFPR contract that was used to facilitate the cleanup and reuse effort. Site reuse will include residential and recreational areas, a nature preserve, light and heavy industry. Additional information on this case study can be found in Appendix C.

Environmental insurance can be used to provide liability protection at a contaminated property. It can be purchased to cover costs exceeding the expected cleanup cost as well as provide added assurance about future liability. The two most commonly used insurance products at BRAC installations and brownfield properties are cleanup cost cap and pollution legal liability policies.

- *Cleanup cost cap* is commonly used to provide remediation “cost overrun coverage.” It covers situations when cleanup costs are greater than what was originally estimated. It can also be used to cover off-site cleanup costs when previously unknown contamination is discovered during remedial activities or there are increased costs for remediation. Cleanup cost cap coverage usually ends after the cleanup is completed and a certification that the cleanup is complete is issued by a regulatory agency.
- *Pollution legal liability* insurance covers the cleanup of unknown preexisting contamination, tort liabilities, and economic losses associated with the reuse effort. In addition, this insurance may provide for on-site and/or off-site contamination on or under the site or unknown, preexisting, and new conditions discovered during implementation of the reuse plan. Tort liability coverage can include bodily injury on and off site as well as property damage on and off site and the impacts associated with natural resource damages. Some pollution legal liability policies provide for business interruption, extra expenses, project delay, and transportation-related activities.

In addition, there are two other types of insurance mechanisms that may be used at contaminated sites. These include property transfer insurance and brownfield restoration and redevelopment insurance. Many of these types of insurance products have been used at brownfield sites.

- *Property transfer insurance* provides coverage for claims arising from preexisting known contamination and known contamination below reportable levels. This type of insurance is

similar to pollution legal liability insurance but is focused on the property transfer scenario. The seller, buyer, and lender can all be named on the property transfer insurance policy.

- *Brownfield restoration and redevelopment insurance* is designed to cover sites with known environmental contamination for which cleanup and development activities are planned. It is a combination of property transfer and cost cap type insurance and can include business interruption coverage.

7.2 Community and Reuse Plans

Communities can and should participate and partner with potential developers to complete a reuse plan for their properties. Initially, communities may be unfamiliar with the BRAC process. To assist with this transition, DoD's Office of Economic Adjustment provides eligible LRAs with grants to hire specialists in the planning and reuse process. The reuse plan should take into consideration the environmental condition and previous uses of the property so that reasonable and appropriate future uses can be agreed upon. The degree of environmental cleanup the military will complete depends on the future reuse of the parcel of property identified in the final reuse plan. The early integration of the cleanup plans with the reuse plan will lead to a more balanced successful BRAC project. Lack of agreement or conflicting reuse scenarios for the property can impede the cleanup process and ultimately delay the reuse and redevelopment of that property. The LRA and/or local community group should note that one of the greatest factors associated with a successful BRAC or brownfield reuse project can be the participation of its local political leaders.

While the environmental condition of the property should be a primary consideration in the development of the reuse plan, other factors also need to be accounted for. For example, if Native American lands are on the BRAC property, then the LRA should reach out to the local tribes and ensure their concerns are recognized and addressed in the reuse planning process. In addition, the reuse planning process will also be a forum where competing interests among regulators, local government, the community, and the military may need to be addressed. Open and honest communication is therefore a key strategy as reuse plans are developed. Additional information on community involvement and BRAC installation reuse can be found at www.naid.org.

BRAC CASE STUDY FACT

Glenview Naval Air Station, Glenview, Illinois

Community participation was used to facilitate the development of the reuse plans for this property. A Base Closure Team was established to accelerate the cleanup and reuse of this 1100-acre former Naval Air Station. Through diligent planning efforts surrounding the ultimate reuse of the property, the site was cleaned up to residential standards in all areas. The site has been redeveloped to include residential and commercial parcels and green space. Additional information on this case study can be found in Appendix C.

7.3 Public Involvement

Frequent communication should be undertaken between all stakeholders active in the cleanup and reuse planning effort, including the LRA and BCT. This communication effort will allow for

a balanced and integrated site cleanup and reuse effort. In the cleanup and reuse of contaminated properties, proactive approaches to public involvement can increase community acceptance, allowing for community input and potentially protecting the community and the redeveloper from placing an inappropriate industrial facility, especially in areas where existing facilities may already impact local public health and the environment. In addition, the concerns of groups such as local Native Americans, as well as other environmental justice issues, can be addressed through the use of a well-thought-out public involvement approach.

EPA provides significant grant funds to local government agencies and nonprofit community groups to implement programs that include community outreach to address social issues. Moreover, EPA offers several simple but valuable suggestions and recommendations (www.USEPA.gov/compliance/resources/faqs/ej) in working with communities, especially those high-minority and high-poverty populations that are offered assistance through environmental justice programs, including the following:

- Learn about the community in which you are working.
- Talk to and involve community members early in the process.
- Listen to community concerns and take them seriously.
- Make use of a facilitator.
- Work with informal networks (as well as formal methods of communication).
- Hold workshops with local leaders.

Public involvement requirements at BRAC sites arise from the National Contingency Plan (NCP) and BRAC regulations as well as some states laws and regulations. Any cleanup conducted under the NCP requires public involvement in the selection of the site remedy. The proposed plan for cleanup is subject to formal public review and comment prior to remedy selection. DoD meets the requirements outlined in the NCP by establishing a community RAB when sufficient community interest around base cleanup exists at both active and BRAC facilities. These groups meet regularly and have the opportunity to review and comment on cleanup records throughout the remediation process.

BRAC CASE STUDY FACT

Camp Devens/Fort Devens, Middlesex and Worcester Counties, Massachusetts

Public involvement was important to the decisions being made at the Camp Devens facility. This 4400-acre installation encompassed four towns in two counties that had potentially competing interests. In 1996 the Commonwealth of Massachusetts purchased the property and signed an agreement with the Massachusetts Government Land Bank; now known as MassDevelopment, to oversee the redevelopment of the installation since many towns were affected. Members of the towns joined the Boards of Selectmen to represent the towns in open biweekly meetings to discuss all critical Devens issues. In addition, six public meetings were held on the proposed reuse plan to gain public insight and acceptance of the proposed project. Additional information on this case study can be found in Appendix C.

Public involvement at brownfield sites often depends on the level of interest from the community. However, many states have a formal public involvement process. If there is significant community interest, many states convene a formal public advisory group early in the cleanup process. Even when regular meetings of a public group are not required, outreach to the community and allowing for their input can help ensure a successful project. State and federal

brownfield grants usually require the recipients to include the public in the process. For instance, EPA includes an evaluation of proposed community outreach and participation activities in awarding competitive grants to state and local governments and nonprofit organizations.

Some additional steps that should be considered in the public involvement process include seeking input from government and local officials, communication to the public through fact sheets, Web sites that post up-to-date information on activities being conducted on the site, making all environmental records available to the public using the local library as a depository for this information, and offering tours of the facility. Such open communication will help to break down any perceived barriers about what activities might have taken place on the property or installation.

7.4 Infrastructure Investment

Converting a closed BRAC installation to a thriving state-of-the-art facility or even reusable property may require a significant investment by the local community for infrastructure needs. Existing infrastructure on a BRAC installation or brownfield property may need to be upgraded to conform to local building codes; buildings may need to be demolished or upgraded; and the base property may need to be linked to the local utility, water, and road networks. The cost to replace, repair, or adapt antiquated infrastructure can be prohibitive. Federal, state, and local infrastructure initiatives should be evaluated to determine whether they apply to the planned reuse project.

7.5 Financial Incentives/Technical Assistance Opportunities

The lack of funds to investigate a site and reduce the uncertainty of contamination is a major issue for brownfield redevelopment. This is less of a problem for BRAC installations where future liability for contamination that is a result of DoD activities lies strictly with DoD after base closure and transfer. Within the limitations of annual funding from Congress, DoD generally has the financial resources needed to perform cleanup. In contrast, brownfields sites often lack a viable responsible party. Recognizing that a small investment may foster revitalization, EPA and many states make site assessment and cleanup grants available to local governments and nonprofit organizations for these sites. These funding sources allow private stakeholders and in some cases local governments and nonprofits to characterize properties and quantify the contamination at a site. State and local governments as well as nonprofit organizations are eligible for EPA cleanup grants contingent upon ownership history. This crucial information allows developers a measure of certainty on the scope and timeline of needed cleanup activities. Federal and state program guidelines vary in terms of eligible grant recipients. Responsible parties generally are not eligible for grants for use at a brownfield site; thus DoD is not eligible since the DoD is the responsible party at BRAC installations. In addition, a party may not be eligible for federal grants because the owner of the property is subject to an enforcement action.

There are other tools at the state and municipal level that are available to assist BRAC and brownfields redevelopment. These tools include tax increment financing, tax abatement programs, subsidized low-interest loans, revolving loan funds, public grants, informational and

advisory services, liability assurances, financial assurances, and legislative reforms and a variety of other grant sources to entice businesses to locate on these properties. However, due to the involvement of the federal government at environmentally contaminated BRAC sites, few federal funding mechanisms are available to BRAC installation or any other federal property prior to property disposal. It should be noted, however, that grants can be obtained for BRAC sites to assist in planning and job training activities.

7.5.1 Public Sources of Financial Assistance

Local, state, federal, and other governmental agencies can offer funding and financial incentives to municipalities, developers, innocent landowners, prospective purchasers, and other entities; however, they are typically restricted to those parties who are not responsible for contamination at a particular site. These financial incentives may be awarded based on financial need, lack of private-sector support, positive impacts on the community, the ability to meet community goals for public health and environmental protection, urban revitalization, and/or economic development. The public sector, therefore, has committed to assuming a valuable role in assisting communities and developers to overcome some of the hurdles of contaminated property redevelopment. The tools available to the public sector have expanded each year in response to overwhelming public need and bipartisan support, and the application of these funds is becoming less restrictive due to the creativity and sophistication of grantors and grantees.

Many BRAC and brownfield success stories include the use and leveraging of public-sector funding as a key factor in the success. EPA has indicated that in many cases these sites have used public-sector funding in three specific areas:

- carrying out an early stage site assessment
- developing site remediation plans and estimated remediation costs (a key step in the regulatory process and important in reducing uncertainty for subsequent owners/developers)
- performing the actual site cleanup

Some of the federal financial assistance programs offered by EPA and other federal agencies that apply to the revitalization of potentially contaminated sites are summarized in the following sections. For example, at Pease Air Force Base, Norton Air Force Base, and England Air Force Base, Economic Development Administration (EDA) grants played a very important role in redevelopment. The Pease Development Authority used EDA grants for demolition of buildings, infrastructure upgrades, and building improvements needed to secure tenants. At Norton AFB, a \$6.8 million EDA grant funded 75% of the cost to construct a road providing access to the property. England AFB used a \$5.2 million EDA grant to build an access road and passenger terminal required to establish a commercial airport.

7.5.1.1 Office of Economic Adjustment

The DoD Office of Economic Adjustment (OEA) works with communities impacted by BRAC closures and realignment to develop strategies and plans to assist in addressing the social impacts and reuse efforts. OEA also offers eligible LRAs grant monies to complete strategic plans for the reuse of BRAC properties. LRAs need to submit an application to OEA for consideration. The

OEA Web site (www.oea.gov) contains additional information regarding the many resources that are available to communities impacted by a base closure.

7.5.1.2 DoD Technical Assistance for Public Participation Grants

As with the brownfield program, affected community and stakeholder groups interested in cleanups in their neighborhoods often need advice from experts. Accordingly, DoD offers Technical Assistance for Public Participation (TAPP) grants. Under this program, the DoD pays for technical experts to review cleanup plans and provide advice to the RAB or other community members. Additional information on these grants can be found at www.denix.osd.mil/denix/public/library/cleanup/cleanupofc/stakeholder/TAPP.html.

7.5.1.3 U.S. Environmental Protection Agency

The Small Business Liability Relief and Brownfields Revitalization Act that was signed into law in 2002, authorized up to \$200 million per year for grants to states, local governments, and tribes, as well as entities such as quasipublic revitalization agencies and authorities for early-stage activities such as site assessment, remediation planning, actual cleanup, and job training. The new law also limits the liability of certain contiguous property owners and prospective purchasers of contaminated properties and clarifies innocent landowner defenses to encourage revitalization and reuse of brownfield sites.

BROWNFIELD CASE STUDY FACT

Thea Foss Waterway Redevelopment, Tacoma, Washington

A federal brownfield grant was used to initiate the reuse of this formerly contaminated brownfield property. The site was a former cement plant and roofing company that has now been transformed into a Glass Museum with additional capacity for mixed use and commercial business operation. It is part of a larger redevelopment project along the waterfront. Additional information on this case study can be found in Appendix C.

EPA provides technical assistance grants provide money to community groups so they can pay for technical advisors to interpret and explain technical reports, site conditions, and proposed cleanup proposals and decisions at Superfund sites. An initial grant of up to \$50,000 is available for any site that is on or proposed for listing on the NPL where a response action has begun. EPA's NPL is a list of the most hazardous waste sites nationwide. Additional funds may be available for very large or complex sites listed on the NPL. Additional information on technical assistance grants can be found at www.epa.gov/superfund/tools/tag.

Appendix B of this document lists the availability and requirements for some of the financial incentives available for the revitalization of contaminated properties. Additional information can also be found in the GSA's *Domestic Catalog for Federal Assistance* as well as other federal government Web sites. Information on federal brownfield programs can be found in the *Brownfields Federal Programs Guide* (EPA 2005a) and at www.epa.gov/brownfields.

7.5.1.4 Other Federal Agency Sources

Recognizing the need for funding for environmental components of redevelopment, other federal agencies such as HUD and EDA have also allowed the use of their funding for environmental activities in projects that they are mandated to support. Examples of funding sources available from other federal agencies are provided in Appendix B.

7.5.1.5 State, Local, and Other Sources

Increasingly, state and local governments are offering financial assistance and incentives for the redevelopment of brownfield sites. In some cases, state governments manage federal programs at the local level or are the source of federal funding under some federal assistance programs. Local governments may use a variety of financial assistance programs and incentives to promote economic and business development. Generally, local funds can be more easily earmarked to specific local projects, often under authority granted by the state government, especially in areas specially designated for redevelopment. Some of the programs listed below may be used by communities to assist in reuse activities.

- *State Grant Programs*—Many states have grant programs that provide funding for localities and agencies that undertake assessment, cleanup, and revitalization of potentially contaminated sites. State grant assistance can be attained from a number of agencies including nonenvironmental agencies (economic development agencies, housing, etc.).
- *Subsidized Low-Interest Loans*—Subsidized low-interest loans are often offered by state and local governments and can be used to reduce the cost of capital. They also provide full or partial financing for projects for which private-sector financing may be unavailable or difficult to obtain at sustainable interest rates. Some loan programs are specifically targeted to assessment, cleanup, and revitalization of contaminated sites.
- *Revolving Loan Funds*—In some cases, state and local loan programs operate revolving loan funds (RLFs), under which future loans are financed through the repayment of current loans. State or local governments using funds provided by the federal government manage certain revolving loan funds, such as EPA’s Brownfields Cleanup Revolving Loan Fund. Although less desirable than direct grants, RLFs may be particularly appropriate for assessment, cleanup, and revitalization of contaminated sites, where repayment terms tend to be more flexible and negotiable than the terms of commercial loans.

BROWNFIELD CASE STUDY FACT

Bridgeport Regional Maritime Complex, Bridgeport, Connecticut

This formerly abandoned steel manufacturing/fabrication facility leveraged various funds and from various federal, state, and local sources, including the U.S. Economic Development Authority. State funds were used as the required “local” match, thereby gaining maximum leverage from both funding sources. The site is now home to a shipyard that contracted more than \$100 million of business before the site redevelopment was completed. The site is now an attractive, functional waterway and a new viable revenue generating site contributing to the City of Bridgeport. Additional information on this case study can be found in Appendix C.

- *Bonds*—Bonds can extend payments for new projects for extended periods (15–30 years), allowing time to generate sufficient income to repay the bond. Typically, states and local governments repay bonds with revenues from taxes, income, rent, fees, or other sources attributed to the project site or specified local area or zone. Tax-exempt bonds are exempt from federal and state taxes and can be used for a variety of government projects including airports; docks and wharves; mass-commuting facilities; facilities for furnishing water, sewage disposal, and facilities for solid waste disposal. In addition, tax exempt bonds can be used for infrastructure; small issuer manufacturing facility bonds; and multifamily housing bonds for affordable housing. Security and sources of repayment for bonds need to be identified, such as property taxes, revenues, limited tax, tax increment financing, local improvement district, certification of participation, and using lease revenues to pay back debt. Types of project bonds include open-space projects, parks, housing, golf courses, assisted-living facilities, hospitals, convention centers, libraries, and mixed-use projects.

BROWNFIELD CASE STUDY FACT

Renaissance Grand Hotel, St. Louis, Missouri

This brownfield redevelopment project was the cornerstone to revitalizing the City of St. Louis, Missouri. To facilitate the redevelopment process, the project incorporated and leverages various sources of funding and grants incentives, including but not limited to tax-exempt bonds, federal historic tax credits, Missouri historic tax credits, Missouri brownfield tax credits, and increment financing. The property, now the Renaissance Grant Hotel connected to the St. Louis Convention Center, provided the venue for the 2004 National Brownfield Conference. Additional information on this case study can be found in Appendix C.

- *Public Ownership*—Public ownership can qualify sites for additional funding not always available to privately owned sites. Government agencies can acquire property and subsequently assess and clean up a site, after which the site can be sold or donated to a private or quasipublic agency for redevelopment. Such public-private partnerships may be subject to legal scrutiny to verify that such land deals are ethical and legal and do not provide windfall profits to the private sector. In certain instances, specially designated redevelopment areas are established that allow government agencies to designate developers and circumvent typical legal restrictions on the disposal of publicly owned property.
- *Land Reclamation Banks*—Some communities use land reclamation banks, which take title to property through tax foreclosure, eminent domain, or negotiated sale. Again, the governmental agency may assess and remediate the site prior to disposition to a developer. Some communities use the proceeds from the lease or sale of the property to finance future projects. Use of land reclamation banks is usually applicable only to sites that would otherwise be profitable were it not for environmental impacts, although owners of numerous parcels of real estate, such as urban local governments, can develop portfolios composed of profitable and unprofitable sites, thereby forcing the redevelopment of “upside down” properties as a condition of the redevelopment of the more desirable sites.
- *Empowerment Zone and Enterprise Communities*—The Empowerment Zone (EZ) and Enterprise Communities (EC) program is designed to empower communities to create jobs and economic opportunities. An EZ or EC is a distressed area that the federal government has targeted to receive substantial investment of federal technical resources to encourage private-

sector development, job growth, and entrepreneurship. Designated EZs and ECs have a range of tools available to maximize the flow of private capital and investment to their nominated areas. HUD added renewal communities to the program as well. These were developed to spark job growth and economic renewal. It is important to note that state government may have also designated areas of the state as zones focused on the revitalization of urban communities.

- *Taxes and Special Assessments*—Incentives are one method local governments use to encourage institutional and private investment in revitalization of contaminated sites. Local governments also are becoming partners in revitalization projects by allocating public works resources for site preparation and cleanup or by allocating tax revenues or loan payments from other programs to fund specific project activities.

BRAC CASE STUDY FACT

Warminster Naval Air Warfare Center, Warminster and Ivyland, Pennsylvania

This case study is an example of how state, federal, and local incentives can be used to facilitate the reuse of a BRAC installation. The Air Station was commissioned in 1944 and operated until closure in 1997. The facility has undergone a transformation through cleanup and redevelopment efforts and is now home to commercial, open space, and residential and age-restricted housing. The former BRAC property was redeveloped through a partnership with the Navy, the community, and the State of Pennsylvania. The state and the community designated the area as a Keystone Opportunity Zone, which in turn allows developers to take advantage of state tax incentive programs. Additional information on this case study can be found in Appendix C.

- *Tax Increment Financing*—The tax increment financing (TIF) mechanism is available in nearly 48 states and has traditionally been used for numerous types of economic development projects, usually in economically distressed or abandoned areas. The TIF process uses the anticipated growth in property taxes generated by a revitalization project to finance the necessary public sector investment. TIFs are built on the concept that new value will be created and that the future value can be used to finance the actions necessary to realize that value. This funding mechanism is generally not suitable for parks or other public projects that do not generate tax revenue, and it may compete with other programs that use tax revenues as incentives. TIF bonds are issued for the specific purpose of revitalization: acquiring and preparing the site; upgrading utilities, streets, or parking facilities; and carrying out other necessary site improvements. TIF mechanisms can be complex and risky to the local government in that the failure of a particular project to generate sufficient revenue can cause default or other hardship in repaying the bonds.
- *Tax Abatements*—Tax abatements include deferments, reductions, or waivers in tax obligations over specified time periods and are commonly used to stimulate investments in new construction in areas where economic or other conditions discourage private investment. States must usually grant local governments the authority to offer tax abatement programs, and most allow only certain areas to participate, such as economically distressed communities or deteriorating neighborhoods. The key advantages of tax abatements are that they give local governments a workable, flexible incentive that helps influence private investment decisions. This incentive can be important in efforts to promote reuse of BRAC and brownfield redevelopment sites.

- *Payment-in-Lieu-of-Taxes (PILOT) Programs*—PILOT programs provide a mechanism by which states and other government entities, which are traditionally exempt from paying local property taxes, may pay to a municipality a grant in lieu of taxes with respect to certain real property. Each year a municipality assesses the value of such property and provides this information to the state or other nonlocal government. On the basis of this valuation, the state awards a grant to the municipality that is typically equal to a percentage of the property taxes that would have been paid with respect to the real property if the property were not tax exempt. Federal agencies also support PILOT programs to offset the loss of tax revenue caused by the presence of tax-exempt federal property within municipalities and counties.
- *Equity Participation*—Many communities consider equity participation an excellent tool for stimulating projects. That effort can take the form of lease arrangements, establishment of reclamation banks, or municipal ownership and revitalization of property on its own behalf. The important aspect of equity participation is that the public sponsor assumes part of the risk of the project, typically because the assessed, cleaned up, and revitalized property will provide a source of new tax revenue. In addition, although state and local governments enjoy only a statutory liability exemption when acquiring property involuntarily, federal regulators have historically been more reluctant to pursue legal action against public agencies than against private landowners, a fact that reduces the risk. Even where it may not be appropriate to provide local funds for a private revitalization, local governments can contribute by upgrading utilities, providing streetscapes, and providing other improvements to adjacent public areas.
- *General Obligation Bonds*—Communities can issue general obligation bonds for appropriate public purposes such as job creation and enhancement of the local tax base. Cities traditionally issue general obligation bonds for acquiring land, preparing sites, and making infrastructure improvements. A city's ability to repay the bond debt would be enhanced by the growth in property tax revenues as more potentially contaminated sites are brought back to productive uses.

Local governments may use a variety of financial assistance programs and incentives to promote economic and business development at either brownfield or BRAC sites. Like federal and state programs, local offerings can be more explicitly packaged and promoted for potential developers and lenders to provide for the reuse of potentially contaminated sites. Cities and other local governments can explore other low- or no-cost techniques to stimulate the flow of capital to promising revitalization projects:

- considering ways to more easily convey tax-delinquent properties to new owners with viable reuse plans
- applying site-specific zoning modifications to provide developers with the opportunity to earn a greater return on their investment and offset site-preparation costs
- using portions of water, sewer, and waste water revenues for cleanup activities
- using portions of grant, loan, or loan guarantee program funds to applicants proposing site characterization or cleanup projects
- discounting publicly owned properties with cleanup requirements

- channeling some portion of loan repayments from existing city programs to the revitalization of potentially contaminated sites
- devoting monies raised from fines or fees to a financing pool to be used for the revitalization of potentially contaminated sites
- using small amounts of public funds to “seed” a private, shared-risk financing pool devoted to the revitalization of potentially contaminated sites

7.5.2 Private Sources of Financial Assistance

As private companies and individuals find that the redevelopment of potentially contaminated sites can be profitable, a surge in the demand of property in formerly neglected urban areas has been experienced. While public-sector funding may be available for cleanups of contaminated land, most redevelopment funding comes from private-sector investors looking for projects that promise returns above the market rates. Private companies and joint ventures between developers, environmental consultants, insurers, and financiers that specialize in the redevelopment of contaminated properties are becoming more willing, albeit cautiously, to invest in this area. Some private sources of funding include the following:

- *Revolving loan funds*—A revolving fund is a source of money that provides loans for specific purposes, including financing brownfields redevelopment projects. The parties reimburse the fund for the loan amount plus interest. Through payback of principal and interest, the fund is able to maintain the same or increased levels of funding. Private revolving funds are typically developed through the revenue disbursement from a trust fund.
- *Trust funds*—Trust funds are special accounts developed to receive and disburse revenues from taxes or fees for dedicated purposes, including brownfields redevelopment projects. These funds differ from revolving funds in that they maintain funding capacity not through payback of loans but through new injections of revenue—taxes, fees, or investment income.
- *Real estate investment trust*—Real estate investment trusts (REITs) are holding companies that act as primary investors when purchasing property. For brownfields redevelopment, the REIT acts as the owner, thereby shielding investors from liability in excess of the investor’s initial investment. REITs are essentially mutual funds that specialize in pooled investments in real estate and are fully integrated companies with professional management and staff that put real estate planning, acquisition, redevelopment, management, and sales under one roof. With their investment focus, REITs can assemble diverse portfolios of real estate properties to spread and reduce financial risks. REIT dividend earnings can be tax-exempt for tax-exempt investors such as pension funds. Most REITs have a particular real estate investment focus, such as residential housing, industrial properties, general commercial properties, or shopping centers. Hundreds of REITs invest billions of dollars in real estate properties nationwide and are a major force in the development of apartment housing and shopping centers. REITs that focus on industrial and commercial real estate are beginning to include select potentially contaminated sites in their portfolios. New REITs are being established that focus on buying, assessing, remediating, redeveloping, or selling contaminated properties; others focus investments on real estate properties located in EZs and ECs. Some REITs have

set-asides (portions of their portfolios) for “socially responsible” development, aimed primarily at urban revitalization projects in high risk or blighted areas.

- *Private and nonprofit grants*—Private nonprofit organizations and corporations can also be a source of grant funds for revitalization and economic development activities. Partnering with nonprofits can provide access to funds available only to nonprofits. The nonprofit can in turn act as an important asset in community outreach, acceptance, and participation activities.
- *Private loans/lender issues*—Traditionally, lenders have been hesitant to make loans secured by contaminated properties. In the past several years, however, larger banks, insurance companies, and even some smaller banks and other lenders have become more knowledgeable in environmental matters. Consequently, in certain circumstances, they can be more willing to make loans secured by contaminated property. In general, bankers analyze risk; therefore, the project that presents a minimized risk to the lender has a greater opportunity for approval. To obtain a loan secured by contaminated property, the prospective borrower should demonstrate to the lender at least a basic understanding of the environmental risks involved in the loan transaction. Phase I and II environmental site assessments are routinely required by lenders for sites with known or suspected contamination problems. Lenders may also seek indemnification from sellers for any preexisting contamination. Indemnification agreements often address issues related to cleanup expenses and the costs of fines, third-party claims, and the determination of “reasonable” costs, cleanup standards, and limits on potential liability.

7.6 Summary

Many potential solutions and techniques can be implemented to address many of the concerns surrounding the reuse of a contaminated property. Liability, environmental, economic, and social issues are potentially significant issues that need to be addressed in regards to completing a successful BRAC or brownfield cleanup and redevelopment effort. The federal government and most states provide varying levels of liability protection and relief through various regulatory requirements to promote redevelopment. Likewise, federal and state governments provide a variety of financial incentives to promote the cleanup and redevelopment of these sites. The initiatives that are offered vary in terms of applicability and specific use of the funds. It is important to note that in all aspects of development and reuse effort, social issues must be addressed and public input should be sought early and often.

8. CONCLUSIONS AND RECOMMENDATIONS

BRAC installations and brownfield sites have similar impacts on the communities in which they are located. To lessen these impacts and facilitate the reuse of these properties, these programs share similar goals, including the implementation of a cleanup that is protective of human health and the environment and the ultimate reuse of contaminated, blighted, and underutilized property. As can be seen from the information presented in this document, these goals are not mutually exclusive. Creativity and “thinking outside of the box” can facilitate the cleanup and reuse of contaminated properties, as can efforts undertaken to work with the community, federal

and state regulatory agencies, and local governments. Information is presented throughout this document about some of the issues and concerns surrounding the cleanup and reuse of BRAC installations and brownfield properties that are being undertaken across the country. In addition, this document also outlines the governing program information, solutions, and techniques that should be considered in evaluating and addressing the cleanup and reuse of a BRAC installation or brownfield.

8.1 Program Similarities and Differences

In the research and case study investigation undertaken to complete this resource document, it became clear that there were some similarities and differences between the BRAC and brownfield programs. EPA developed the information in Table 2, outlining the two programs as they are discussed in this document.

Table 2. Comparison of BRAC and brownfield programs

Factor	BRAC Program	Brownfield Program
Property identification	<ul style="list-style-type: none"> • BRAC property is identified as excess property that DoD wishes to remove from its inventory. • The property is identified through a legislative process directed by law. 	<ul style="list-style-type: none"> • In some cases properties are identified through inventories. • In most cases, the buyer, developer, or local government (not necessarily the seller) identifies the property .
Ownership and history	<ul style="list-style-type: none"> • In many cases, the federal government has been the sole owner of the BRAC property. • BRAC property usually supported multiple missions and uses as the needs of the military changed. • Historical records may not be complete or capture every change in use or mission. 	<ul style="list-style-type: none"> • Brownfields property may have had multiple property owners and past uses. • Owners may abandon property, and at times the responsibility for property falls to the local government.
Extent of environmental contamination	<ul style="list-style-type: none"> • Can be highly variable at BRAC property, ranging from metals, chlorinated solvents, hydrophobic organic chemicals, UXO, and radioactive wastes. • All or any type of media may be affected (soil, groundwater, surface water, sediments, etc.) • Military installations may cover hundreds or thousands of acres. Environmental contamination may be widespread. • Installations maybe be listed on the NPL. 	<ul style="list-style-type: none"> • Can be highly variable, depending on past uses of the facility, although in general usual contaminants of concern are related to industrial or commercial processes. • Brownfields properties typically are several acres in size, limiting the scope of where environmental contamination may be found. • All or any type of media may be affected (soil, groundwater, surface water, sediments, etc.). • For properties to be considered a brownfield, they cannot be listed on the NPL or under the jurisdiction, custody, or control of the federal government. Many states have exclusions as well.

Factor	BRAC Program	Brownfield Program
Site assessment	<ul style="list-style-type: none"> • DoD cleanups follow the process as outlined in the NCP. • The Preliminary Assessment/Site Investigation process outlined in the NCP generally involves conducting a file review, site reconnaissance, collecting information and analytical data, and, if needed, conducting field sampling to gather additional data. • At BRAC facilities, Environmental Baseline Surveys are conducted and generally follow the procedures laid out in <i>Standard Practice for Conducting Environmental Baseline Surveys</i> (ASTM 2005). 	<ul style="list-style-type: none"> • Phase I Environmental Assessments are the most common assessment conducted at brownfield properties. • If warranted, a Phase II Environmental Assessment is conducted to further delineate and identify contamination present. • Remedial Action work plan is developed and implemented with results sent to regulatory agency for approval.
Addressing environmental contamination	<ul style="list-style-type: none"> • DoD is the responsible party for contamination that is the result of its activities. • DoD has authority under the Defense Environmental Restoration Act and CERCLA to conduct cleanup in accordance with CERCLA and the NCP, RCRA, and other statutes as they apply. • General process for cleanups conducted under the NCP: <ul style="list-style-type: none"> – Preliminary Assessment/Site Investigation – Remedial Investigation and Feasibility Study – Record of Decision for Cleanup (with Public Comment Period) – Design of the Remedial Action – Remedial Action conducted – Operation and maintenance of long-term land use controls activities <p>All activities are reviewed and approved by the states and EPA.</p>	<ul style="list-style-type: none"> • In some instances a responsible party is not present or may not be viable. • Cleanups are often conducted by a nonresponsible party that will receive liability protection at the end of the process. • State VCPs or brownfield programs are the most common processes to cleanup contamination. • General processes for voluntary cleanups (may vary from state to state): <ul style="list-style-type: none"> – File application and fee – Site Assessment/Site Investigation conducted by party and reviewed by the state – Cleanup plan prepared by third party and reviewed by the State – Public notice and comment if applicable – Site cleanup conducted – State review and approval
Cleanup standards	<ul style="list-style-type: none"> • Cleanups by DoD are required by statute to follow the NCP and state laws, as appropriate. The NCP provides that, for all classes of contaminants, health-based ARARs, where available, should be used to set remediation goals. • Where health-based ARARs are not available, remediation goals should be set so that they are protective of human health and the environment. • The reasonably anticipated future land use is a key factor in determining remediation goals. 	<ul style="list-style-type: none"> • Property owner may use the statewide health or cleanup standard established for a specific contaminant, or develop cleanup standards specific to that site based on information about the contaminants present, the site's geologic characteristics, the potential reuse of the site, and other factors. • Planned or anticipated future use of the site is a key factor setting remediation goals.

Factor	BRAC Program	Brownfield Program
Funding availability and sources	<ul style="list-style-type: none"> • Congress provides annual budgets to DoD to conduct environmental cleanup to meet regulatory cleanup requirements and schedules. • Through OEA, DoD provides resources for reuse planning to the LRA where a base is closing. • Other federal agencies provide assistance to BRAC communities, such as the Department of Labor, HUD, and EDA. • DoD may reimburse a third party, in a form negotiated between parties, who are willing to conduct cleanup activities on behalf of DoD. 	<ul style="list-style-type: none"> • EPA provides federal grants to conduct property site assessments and cleanups, to capitalize cleanup revolving loan funds, as well as job training. • Private funding is often leveraged with grants received from the public sector (federal, state, and local). • Other federal and state agencies provide assistance for brownfield properties, such as but not limited to the Department of Commerce's EDA and HUD. • Federal Taxpayers Relief Act, allows eligible taxpayers to deduct qualified cleanup expenses at eligible brownfields in the year they are incurred.
Future liability	<ul style="list-style-type: none"> • DoD is required by statute to provide covenants to future property owner (transferee) with the deed stating that <ul style="list-style-type: none"> – DoD has completed all necessary response actions, and – the federal government is responsible for all response action required in the future for contamination from DoD activities. • Purchasers of BRAC property receive indemnifications that they will not be liable for any claim of injury or property damage resulting from contamination that is a result of DoD activities (Section 330 of the FY 1993 National Defense Authorization Act). • EPA's Policy Towards Landowners and Transferees of Federal Facilities provides that generally EPA will not take a CERCLA enforcement action against transferees of BRAC properties, except in instances where the transferee has caused, contributed to, or exacerbated the release or threat of release of any hazardous substances. • Under CERCLA 107, liability protections are provided to contiguous property owners, bona fide prospective purchasers, and innocent landowners who meet the statutory requirements set forth. 	<ul style="list-style-type: none"> • State liability relief programs offer the following: <ul style="list-style-type: none"> – covenant not to sue from the state agency – no-further-action letter from the state agency – certificates of completion or cleanup approval letters from the state agency • CERCLA liability protections are provided to contiguous property owners, bona fide prospective purchasers, and innocent landowners who meet the statutory requirements set forth.
Environmental insurance	<ul style="list-style-type: none"> • Third parties who agree to conduct cleanup on behalf of DoD may obtain environmental insurance to cover cost overruns or cover the cleanup of unknown preexisting contamination, tort liabilities, and economic losses associated with the reuse effort. 	<ul style="list-style-type: none"> • Owners of brownfields property conducting cleanup may obtain environmental insurance to cover cost overruns or cover the cleanup of unknown preexisting contamination, tort liabilities, and economic losses associated with the reuse effort • Brownfield EPA grantees can use a portion of their funds to pay for insurance.

Factor	BRAC Program	Brownfield Program
Community and local involvement	<ul style="list-style-type: none"> • CERCLA Section 117 (Public Participation) applies to BRAC cleanups conducted by DoD. • RABs are established at the installation and provide a forum for its members (including local community members) to provide input about the cleanup. RABs are established by DERP statute and implementing regulation. • LRAs, as required by Congress, are created where bases are closed or realigned. LRAs are responsible for developing and implementing a reuse plan for the BRAC property. • Public notice and comment period is required for cleanup decisions made under the NCP framework. • Prior to the transfer of property from the federal government, a public notice and comment period is required. 	<ul style="list-style-type: none"> • Public participation requirements under state voluntary cleanup programs or RCRA. • Community involvement requirements as part of the federal brownfield grant process. • Also may be dependent on the level of interest from the community.
Reuse plans	<ul style="list-style-type: none"> • LRAs are responsible for developing a reuse plan for the BRAC property. • The future use of the property as identified in the reuse plan helps determine the level of cleanup required for use to safely occur. • BRAC property is subject to local government planning, permitting, and zoning processes once transferred from DoD. 	<ul style="list-style-type: none"> • Communities can partner with developers and new users to complete a reuse plan for brownfield properties. • The future use of the property as identified determines the level of cleanup required for use to safely occur. • Brownfield property is subject to local government planning, permitting, and zoning processes.
Assistance for the homeless	<ul style="list-style-type: none"> • The LRA and military Service must follow the procedures set forth in either Title V of the Stewart B. McKinney Homeless Assistance Act or the Base Closure Community Redevelopment and Homeless Assistance Act of 1994 to undertake efforts to provide surplus property for assistance to the homeless in the local community. 	<ul style="list-style-type: none"> • The Brownfields process does not require assistance for the homeless.
Property transaction process	<ul style="list-style-type: none"> • Once an installation is designated for closure, the available property is subject to the federal screening process, as follows: <ul style="list-style-type: none"> – Identify other DoD interests in the property. – Identify other federal agency interests in the property. – Identify other interests in property (i.e., available to the LRA and the public). • Once interests in the property have been identified, the property disposal method must be determined between DoD and the LRA. Disposal methods include, but are not limited to, public benefit conveyances, economic development conveyances, public sale, negotiated sale, homeless assistance conveyances, and conveyances for the cost of environmental remediation. 	<ul style="list-style-type: none"> • Open-market transactions are not regulated by federal statutes. • Two parties may agree to a transaction in any form that is mutually agreeable to the parties. • Municipality may take ownership of property through use of eminent domain procedures. • Liability relief is generally transferable to new owners.

Factor	BRAC Program	Brownfield Program
Environmental considerations in property transactions	<ul style="list-style-type: none"> • CERCLA 120(h) requires that all remedial action necessary should be completed at a property prior to the federal government disposing of the property, unless <ul style="list-style-type: none"> – an early transfer is conducted, where property is transferred to a third party prior to the completion of all remedial action and – response action assurances are provided that the cleanup will continue and be completed. • Use restrictions may be applicable at a BRAC property. • Government property transactions are governed at the federal level through CERCLA 120(h) and the Federal Real Property Act. 	<ul style="list-style-type: none"> • Private property transactions are not regulated. • Environmental assessments and due diligence are commonly conducted for real estate transactions which take place in the private sector. • Use restrictions may be applicable at a brownfields property.

The closing of a BRAC installation brings both challenges and opportunities to communities. Brownfields present similar challenges and opportunities. It is clear that the cleanup and reuse of BRAC installations and brownfield sites may be expedited by looking at lessons learned from previous projects that have been completed across the country under both scenarios. These lessons learned have been illustrated throughout this document in the case studies presented. A complete compilation of all of the case studies used in this document can be found as Appendix C.

Through the research and evaluation of the information obtained and summarized in this document, it can be seen that many of the same principles can be applied to both BRAC installations and brownfield sites. In addition, community involvement and communication are other key strategies that need to be employed on both brownfield and BRAC sites. If all stakeholders involved in the process are prepared to succeed or willing to share goals, communicate openly with each other, and cooperate, there is no reason for BRAC installation to remain in the hands of the federal government instead of the local communities who have been impacted by the closure of the military base.

The Base Closure Teams, Local Reuse or Redevelopment Authorities, and Restoration Advisory Boards play important roles in the cleanup and reuse of BRAC sites, and maintaining communication amongst these groups, as well as with the affected community, can be key to successful revitalization. Balancing reuse goals, the needs of the developer and community, and sharing information among parties, especially concerning past base activities and potential contamination, in an open and cooperative manner will allay community concerns and reduce the impediments to future development at both BRAC and brownfield properties.

Despite the many successful projects that have been completed at BRAC installations and brownfield sites, environmental, economic, and social issues and challenges remain. Communities still wrestle with privately owned or “mothballed” properties, small abandoned parcels, landfills, and other less strategically located properties. Additional financial resources are often required to assess and cleanup these less desirable properties to even the “playing” field with greenspace and more attractively located BRAC installation and/or brownfield properties. Moreover, many communities lack the expertise and knowledge to provide the vision and the incentives to the redevelopment of contaminated properties. To this end, this document can be used as a tool to help educate and train communities to recognize the opportunities that both BRAC installations and brownfield properties offer them. Below is a case study that demonstrates some of the successful incentives and techniques discussed within this document that were used in the ongoing development of a former BRAC installation.

BRAC CASE STUDY FACT**Lowry Air Force Base, Denver, Colorado**

The closing of the Lowry Air Force Base could have been devastating to the City of Denver. Through careful planning and a cooperative spirit, the cleanup and redevelopment of this former Air Force Training Base's 1866 acres has proven to be extremely successful. The base closure created an economic impact that included the loss of 7000 jobs and \$295 million in annual spending. Through the diligent efforts of developing attainable reuse goals—including residential housing, schools, and the innovative reuse of existing structures and buildings—45% of the property is being dedicated as recreation and open space, and commercial enterprises have created a \$4 billion gross economic impact. There is now a net increase of 3000 jobs (10,000 total jobs on site) and 6445 new residences which totals approximately, \$2.3 billion in benefits to the City and County of Denver, including \$39 million in taxes and fees and another \$1.7 billion that has benefited the City of Aurora, the State of Colorado, and other states. Additional information on this case study can be found in Appendix C.

8.2 Recommendations to Assist in Reuse Efforts

Evaluating the case studies that are contained within this document and in Appendix C, the reader will notice that a variety of strategies have been implemented on BRAC installations and brownfield sites to facilitate property reuse. It is important to note that there is no specific solution that will work in **all** cases. In fact, various strategies may need to be employed to allow for a successful property cleanup and reuse.

In summary, the conclusion and recommendations set forth in this document for consideration include the following, in no particular order:

BRAC

To facilitate the closure of military bases, the BRAC process was formulated from existing federal laws and includes the completion of specific tasks and processes. The process includes the identification of parcels for property disposal and reuse, evaluating the environmental condition of the property, developing a reuse plan that considers environmental and reuse options and cleanup pursuant to applicable federal and state regulations. The process also includes the formation of a BRAC Cleanup Team (BCT), LRA and RAB to facilitate various components of closure, environmental remediation and redevelopment of a BRAC installation. The success of

the process can be highly dependent upon the work of and interaction among these groups. There are many techniques from the BRAC process that can be used such as early transfers to facilitate the reuse of these properties.

Brownfields

Brownfields, properties that are suspected or are known to be contaminated, can negatively impact a community's economy and quality of life. Federal, state and local governments have developed financial incentives and voluntary cleanup programs to facilitate the cleanup and redevelopment of these properties. Coordinating the use of these incentives and programs can help to facilitate cleanup and reuse of these sites.

Redevelopment Planning

Redevelopment planning for BRAC and Brownfield sites offers some special challenges; however, the local review process is essentially the same as any other type of development project. Due to the nature of the redevelopment and planning process communication among all parties is critical throughout the process. Community involvement is key to the successful revitalization of these sites. In the instance of the reuse of BRAC properties, the LRA provides a crucial role in the planning, zoning and permitting process and the overall redevelopment of the property.

Environmental Considerations

Redevelopment of BRAC and brownfield sites requires a thorough assessment of environmental conditions on a property. This includes the completion of an environmental assessment that adequately summarizes past and current uses and characterizes current site conditions with respect to environmental impact. This information is an integral part in the reuse planning and redevelopment of the property that incorporates human health and environmental concerns.

BRAC installation and brownfield properties may contain similar types of contaminants for which similar remedies may be used to clean up sites. In addition, depending on the reuse scenario, tools such as deed notices, and/or deed restrictions may be used to address residual contamination and changes in reuse. BRAC and brownfield sites are governed by many of the same regulatory requirements and programs. The goal to address contamination at either property is to characterize pollution on-site and take the appropriate remedial action to allow for the reuse of the property while protecting human health and the environment.

BRAC and brownfield properties can be successfully remediated through the use of innovative technologies, presumptive remedies, institutional and engineering controls, and other instruments that can be implemented to address contamination and ensure the safe reuse of the property.

Liability, Economic and Social Issues

Liability, economic and social considerations are important issues that impact the overall cleanup and redevelopment of both BRAC and brownfield properties. Sites will be affected to different degrees by these issues, but all of them need to be evaluated for a successful project to be completed. Competing interests including developer's reuse goals, the community's reuse goals, and the cleanup and liability issues associated with the reuse, must be balanced to ensure that an appropriate reuse of the property can occur in a timely and efficient manner.

Solutions and Techniques

There are many solutions and techniques that can be implemented to address many of the concerns surrounding the reuse of a contaminated property. Liability, environmental, economic and social issues are potentially significant issues that need to be addressed in regards to completing a successful BRAC and brownfield cleanup and redevelopment effort. The federal government and most states provide varying levels of liability protection and relief through various regulatory programs to promote redevelopment. Likewise, federal and state governments provide a variety of financial and technical assistance incentives to promote the cleanup and redevelopment of these sites. The initiatives that are offered vary in terms of applicability and specific use of funds. Leveraging these many incentives can assist in making a redevelopment effort a reality.

A quick guide to some of the available assistance that can be applied to a BRAC installation or brownfield site reuse effort are identified in Table 3.

Table 3. BRAC and Brownfield site reuse assistance

Impediment	BRAC Program	Brownfield Program	Available Incentives
Environmental contamination	<ul style="list-style-type: none"> • Presumptive remedies • Institutional controls • Engineering controls • Innovative technologies • DoD completes cleanup • Risk-based corrective action • Early transfer/ privatization 	<ul style="list-style-type: none"> • Institutional controls • Engineering controls • Innovative technologies • State voluntary cleanup program • Risk-based corrective action 	<ul style="list-style-type: none"> • EPA assessment grant (brownfields only) • EPA brownfield cleanup and revolving loan fund (brownfield only) • EPA cleanup grant (brownfields only) • Federal tax incentives • Insurance
Location of the installation/ property	<ul style="list-style-type: none"> • Use of easements • Evaluate access • Public utilities • Property configuration • Property characteristics • Assemble neighboring properties • Zoning • Property value 	<ul style="list-style-type: none"> • Use of easements • Evaluate access • Public utilities • Property configuration • Property characteristics • Assemble neighboring properties • Zoning • Property value 	<ul style="list-style-type: none"> • Local tax incentives • Tax increment financing • Tax-abatement programs • Low-income housing tax credits
Community perception	<ul style="list-style-type: none"> • LRA • Local involvement • RAB • Visioning • Market studies • Preapplication meetings • Site plans and approval • Financing • Local permits • Zoning 	<ul style="list-style-type: none"> • Local involvement • Visioning • Market studies • Preapplication meetings • Site plans and approval • Financing • Local permits • Zoning 	<ul style="list-style-type: none"> • Community Adjustment Grants (BRAC) • Technical Assistance Public Participation (TAPP) grants
Future liability	<ul style="list-style-type: none"> • Environmental services Cooperative agreement • DoD maintains liability 	<ul style="list-style-type: none"> • State liability relief program • Covenant not to sue 	<ul style="list-style-type: none"> • Environmental insurance

Impediment	BRAC Program	Brownfield Program	Available Incentives
Community and reuse plans	<ul style="list-style-type: none"> • LRA • Local involvement • RAB • Visioning • Market studies • Preapplication meetings • Site plans and approval • Financing • Local permits • Zoning 	<ul style="list-style-type: none"> • Local involvement • Visioning • Market studies • Preapplication meetings • Site plans and approval • Financing • Local permits • Zoning 	<ul style="list-style-type: none"> • Community economic planning assistance (BRAC) • Joint land use studies (BRAC) • Community base reuse plan grant (BRAC) • Community economic adjustment assistance for advanced planning (BRAC) • State planning grants (brownfields)
Competing political and economic interests	<ul style="list-style-type: none"> • Land use laws • Zoning • Planning • Subdivision of property • Interim leasing • Native American population • Environmental justice 	<ul style="list-style-type: none"> • Land use laws • Zoning • Planning • Subdivision of property • Native American population • Environmental justice 	<ul style="list-style-type: none"> • EPA job training grants • Community economic adjustment planning assistance for reduction in defense industry—employment (BRAC)
Infrastructure investment	<ul style="list-style-type: none"> • Update existing infrastructure • Public utility 	<ul style="list-style-type: none"> • Update existing infrastructure • Public utility 	<ul style="list-style-type: none"> • U.S. Department of Transportation • State department of transportation • U.S. Department of Commerce

9. REFERENCES

- ASTM (ASTM International). 2000. *Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process*. E1527-00.
- ASTM. 2005. *Standard Practice for Conducting Environmental Baseline Surveys*. D6008-96(2005).
- Cuyahoga County Planning Commission. 1998. *Brownfield Information and Resource Guidebook: A Resource Manual for Developing Brownfields in Cuyahoga County*.
- Defense Environmental Restoration Program Annual Report to Congress, FY 2002. (http://63.88.245.60/Derparc_FY02/DERP/DERP_report.htm)
- Department of Toxic Substances Control, California Environmental Protection Agency. *California Military Base Reuse*.
- DoD (U.S. Department of Defense. 1995a. *Closing Bases Right: A Commander's Handbook*. Office of the Assistant Secretary of Defense for Economic Security.
- DoD. 1995b. *Community Guide to Base Reuse*. Office of the Assistant Secretary of Defense for Economic Security.
- DoD. 2001. *Fiscal Year 2001 BRAC Environmental Restoration Analysis* (https://www.denix.osd.mil/denix/Public/Library/Cleanup/CleanupOfc/Documents/BRAC/FY01_BCPAbstractAnalysis_final.pdf).
- DoD. 2004. *A Guide to ETA to Dispose of Surplus Property*.
- DoD. 2005. *Economic Transition of BRAC Sites*. Office of Economic Adjustment.
- Economic and Planning Systems, Inc. 1999. *Use of Master Developers in Implementing Military Base Reuse Plans*.
- EPA (U.S. Environmental Protection Agency). 1993. *Presumptive Remedies: Policy and Procedures*. Directive 9355.0-47FS. Office of Solid Waste and Emergency Response.

- EPA. 1996. *Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills*. Directive No. 9355.0-67FS. Office of Solid Waste and Emergency Response.
- EPA. 1997. *Clean Up the Nation's Waste Sites: Markets and Technology Trends*. Office of Solid Waste and Emergency Response.
- EPA. 1998. *Perchlorate Environmental Contamination: Toxicological Review and Risk Characterization Based on Emerging Information*. Office of Research and Development.
- EPA. 1999. *Road Map to Understanding Innovative Treatment Options for Brownfield Investigation and Cleanup*, 2nd ed. EPA 542-F-99-032. Office of Solid Waste and Emergency Response.
- EPA. 2000a. *Assessing Contractor Capabilities for Streamlined Site Investigations*. EPA 542-R-00-001. Office of Solid Waste and Emergency Response.
- EPA. 2000b. *Innovative Treatment Technology Developer's Guide to Support Services*, 4th ed. EPA 542-B-99008. Office of Solid Waste and Emergency Response.
- EPA. 2000b. *Site Remediation Technology InfoBase: A Guide to Federal Programs, Information Resources, and Publications on Contaminated Site Cleanup Technologies*, 2nd ed. USEPA 542-B-00-005.
- EPA. 2001a. *Brownfields Technology Primer: Requesting and Evaluating Proposals that Encourage Innovative Technologies for Investigation and Cleanup*. USEPA 542-R01-005. Office of Solid Waste and Emergency Response.
- EPA. 2001b. *Perchlorate Overview*. Office of Groundwater and Drinking Water (www USEPA.gov/ogwdw000/ccl/perchlo.html).
- EPA. 2002a. *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* (Subsurface Vapor Intrusion Guidance). Office of Solid Waste and Emergency Response.
- EPA. 2002b. *Innovative Remediation and Site Characterization Technologies Resources* (CD-ROM). EPA 542-C-02-002. Office of Solid Waste and Emergency Response.
- EPA. 2004b. *Overview of Primary Environmental Regulations Pertinent to BRAC Cleanup Plan Development: Appendix A*.
- EPA. 2004c. *Substantial Progress Made, but Further Actions Needed in Implementing Brownfields Program*, Report 2004-P-0020. Evaluation Report, Office of Inspector General.
- EPA. 2004d. *United States and Germany Bilateral Working Group on Revitalization of Potentially Contaminated Sites: Site-Specific Management Approaches and Revitalization Tools, SMART Resource* (DRAFT). Cincinnati: Office of Research and Development.
- EPA. 2005a. *Brownfield Federal Programs Guide*. EPA-560-F-05-230. Office of Solid Waste and Emergency Response (www.epa.gov/brownfields/partners/2005_fpg.pdf).
- EPA. 2005b. "Environmental Justice" (www.epa.gov/compliance/basics/ejbackground.html).
- EPA Environmental Financial Advisory Board. 1997. *Expediting Cleanup and Redevelopment of Brownfields: Addressing the Major Barriers to Private Sector Involvement—Real or Perceived*. Letter to Administrator Browner from Robert O. Lenna, Chair (www.epa.gov/efinpage/efab/brncle.pdf).
- EPA and ITRC. 2004. *Site-Specific Management Approaches and Revitalization Tools (SMARTe Resource DRAFT)*.
- GAO (U.S. General Accountability Office). 2002. *Military Base Closures: Progress in Completing Actions from Prior Realignments and Closures*. GAO-02-433.
- GAO. 2005. *Military Base Closures: Updated Status of Prior Base Realignment and Closures*. GAO-05-138.

- GSA (U.S. General Services Administration). 1994a. *GSA Handbook Appraisal of Excess and Surplus Real Property*. PRM P 1005.1A.
- GSA 1994b. *GSA Handbook of Excess and Surplus Real Property*. PBS P 4000.1.
- Hayworth, J. A. and M. Anderson. 2000. “Innovative Remediation Technologies in Military Applications.” Brownfields 2000. Available on the Internet at www.brownfields2002.org/proceedings2000/1-18h.pdf
- ICMA (International City/County Management Association). 2000. *Practice of Local Government Planning*, 3rd ed., C. J. Hoch, L. C. Dalton, and F. So, eds.
- ITRC (Interstate Technology & Regulatory Council). 2002. *A Systematic Approach to Bioremediation: Including Decision Trees for Nitrate, Carbon Tetrachloride and Perchlorate*. ISB-8. Washington, D.C.: Interstate Technology & Regulatory Council, In Situ Bioremediation Team. Available on the Internet at www.itrcweb.org.
- ITRC. 2003a. *Technical and Regulatory Guidance for the Triad Approach: A New Paradigm for Environmental Project Management*. SCM-2. Washington, D.C.: Interstate Technology & Regulatory Council, Sampling, Characterization, and Monitoring Team. Available on the Internet at www.itrcweb.org.
- ITRC. 2003b. *Vapor Intrusion Issues at Brownfields Sites*. BRNFLD-1. Washington, D.C.: Interstate Technology & Regulatory Council, Brownfields Team. Available on the Internet at www.itrcweb.org.
- Kovalcik, J. P., and P. A. B. Newman. 2001. “The Role of Guaranteed Fixed Price Remediation Contracting in Brownfield Redevelopment.” EPA Brownfields Conference 2001. Available on the Internet at www.brownfields2002.org/proceedings2001/POS-14.pdf
- Massachusetts Institute of Technology Military Base Redevelopment Project. 2000. *From Barracks to Business*.
- Miles, D. 2005. “BRAC Deadline Expires: DoD to Begin Closures, Realignments,” *Defense LINK News*, American Forces Information Services (www.dod.mil/news/Nov2005/20051109_3280.html).
- NALGEP and the Northeast-Midwest Institute. 2004. *Unlocking Brownfields: Keys to Community Revitalization*.
- New York Lawyers for the Public Interest. 2000. *Brownfields Basics, A Guide to Rebuilding our Communities: A Project of New York Lawyers for the Public Interest*.
- Northeast-Midwest Institute. 2003. *The Role of the U.S. Army Corps of Engineers in Brownfield Redevelopment*.
- Northeast-Midwest Institute. 2004. *Base Closings and Military Presence in the Northeast Midwest: The Nation’s Unguarded Region*.
- Office of the Secretary of Defense. 2004. *Base Realignment and Closure Frequently Asked Questions*. August 23.
- Ring, A. A. 1972. *Real Estate Principles and Practices*, 7th ed. Englewood Cliffs, N.J.: Prentice Hall.
- U.S. Army. 2005. *Leaders Guide to Environmental Public Involvement*. Army Public Involvement Toolbox (www.asaie.army.mil/pitoolbox).
- U.S. Navy. 2001. *Information Resource for Early Transfer of Federal Facilities*, 3 vols.
- U.S. Navy. 2002. *Environmental Cleanup of Navy Facilities: Adaptive Site Management*.

Appendix A

Acronyms

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ACRONYMS

ARAR	applicable or relevant and appropriate requirements
ASTM	American Society for Testing and Materials
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BRAC	Base Realignment and Closure
CDBG	Community Development Block Grant
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CMI	RCRA Corrective Measures Implementation
CMS	RCRA Corrective Measure Study
DERP	Defense Environmental Restoration Program
DoD	U.S. Department of Defense
DSMOA	Defense and State Memorandum of Agreement
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EC	Enterprise Community
ECP	environmental condition of property
EDA	Economic Development Administration
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESCA	Environmental Services Cooperative Agreement
EZ	Empowerment Zone
FFA	Federal Facility Agreement
FMV	fair market value
FOSL	Finding of Suitability for Lease
FOSET	Finding of Suitability for Early Transfer
FOST	Finding of Suitability for Transfer
FRTR	Federal Remediation Technologies Roundtable
FS	Feasibility Study
FY	fiscal year
GAO	U.S. Government Accountability Office
GSA	U.S. General Services Administration
HUD	U.S. Department of Housing and Urban Development
IC	institutional control
ITRC	Interstate Technology & Regulatory Council
LIFO	lease in furtherance of conveyance
LRA	local redevelopment authority
LTS	long-term stewardship
MEC	munitions and explosives of concern
MOU	memorandum of understanding
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act of 1969

NPL	National Priorities List
OEA	Office of Economic Adjustment
OSRTI	(EPA) Office of Superfund Remediation and Technology Innovation
Pub. L.	Public Law
PCB	polychlorinated biphenyl
PILOT	payment in lieu of taxes
PRP	Potential Responsible Party
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
REIT	real estate investment trusts
RFA	RCRA Facility Assessment
RLF	revolving loan fund
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
TIF	tax increment financing
TSD	treatment, storage, and disposal
U.S.C.	United States Code
UXO	unexploded ordnance
VCP	voluntary cleanup program

Appendix B

Federal Financial Assistance Programs Applicable to Revitalization of Potentially Contaminated Sites

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FEDERAL FINANCIAL ASSISTANCE PROGRAMS APPLICABLE TO REVITALIZATION OF POTENTIALLY CONTAMINATED SITES

Program type	Program	Source for additional information*
Loans	EDA's Title IX (capital for local revolving loan funds)	http://www.eda.gov/xp/EDAPublic/InvestmentsGrants/Directives.xml
	HUD funds for locally determined Community Development Block Grants loans and "floats"	www.hud.gov/offices/cpd/communitydevelopment/programs/108/index.cfm
	EPA-capitalized brownfields cleanup revolving loan funds	www.USEPA.gov/brownfields/gdc.htm#bcrlfpg www.USEPA.gov/brownfields/pdf/causemmo.pdf
	SBA's micro loans	www.sba.gov/opc/pubs/fs68.html www.sba.gov/financing/sbaloan/microloans.html
	SBA's Section 504 development company debentures	www.sba.gov/financing/sbaloan/cdc504.html
	Clean Water State Revolving Loan Fund	www.USEPA.gov/owm/cwfinance/cwsrf/index.htm
	Drinking Water State Revolving Loan Fund	www.USEPA.gov/safewater/dwsrf.html
Loan guarantees	HUD's Section 108 loan guarantees	www.hud.gov/offices/cpd/communitydevelopment/programs/108/index.cfm
	Federal Home Loan Bank	www.fhlbanks.com
	SBA's Section 7(a) and Low-Doc programs	www.sba.gov/financing/sbaloan/7a.html
Grants	HUD's Brownfield Economic Development Initiative	www.hud.gov/offices/cpd/economicdevelopment/programs/bedi/index.cfm www.comcon.org/
	HUD's Community Development Block Grants (for projects locally determined)	www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm
	EPA assessment pilot grants transition guidance	www.USEPA.gov/swerosps/bf/pilot.htm www.USEPA.gov/brownfields/pilotlst.htm www.USEPA.gov/brownfields/html-doc/bcrlf-0.htm
	EDA Title I (public works) and Title IX (economic adjustment)	http://www.eda.gov/xp/EDAPublic/InvestmentsGrants/Directives.xml
	DOT (various system construction and rehabilitation programs)	www.fhwa.dot.gov/tea21/factsheets/index.htm

	DOT's transportation and community system preservation grant	www.fhwa.dot.gov/tea21/factsheets/t-c-sp.htm
	Army Corps of Engineers (cost-shared services)	www.usace.army.mil/military.html#FUSRAP www.nemw.org/CorpsBFredev.pdf
Equity capital	SBA's Small Business Investment Companies	www.sba.gov/INV/
Tax incentives and tax-exempt financing	Targeted expensing of cleanup costs	www.USEPA.gov/swerosps/bf/html-doc/btaxguid.htm
	Low-income housing tax credits	www.USEPA.gov/brownfields/html-doc/eligible.htm
	Industrial development bonds	www.USEPA.gov/swerosps/bf/html-doc/taxfact.htm
Tax-advantaged zones	HUD/USDA Empowerment Zones (various incentives)	www.hud.gov/offices/cpd/economicdevelopment/programs/index.cfm
	HUD/USDA Enterprise Communities (various incentives)	www.hud.gov/offices/cpd/economicdevelopment/programs/rc/index.cfm

Source: EPA/ITRC's SMARTe Resource.

*Reference Web sites validated on January 31, 2006.

ADDITIONAL FEDERAL ASSISTANCE PROGRAMS

EPA Assessment Grant Program	Assessment grants provide funding to inventory, characterize, and assess brownfields sites in grant recipient communities and conduct related planning and community involvement activities. Eligible entities may apply for up to \$200,000 to address sites contaminated by hazardous substances, pollutants, or contaminants (including hazardous substances comingled with petroleum) and up to \$200,000 to address sites contaminated by petroleum. Grant funds may not exceed \$400,000 per applicant unless a waiver is requested, which must be based on the anticipated level of contamination, size, or ownership status. Applicants may request a waiver of the \$200,000 limits up to \$350,000 for sites contaminated by hazardous substances, pollutants, or contaminants and up to \$350,000 to address sites contaminated by petroleum. Due to budget limitations, no entity may apply for funding assessment activities in excess of the \$700,000 as described above. The performance period for these grants generally will be two years, subject to extension with EPA approval.
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EPA Brownfields Cleanup Revolving Loan Fund Grant Program (BCRLF)	BCRLF grants provide funding for a grant recipient to capitalize a revolving loan fund and to provide subgrants to carry out cleanup activities at revitalization sites. An eligible entity may apply for up to \$1 million for an initial BCRLF grant. Proposals may be submitted by “coalitions,” or groups of eligible entities, to pool their revolving loan capitalization grant funds. The grant recipient must administer the grant, be accountable to EPA for proper expenditure of the funds, is the point of contact for the other coalition members and must use at least 60% of the awarded funds to capitalize an RLF. RLFs generally are used to provide no-interest or low-interest loans for site remediation and related activities. A BCRLF grant recipient also may use its funds to award up to 40% of awarded funds as subgrants not subject to repayment to other eligible entities, including nonprofit organizations, for site cleanups on sites owned by the subgrantee. A BCRLF award requires a 20% cost share, which may be in the form of a contribution of money, labor, material, or in-kind services for eligible and allowable costs (administrative costs are excluded). A BCRLF grant applicant may request a waiver of the 20% cost share requirement based on hardship. Repayment of the BCRLF is required.
EPA Cleanup Grant Program	Cleanup grants provide funding for eligible recipients to implement cleanup activities at brownfield redevelopment sites. An eligible entity may apply for up to \$200,000 per site. These funds may be used to address sites contaminated by petroleum and/or hazardous substances, pollutants, or contaminants. Cleanup grants require a 20% cost share, which may be in the form of a contribution of money, labor, material, or in-kind services for eligible and allowable costs. A cleanup grant applicant may request a waiver of the 20% cost share requirement based on hardship. An eligible entity must own the site by the time the grant is awarded for which it is requesting funding in order to qualify. A local government may use up to 10% of its grant funds for monitoring the health of potentially exposed populations and for monitoring and enforcement of any institutional control used to prevent human exposure from the site.
EPA Job Training Grant	The job training program helps to integrate training activities with brownfield redevelopment projects. This effort links the goal of encouraging site cleanup with that of training for jobs in the environmental field, including innovative treatment technologies, so people affected by brownfields can be trained to address them. Colleges, universities, community job training organizations, states and local governments, and Indian tribes are eligible to apply. Recipients can get up to \$200,000 to provide training for residents in communities impacted by brownfields.
Community Development Block Grants (CDBG)	This HUD program offers considerable potential resources to entitlement communities based on objective measures of community needs, extent of poverty, population, housing overcrowding, age of housing, and population growth lag in relationship to other metropolitan areas. Local communities have broad latitude in allocating these funds for specific purposes. HUD’s Section 108 loan guarantee program funds can be used for site clearance, property acquisition, infrastructure, rehabilitation, and removal of toxic contaminants at brownfield sites. CDBG funds can also be lent to private companies for economic development projects under some circumstances. Smaller cities with a population of fewer than 50,000 people, precluded from applying for funds directly to the federal government, may be eligible for funding through their state or an urban county. Communities that can demonstrate that previously awarded CDBG funds will not be needed in the near term may use their CDBG monies on an interim basis. This CDBG “float” can be used to finance short-term, low-interest construction financing for projects that create jobs. Any developer, nonprofit agency, or private company that can obtain an irrevocable letter of credit from a lender is eligible to apply for such financing. Proceeds may be used to pay all costs for the purchase of land and buildings, site and structural rehabilitation, new construction, and the financing of machinery and equipment.
Brownfield Economic Development Initiative (BEDI)	HUD’s BEDI grants are intended to improve the viability of projects financed with HUD’s Section 108 loan guarantee program. BEDI funds can be used for any activity also eligible under CDBG.

Low-Income Housing Tax Credits	These support revitalization of potentially contaminated sites redeveloped for residential purposes and are intended to attract and provide incentives to private developers and lenders.
U.S. Economic Development Administration (USEDA) Grants	USEDA provides grants to communities to support public works activities and industrial development and provide capital for locally run revolving loan funds to enhance business development activities in distressed areas.
U.S. Department of Transportation (USDOT) Funds	USDOT funds can be obtained to contribute to the revitalization of potentially contaminated sites in the following scenarios: (1) situations in which the revitalization site itself may be a transportation facility in need of upgrading, such as roads and rail yards; (2) sites where infrastructure improvements are needed to make them more marketable, typically by expanding access for vehicles, freight, or passengers; and (3) when part of the transportation solution is also part of the environmental solution, where roads, parking lots, and other transportation structures can be used as engineering control to limit exposure to site contaminants.
Federal Tax Initiatives	The Taxpayer Relief Act, originally signed into law in 1997, included a new tax incentive to spur the cleanup and revitalization of contaminated sites in distressed urban and rural areas. It was anticipated that the Brownfield Tax Incentive would help bring thousands of abandoned and underused industrial sites back into productive use and providing for neighborhood revitalization, job creation, and the restoration of hope in our nation's cities and distressed rural areas. The law required that those expenditures that increase the value or extend the useful life of a property or that adapt the property to a different use (including acquisition costs) can be capitalized; and, if the property is depreciable, that those expenditures are depreciated over time and not in the year in which the expenditures occur (as is the case with repair and maintenance expenditures). The tax incentive applies to properties that meet specified land use, contamination, and geographic requirements. Both rural and urban sites may qualify for the tax incentive. The original tax incentive expired December 31, 2003. An extension of the incentive was granted until December 2005.

Appendix C

BRAC and Brownfield Case Studies

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BRAC AND BROWNFIELD CASE STUDIES

[This appendix is located on the CD enclosed on the back cover of this document.]

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Appendix D

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