



Measuring Revitalization of Contaminated Properties in America's Communities: Past Accomplishments and Future Opportunities

**INTERIM FINAL
U.S. Environmental Protection Agency
Office of Solid Waste and Emergency Response
Land Revitalization Staff Office**

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“...EPA’s cleanup programs have set a national goal for returning formerly contaminated sites to long-term, sustainable, and productive uses.”

2003-2008 EPA Strategic Plan—Direction for the Future

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Disclaimer

This report is a work product of the Land Revitalization Staff Office and the Land Revitalization Outcomes and Benefits Workgroup. This report is intended to provide information to EPA management, program staff, and other stakeholders for their consideration and to inform and encourage discussion on the topic. The statements in this document do not constitute official Agency policy, do not represent an Agency-wide position, and are not binding on EPA or any other party.

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Acronyms and Abbreviations

ACRES	Assessment, Cleanup, & Redevelopment Exchange System
ASTSWMO	Association of State and Territorial Solid Waste Management Officials
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
DoD	Department of Defense
DoE	Department of Energy
ECOS	Environmental Council of the States
EI	Environmental Indicators
EOY	End of Year
EPA	United States Environmental Protection Agency
FFRRO	Federal Facilities Restoration and Reuse Office
FRS	Facility Registry System
FUDS	Formerly Used Defense Site
FY	Fiscal Year
GPRA	Government Performance and Results Act
ICMA	International City/County Management Association
ICR	Information Collection Request
ICs	Institutional Controls
IHW	Industrial and Hazardous Waste Corrective Action Program under the Texas Commission of Environmental Quality
NCEE	National Center for Environmental Economics
NFA	No Further Action
NPL	National Priorities List
NRCC	Texas Natural Resource Conservation Commission
O&M	Operation and Maintenance
OBCR	Office of Brownfields Cleanup and Redevelopment
OGC	Office of General Counsel
OH EPA	Ohio Environmental Protection Agency
OMB	Office of Management and Budget
OSRTI	Office of Superfund Remediation and Technology Innovation
OSW	Office of Solid Waste
OSWER	Office of Solid Waste and Emergency Response
OUST	Office of Underground Storage Tanks
PA DEP	Pennsylvania Department of Environmental Protection
PARMS	Policy and Regulatory Management Staff
PPA	Prospective Purchaser Agreement
RCRA	Resource Conservation and Recovery Act
RfR	Ready for Reuse (Determination)
RLF	Revolving Loan Fund

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ROD	Record of Decision
SAS	Superfund Alternative Sites
SURE	Superfund Redevelopment Database
TCEQ	Texas Commission on Environmental Quality
UST	Underground Storage Tanks
VAP	Voluntary Action Program
VCP	Voluntary Cleanup Program

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Executive Summary

This report provides information on and possible approaches to measuring revitalization in several cleanup programs within the U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response (OSWER)—specifically, the Brownfields, Federal Facilities, RCRA Corrective Action, Superfund, and Underground Storage Tank (UST) cleanup programs. This information is intended to help stakeholders—whether EPA and other federal, state, and tribal agencies or non-governmental and private sector organizations—better understand how these five OSWER cleanup programs are currently measuring revitalization, as well as the opportunities that may be available to develop new or improved ways of capturing cleanup and revitalization accomplishments. It is important to note that this report is intended primarily for informational purposes to further the discussion of performance measurement in the context of environmental cleanup programs.

The revitalization of contaminated properties in OSWER's cleanup programs, as well as EPA's ability to capture such accomplishments, are increasingly important topics for EPA. The reason for this is twofold. First, OSWER cleanup programs have made a commitment to support the appropriate beneficial use or reuse of previously contaminated land (either actual or perceived), and have made significant progress in accomplishing this goal. Second, federal programs need systematic approaches to communicate outcomes achieved for resources spent. To identify opportunities for improving how its cleanup programs measure and report revitalization accomplishments, OSWER formed the Land Revitalization Outcomes and Benefits Workgroup (the Workgroup) in 2004. This report is the culmination of the Workgroup's research and analysis and it presents:

- Why land revitalization is important and why measuring EPA's efforts in supporting revitalization is important. Section 1 of this report describes some of the reasons why land revitalization is important to communities and ecosystems. Real or perceived contamination can prevent communities from using land to support commercial, recreational, ecological, or other uses. This can contribute to urban sprawl and subsequent resource and quality-of-life impacts. Revitalization can result in higher levels of protection of human health and can support local land use planning trends. It can also bring ecological habitat enhancements, as well as economic and other benefits to communities. EPA is committed to supporting the productive use and reuse of previously contaminated properties, and measuring the performance of these efforts will help provide metrics for the Agency's programs in accomplishing revitalization goals and objectives.

- How the OSWER cleanup programs are currently measuring their revitalization activities and accomplishments. As Section 2 of this report demonstrates, EPA's cleanup programs are making substantial progress in developing revitalization performance measures. For example, the Brownfields, Superfund, and Federal Facilities programs are currently collecting and reporting information under the Government Performance and Results

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Act (GPRA) on the number of properties and acres of properties¹ that have land “ready for reuse.”² While these programs have only recently begun to collect and report these performance measures, the revitalization accomplishment data currently available serve as an early indication of the possibilities that revitalization measures hold for communicating EPA progress and accomplishments. For example, thousands of acres of land have been assessed or cleaned up and are either continuing to be used or are now ready to be reused. Hundreds of properties are being used productively for ecological, recreational, commercial, residential, and other purposes.

- Opportunities for new or enhanced approaches for measuring and characterizing revitalization accomplishments across OSWER cleanup programs. Section 3 presents a group of possible measures OSWER could use to better communicate revitalization-related information across its programs. The possible measures include: 1) number and acres of properties addressed by OSWER cleanup programs; 2) number and acres of properties determined protective for current and reasonably anticipated future uses; 3) status of use (e.g., vacant, continued use, reused, or planned reuse); and 4) type of use (e.g., industrial, commercial, greenspace, residential, and government). The purpose of presenting these possible measures is to promote and guide discussions toward systematic and, ideally, cross-programmatic approaches to capture OSWER’s revitalization accomplishments. Implementation of these measures could offer numerous benefits, including:
- ◆ Demonstrating and more clearly linking revitalization accomplishments to protection of human health and the environment;
 - ◆ Helping promote consistent performance measures across cleanup programs;
 - ◆ Creating the potential for EPA to express cleanup and assessment accomplishments in terms of acres and number of properties, providing for more flexible and understandable performance reporting;
 - ◆ Providing greater transparency and meeting the need to demonstrate outcome-oriented EPA program accomplishments to the Administration, Congress, and the general public; and
 - ◆ Providing the foundation for an “extent of contaminated lands” environmental indicator in support of EPA’s Report on the Environment (ROE).³

¹The terms “property” or “properties” are used in this report in a generic sense to succinctly capture the various ways in which OSWER programs describe geographic areas—potentially including land, surface water, and groundwater features—subject to assessment and/or cleanup (e.g., RCRA Facility, Superfund Site, Brownfields Property, etc.).

²More detailed discussion and a definition of the term “ready for reuse” are presented in section 2.2 of this report.

³For more information on ROE, see <http://www.epa.gov/indicators/abouteei.htm>.

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- Possible next steps for the successful development and implementation of new or enhanced revitalization measures. Section 4 of this report presents several activities that may be considered the “next steps” for exploring the viability of developing new and improved ways of measuring revitalization outcomes, including:
 - ◆ Conducting Pilot(s) to evaluate the viability of new/enhanced revitalization measures;
 - ◆ Assessing the state of contaminated lands in America’s communities;
 - ◆ Considering using revitalization measures to support development of an environmental indicator for the usability of contaminated land;
 - ◆ Exploring the opportunities and challenges of measuring the socio-economic Impacts resulting from the revitalization of properties; and
 - ◆ Exploring opportunities to engage the private sector in the development and implementation of revitalization measures.

Land is a finite resource that directly affects the health and vitality of America’s communities. With some estimates suggesting that there are several hundred thousand properties representing millions of acres of contaminated (or potentially contaminated) land in these communities, the need for increased efforts to consider the protective, sustainable, and beneficial uses and reuses of land is significant. EPA’s cleanup programs play an important role in revitalizing land by ensuring protectiveness through its site assessment and cleanup processes, as well as pursuing other activities that collectively promote protective, productive, and sustainable use or reuse of property. Measuring outcomes of these successes provides EPA and its partners an opportunity to demonstrate the progress that cleanup programs are making towards returning potentially contaminated or contaminated lands to America’s communities.

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1. Introduction

The revitalization of properties that are known or believed to be contaminated has been occurring for many years, but more recently these properties have received significant attention from government policy makers, special interest groups, private companies (including developers, financial institutions, insurance providers), and affected communities. There are many explanations for this increased interest, such as new federal and state brownfields laws and resources, new financial and risk management tools available in the market, desire to preserve greenspace, and cleanup programs with an expanding track record of proven revitalization successes. We are witnessing a growing trend in the revitalization of properties with real or perceived contamination and the positive impacts on communities and other stakeholders.

Ensuring sites are cleaned up to protect human health and the environment remains the primary objective of EPA's cleanup programs. However, EPA believes it also needs to consider revitalization to help ensure that the land remains protective of continued use/reuse of properties over the long term. EPA is one of many stakeholders who have a role and an interest in the sustainable and beneficial use, continued use, or reuse of contaminated properties. Ensuring that once-contaminated properties are protective for continued use or reuse often is a primary accomplishment of EPA cleanup programs. Consistent with its statutory and regulatory authorities, EPA also takes proactive steps to consider protective use or reuse of previously contaminated properties.⁴ To date, thousands of acres of land have been assessed and/or cleaned and determined protective for current and reasonably anticipated future uses, and hundreds of communities have reclaimed properties for ecological, recreational, commercial, residential and other productive purposes. Revitalizing these properties can provide numerous positive impacts for communities, such as removing blight, satisfying the growing demand for land, helping limit urban sprawl, fostering ecological habitat enhancements, enabling economic development, and maintaining or improving quality of life. With the emergence of revitalization as an important objective and outcome of the assessment and cleanup process, the need for cleanup programs to measure their performance and report accomplishments in terms related to the use or reuse of land is increasingly important.

“Revitalization”

In its broadest sense, “revitalization” means to impart new life, energy, or activity to something. In the context of contaminated or potentially contaminated properties, revitalization refers to actions taken to promote protective, productive, and sustainable use, continued use, or reuse of property. These revitalization actions can help to impart new life to properties, resulting in enhancements to America's communities and ecosystems.

Examples of actions that support land revitalization include: site assessment, cleanup, identification of possible future uses at idle properties, stakeholder involvement processes, actual construction associated with new or enhanced uses, and addressing liability concerns.

⁴For purposes of this report, considering “protective use of property” refers to ensuring that a property does not pose unacceptable risks to human health or the environment through either an investigation or cleanup action, including, where necessary, ongoing operating and maintenance of engineering and/or institutional controls.

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In 2004, OSWER's Land Revitalization Staff Office formed a workgroup of Headquarters and Regional staff across OSWER's cleanup programs, including the Brownfields, Superfund, RCRA Corrective Action, Underground Storage Tanks, and Federal Facilities programs.⁵ The objective of the Outcomes and Benefits Workgroup was to examine the opportunities and challenges that EPA faces in measuring and reporting revitalization accomplishments across these five OSWER cleanup programs. The Workgroup identified the various approaches that OSWER's cleanup programs currently use to measure their performance in supporting the revitalization of properties, and explored opportunities for developing new methods of measuring their impact on revitalization.

1.1 Purpose of Report

The purpose of this report is to present:

- EPA's efforts in measuring revitalization accomplishments (see Section 2);
- Opportunities for new or enhanced approaches for measuring and characterizing revitalization-related accomplishments across OSWER cleanup programs (see Section 3); and
- Possible next steps for planning and implementing new or enhanced revitalization measures (see Section 4).⁶

This report is intended to help stakeholders—whether from EPA and other federal, state, and tribal agencies, or non-governmental and private sector organizations—better understand how OSWER's cleanup programs are currently measuring revitalization, and the opportunities that may be available to develop new or improved ways of capturing revitalization accomplishments. For example, this report may be informative for managers and staff in environmental cleanup programs—including those programs represented in this report, other Agency “cleanup” programs (e.g., solid waste management, water, toxics and pesticides programs, etc.), and other federal and state cleanup programs—who are considering developing or enhancing their own revitalization performance measures.

The summary of activities in this report acknowledges the tremendous effort and contributions of EPA's programs, while recognizing that measuring revitalization accomplishments is relatively new and still evolving. For some programs, the development of revitalization performance measures has only recently been undertaken, and revitalization accomplishment data are only now being compiled. For other programs, revitalization measures are being considered, but have not yet been fully developed or implemented.

⁵Descriptions of these cleanup programs, along with an OSWER organizational chart, is provided in **Appendix A**.

⁶Appendix B provides the cover letter to the August draft of this report. The cover letter conveyed management's expectation for at least one cross-program revitalization measure to be implemented in FY2007.

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This report also provides possible approaches for the development of new or enhanced measures that would capture a broader array of OSWER's revitalization accomplishments. Specifically, this report presents an analysis of cross-program measures that would capture information to help OSWER communicate its revitalization-related accomplishments. By opening a dialogue on new measures, this report presents an opportunity for OSWER programs to consider new ways of expressing program outcomes that integrate cleanup and revitalization.

Though its focus is revitalization, this report recognizes that land, water, and air resources are interconnected and that revitalization of a geographic area often requires assessment and cleanup of more than just soil (e.g., groundwater, surface water, sediment). The report notes that revitalization can occur where land is cleaned up, as well as where site assessment indicates that land can be used for a designated purpose without cleanup. It also notes that revitalization can occur where land is vacant prior to assessment and cleanup, and where land continues to be used throughout the cleanup process.

The report recognizes that assessment and cleanup (where necessary) by themselves provide revitalization benefits (e.g., reducing uncertainty); whereas in other situations, assessment and cleanup are just the first of many steps toward revitalization. For land where no new use is planned, revitalization is accomplished when site assessment confirms that the land is protective for its current use or cleanup helps ensure that the land will remain protective of its current use over the long-term. Where land is to be redeveloped or reused, assessment and cleanup may confirm the land to be protective for use, but may be only the first of many steps in returning the land to productive use. Other actions, including for example, actions by the Office of Enforcement and Compliance Assurance (OECA) to address prospective purchaser liability, build on the potential created by site assessment and cleanup. The report defines revitalization in a way that addresses not only the revitalization outcomes achieved through site assessment and cleanup, but also those achieved through considering new land uses.

It is important to note that the Workgroup does not intend to be prescriptive in presenting opportunities for new or improved performance measures; rather, it hopes to provide OSWER program managers (and other federal and state cleanup program managers) with information to consider and use in exploring whether and how such measures could be used in the context of their programs.

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1.2 Why Revitalization is Important

The following provides a few of the notable reasons why revitalization of contaminated (actual or perceived) properties is important, and why EPA is committed to supporting revitalization as an outcome of the assessment and cleanup process.

- ***Revitalization can help reduce the amount of land that has not been returned to protective, productive uses.*** Given the vastness of the U.S., we often fail to recognize that land is a valuable and finite resource, which may lead to the perception that contaminated land may be undervalued as there is always an opportunity to develop clean or undeveloped land. However, when one considers the magnitude of actual or perceived contaminated properties—both in terms of the total area of land and their locations—one quickly realizes the opportunity to reclaim properties that might otherwise end up being fenced off and abandoned. For example, although highly accurate data on the number and size of contaminated properties in the U.S. is not currently available, some estimates suggest that there are hundreds of thousands of properties representing millions of acres of contaminated or potentially contaminated land, the equivalent of a medium-sized state. This potentially contaminated land may currently be vacant, or there may be industrial activities that continue to operate. This is land that communities often need to continue to use, or may need to support new commercial, recreational, ecological, or other needs. Moreover, in situations where barriers exist for continued use or reuse, developers turn to open space, which has contributed to urban sprawl, resource demands for expanded infrastructure, and a variety of quality-of-life and environmental impacts.

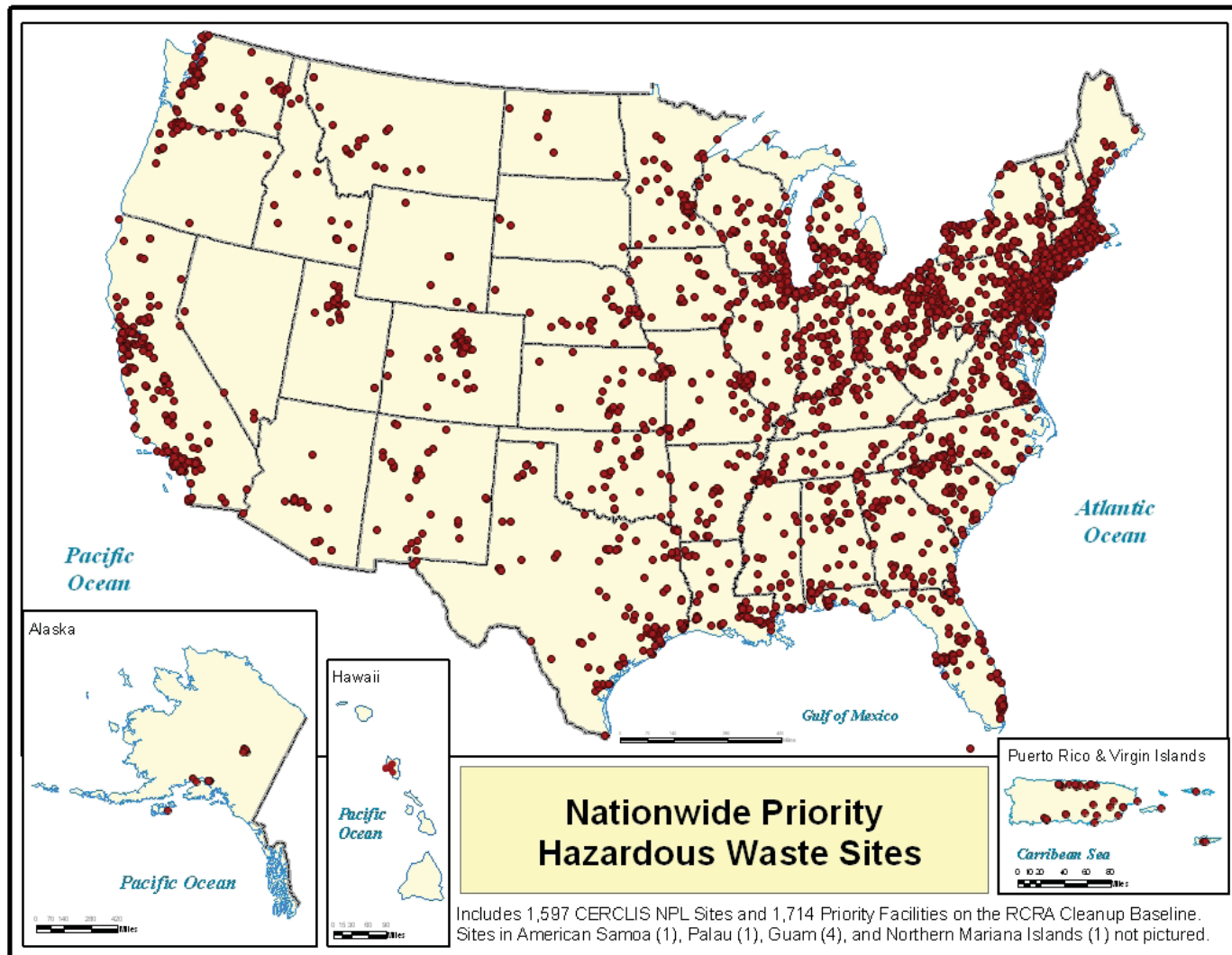
To illustrate the number of properties and the fact that they are located in communities across the U.S., **Exhibit 1-1** provides a national map of priority hazardous waste sites, and **Exhibits 1-2** and **1-3** provide maps of two localities that show the abundance of properties that are too numerous to present on the national level map.⁷ In addition, **Exhibit 1-4** graphically presents estimates of the number of properties nationwide considered by the Brownfields, RCRA, UST, Superfund, and Federal Facilities programs.⁸ These estimates are intended to provide an overall sense of the scale of the number of contaminated or potentially contaminated properties in the U.S., and the possible opportunities that exist for revitalizing this land. To further understand the magnitude of contaminated properties (real or perceived), Section 4 of this report identifies additional activities that could be undertaken to systematically develop a robust baseline of the amount of contaminated land in the United States.

⁷These maps include sites that either are still contaminated or were contaminated but have been cleaned up and in some instances reused. Thus, these maps should not be interpreted to represent the total number of contaminated sites existing today.

⁸The data presented in Exhibit 1-4 are general estimates based on available data about contaminated properties; EPA recognizes that various data quality and accuracy issues may exist.

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Exhibit 1-1 – National Map of Priority Hazardous Waste Sites⁹



⁹Data obtained from CERCLIS and RCRAinfo, January 26, 2005. Sites on this map include EPA priority hazardous waste sites that EPA and/or state partners have already addressed or are in the process of addressing.

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Exhibit 1-2 – Sites in Morris County New Jersey¹⁰

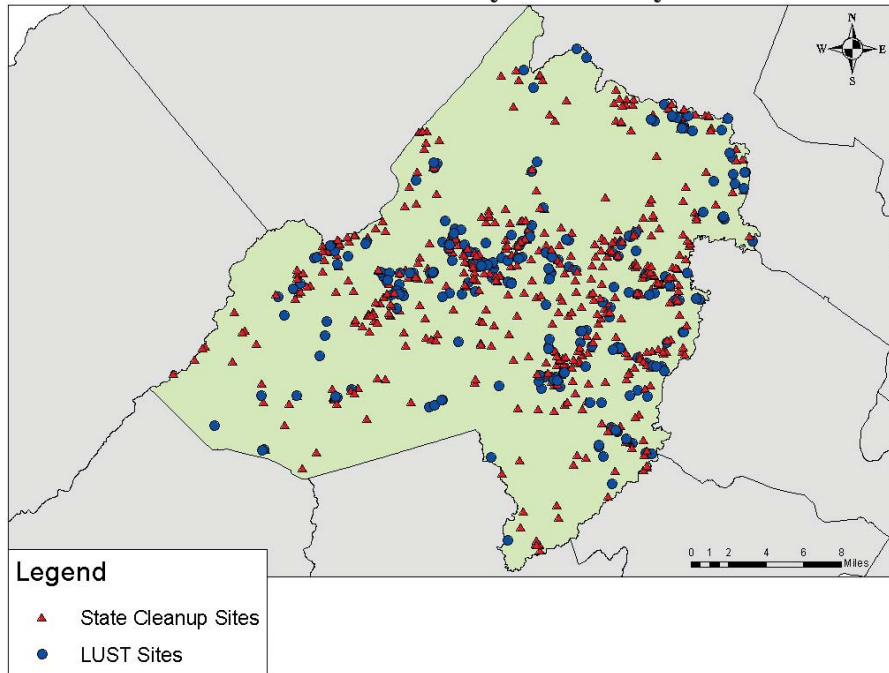
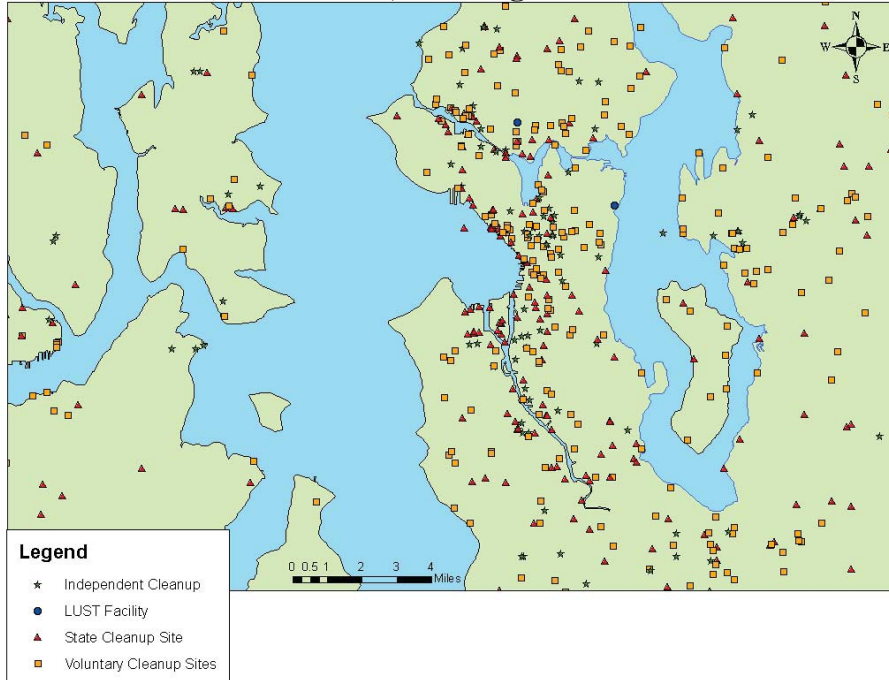


Exhibit 1-3 – Sites in Seattle, Washington¹¹

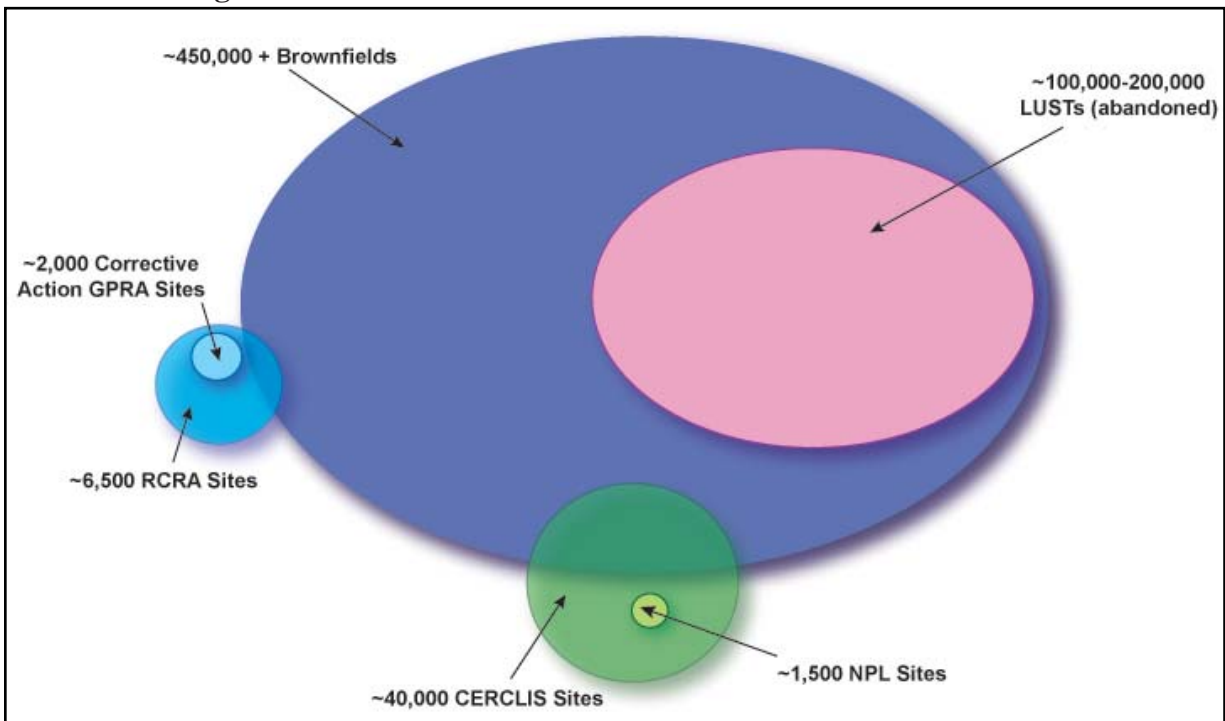


¹⁰Map includes 508 state cleanup sites and 236 LUST sites. Data obtained from the New Jersey Department of Environmental Protection website (<http://www.state.nj.us/dep/gis/stateshp.html#KCSL2001>), March 25, 2005.

¹¹Map includes 83 independent cleanup sites, 2 LUST sites, 195 state cleanup sites, and 243 voluntary cleanup sites. Data obtained from the Washington Department of Ecology website (<http://www.ecy.wa.gov/services/gis/data/data.htm>), March 25, 2005.

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Exhibit 1-4 – Universe of Contaminated or Potentially Contaminated Properties Related to OSWER Programs¹²



- ❑ **Revitalization can result in higher levels of protection.** When potential new uses of a property are identified (e.g., when contaminated properties are included, not overlooked, in community planning decisions), landowners may take measures to attain more stringent cleanup levels that support its future use (and result in a more marketable property). Similarly, landowners may undertake additional measures that may further reduce the risk of exposure to contaminants, such as making a cover system thicker to support a building foundation or adding a layer of asphalt for a parking lot. Furthermore, because there is typically increased presence on properties in use, the monitoring and maintenance of a remedy may also improve, and situations at vacant properties where trespassers can damage a remedy (e.g., riding all-terrain vehicles on a protective cap), or illegally dump new waste may be avoided.
- ❑ **Revitalization (especially associated with property reuse) can increase the pace of assessment and cleanup related activities.** Initiating and completing assessments and cleanups at contaminated properties can take years or even decades. The slow pace is caused by many factors including, for example, limited resources by federal and state cleanup programs (often resulting in less attention to lower-risk properties), high costs

¹²The diagram is intended to display the EPA estimated universe of contaminated or potentially contaminated properties. A larger universe of non-EPA contaminated or potentially contaminated lands (e.g., abandoned mine lands on Bureau of Lands Management lands, etc.) is not represented in this diagram. The diagram also illustrates how some OSWER properties may be addressed by more than one OSWER program. For example, the LUST properties may be part of the larger brownfields universe. Additionally, out of the estimated 450,000 brownfields sites, EPA's focus has been on approximately 502 grants that have been awarded through the Brownfields program.

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for investigation and cleanup activities, limited resources of parties responsible for the contamination, and legal disputes. Experiences around the country have shown that private, and public interest in reusing contaminated properties provides resources for making assessment and cleanup happen faster than would likely have occurred without such reuse interest, without compromising protectiveness.

- ***Revitalization can bring economic and other benefits, including ecological habitat enhancements, to communities.*** Vacant properties that have been investigated and/or cleaned up, and those that remain in use throughout the investigation and/or cleanup process, provide many benefits to the communities affected by those properties. Communities benefit from the positive economic impacts that result from the new or continued industrial or commercial operations that occur at many of the properties, through new employment opportunities or by avoiding the movement of jobs to other communities. Communities also enjoy economic, social, and environmental benefits from the variety of new uses, such as recreational, ecological habitat enhancement, residential, public service, and agricultural purposes. Whether through new or continued use of formerly contaminated properties, revitalization can result in an increase in employment opportunities, income and spending, tax revenues, and property values on both the property and surrounding properties. Revitalization of properties may reduce or eliminate many of the negative impacts of abandoned properties, such as blight and crime, and in many cases, serve as a catalyst for the revitalization of the surrounding area. **Exhibits 1-5 through 1-8** provide examples of revitalized properties that are now bringing benefits to surrounding communities.

- ***Revitalization can support local land use planning trends.*** Communities today are seeking alternative approaches to their development and growth to limit urban sprawl and improve their quality of life. Continuing to use properties or reusing vacant properties represents infill development, which may reduce additional greenfield development at the urban periphery and takes advantage of existing infrastructure. Such land use trends can also have a positive impact on environmental quality, such as reducing carbon dioxide emissions due to less traffic and shorter commutes, and greater carbon sequestration from preserved trees and vegetation. Capturing the potential benefits resulting from revitalization is one of several next steps identified in Section 4 of this report.

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Exhibit 1-5



Cape Charles, VA - A 25-acre, former junkyard is now the center of a new 200-acre eco-industrial park.¹³ The park includes a building with a solar electric roof system, and surrounding wetlands to serve as a natural landscaping enhancement. Nearly one-half of the land in the park is set aside as natural habitat, including a 30-acre Coastal Dune Natural Area Preserve and approximately 60 acres of other natural areas.

Exhibit 1-6



Industri-Plex Site - Woburn, MA - Cleanup and redevelopment of the Industrial-Plex Superfund Site have resulted in a regional transportation center, major retail space, open space and wetlands.¹⁴ Redevelopment of the site is expected to result in as many as 4,300 permanent jobs, approximately \$147 million in annual income, more than \$13 million in state income and sales tax associated with spending and more than \$1.5 million in state retail sales taxes annually.

Exhibit 1-7



Salt Lake City, UT - Railroad lines once webbed across contaminated brownfields, but revitalization of a 30-acre portion of Salt Lake City's neglected west side is expected to generate \$20 million annually in retail sales and taxes, contribute \$5 million to Salt Lake City's revenue and leverage approximately 7,300 new jobs.¹⁵ The master plan for the redevelopment of the Gateway District includes 10,000 new residential units, cultural facilities, commercial developments, and a transportation hub that will link bus, light rail, and commuter rail systems.

¹³For more information go to http://www.epa.gov/reg3hwmd/bfs/success/VA-cape_charles-dec.htm

¹⁴For more information go to <http://www.epa.gov/superfund/programs/recycle/success/casestud/iplxcsi.htm>.

¹⁵For more information go to <http://www.epa.gov/swerosps/bf/success/saltlake.pdf>.

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Exhibit 1-8



Boston, MA - The former Watertown Arsenal (just 5 miles west of Boston, MA), was home to small arms storage, ammunition production, weapons testing, and nuclear research prior to base closure in 1995.¹⁶ The site was added to the NPL in 1994. Redevelopment of the site includes athletic fields, an ice rink, childcare facilities, restaurants, retail, and walking and biking trails. Cleanup and reuse of the site has generated approximately 2,000 new jobs for the area. Great care was taken to preserve the historic architecture of the brick buildings while modernizing them with features such as fiber optic cable for Internet access.

1.3 EPA's Role in Supporting the Productive Use of Contaminated Properties

EPA recognized many years ago the important role it plays in helping communities to reclaim contaminated properties. As such, EPA has worked with the Brownfields, Superfund, RCRA Corrective Action, UST, and Federal Facilities programs, along with the Office of Enforcement and Compliance Assurance, to specifically support the revitalization of properties following, or in conjunction with, their assessment or cleanup. Prior to EPA's more formal programs and initiatives that actively support revitalization, continued use and reuse of contaminated properties occurred on a case-by-case basis. By the early 1990s, EPA began to understand the role it could play in supporting revitalization and began taking proactive steps on a programmatic level to help communities return underutilized contaminated properties to productive use. **Exhibit 1-9** provides an historic timeline of key highlights in EPA's support of revitalization. Note that this timeline is intended to provide an overview and is not inclusive of all milestones

Once an environmental concern is identified with a property, EPA or a state cleanup program may become involved in assessing the property to determine whether, and to what extent, the property is contaminated and to ensure cleanups are implemented as necessary to protect human health and the environment. Assessments are important for addressing the stigma often associated with contaminated property (real or perceived), which can arise due to the lack of accurate information about property conditions. Stigma about a property is often in itself a major obstacle to revitalization. With improved information about the environmental condition of a property, developers and others can make informed real estate decisions. At properties with known contamination, EPA and/or state programs may conduct, oversee, or otherwise support cleanup activities. The quality and efficiency of a cleanup has a direct impact on whether and how a property can be used in the future. Increasingly, EPA has seen the benefit of considering reasonably anticipated future land use (which may include local land use plans) into the cleanup decision making, planning, and implementation process.

¹⁶For more information, reference <http://www.epa.gov/NE/pr/2005/oct/sr051011.html>

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Exhibit 1-9: EPA Land Revitalization Highlights

- 1993** - First Brownfields Assessment Demonstration Pilot awarded
 - BRAC legislative action
- 1994** - First formal agreement with DoD, ensuring EPA participation in cleanup and reuse of
 - BRAC properties
 - FFRRO established to manage cleanup and promote the reuse of contaminated federal properties
- 1995** - Brownfields Action Agenda announced
 - CERCLA Land Use guidance and CERCLA Prospective Purchaser guidance issued
 - First National Brownfields Conference
 - BRAC legislative action
- 1996** - Brownfields Federal Interagency Working Group formed
 - The "Asset Conservation, Lender Liability, and Deposit Insurance Protection Act of 1996" is enacted
 - Comfort Letter guidance issued
 - FFRRO Fast Track Guidance set up BRAC Cleanup Teams (consisting of DoD, EPA, and state/tribe) to facilitate faster cleanup, transfer, and ultimate reuse of property
- 1997** - First 24 Brownfields Cleanup Revolving Loan Fund Pilots awarded
 - Brownfields National Partnership Action Agenda announced
 - Taxpayer Relief Act signed, creating the Federal Brownfields Tax Incentive
- 1998** - The Brownfields National Partnership names 16 Brownfields Showcase Communities
 - First 11 Brownfields Job Training Pilots awarded
 - RCRA Brownfields workgroup formed to address RCRA issues at brownfields
 - Supplemental environmental projects used to facilitate brownfields redevelopment
 - HWIR media rule promotes revitalization by speeding up cleanups
 - FFRRO begins providing annual grant money to ICMA to conduct research on the impacts of base closures on local governments
- 1999** - Superfund Redevelopment Initiative announced
 - First SRI reuse planning pilots awarded
 - Partnership agreement with U.S. Soccer Foundation supporting recreational reuse at Superfund sites
- 2000** - Regional Superfund Reuse Coordinators designated
 - First four RCRA Brownfield Prevention Pilots awarded
 - Comfort/status letters for RCRA Brownfields Properties developed
 - First USTfield pilot grants awarded to 10 State UST programs
 - Environmental Justice Action Agenda published
- 2001** - Directive on Reuse Assessments published
 - First round of RCRA Targeted Site Efforts awarded
- 2002** - New federal Brownfields legislation signed into law
 - MOU with U.S. Army Corps of Engineers launches Urban River Restoration Initiative
 - EPA Region 6/Oklahoma DEQ issue the first in the nation Ready for Reuse Determination (RCRA Corrective Action)
- 2003** - Guidance on implementing, monitoring, and enforcing institutional controls issued
 - Land Revitalization Agenda and Accomplishments announced
 - Land Revitalization Initiative launched
 - Interim Common Elements guidance explaining landowner exemptions liability protections released
 - EPA Region 6 finalizes its Ready for Reuse Program Implementation Guidance
 - First Superfund Ready for Reuse Determination signed for the Tex-Tin site in Texas
 - RCRA Completion guidance, RCRA Prospective Purchaser Agreement guidance released
 - OUST releases "Partnership Initiative For Reusing Petroleum Brownfields"
 - Privatization of cleanup at BRAC sites pilot projects
 - Environmental Justice Revitalization Pilots selected
 - Proposed rule setting all appropriate inquiry standards for Superfund liability relief published
- 2004** - Superfund Ready for Reuse Determination guidance published
 - Superfund Return to Use (RTU) Initiative and RTU demonstration sites announced
 - Multi-program Ready for Reuse Guiding Principles issued
 - Guidance for Documenting and Reporting the Superfund Revitalization Measures issued
- 2005** - Fifth round of BRAC legislative action
 - EPA releases smart growth and base reuse planning guidebook, "Turning Bases into Great Places: New Life for Closed Military Facilities"
- 2006** - Superfund Site-Wide Ready for Reuse Guidance Issued
 - Interim Guidance for EPA's BRAC Program issued, updating the 1996 EPA BRAC policy

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OSWER supports property revitalization, consistent with EPA's statutory and regulatory authorities, in a variety of ways, including: (1) promoting land revitalization by ensuring that reuse options are considered explicitly in the cleanup process; (2) committing the necessary resources to address revitalization as an important consideration in cleanup decisions; (3) developing new comprehensive policies and programs to address unintended cross-jurisdiction and cross-program barriers to the protective use and reuse of previously contaminated properties; (4) considering protective, long-term use and reuse of properties; (5) considering sustainable use and reuse to prevent re-contamination and indirect environmental problems that may result from some reuse (sustainable reuses include greenspaces, energy efficient buildings, smart growth community developments, and wildlife habitats); (6) developing and promoting a land revitalization research agenda that improves our understanding of and ability to use and reuse contaminated or potentially contaminated properties; (7) building partnerships to leverage knowledge, expertise, and resources in the revitalization of properties (including government-to-government partnerships at the local, state, tribal, and federal levels, as well as partnerships with non-government, private, and community organizations); (8) expanding community capabilities through improved public involvement tools and information systems on contamination, cleanup, and long-term stewardship; (9) expanding and promoting educational and training programs that encourage and provide needed tools to achieve land revitalization; and (10) promoting various approaches to measure and report the status and impacts of our collective efforts to revitalize.

Building on the accomplishments of EPA's cleanup programs, EPA embarked on an OSWER-wide initiative to revitalize land by ensuring contaminated and potentially contaminated properties are protective for use and reuse. The Land Revitalization Initiative emphasizes that cleanup and revitalization generally are mutually supportive goals and consideration of a property's use or anticipated reuse should be an integral part of cleanup decisions. In 2003, EPA created the Land Revitalization Agenda to integrate revitalization into EPA's cleanup programs, establish partnerships, and help make land revitalization part of EPA's organizational culture. By 2004, EPA had established the Land Revitalization Staff Office to work with and across EPA's cleanup programs and external partners to implement this initiative.

1.4 The Importance of Measuring Revitalization of Contaminated Properties

“To plan strategically, to adjust our approaches and activities to improve results, and to be able to report to the American people on our progress, EPA must routinely assess its performance and accomplishments.”¹⁷

2003-2008 EPA Strategic Plan—Direction for the Future

As EPA's Strategic Plan states, routinely measuring EPA's performance and accomplishments serves two fundamental purposes: (1) to report program progress and accomplishments to the public and other interested stakeholders; and (2) to evaluate program performance to improve planning and implementation. Specifically measuring revitalization accomplishments in EPA's cleanup programs can play an important part in fulfilling these objectives.

¹⁷See 2003-2008 EPA Strategic Plan—Direction for the Future, available at <http://www.epa.gov/ocfo/plan/2003sp.pdf>.

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Measuring revitalization presents new opportunities for OSWER cleanup programs to capture a broader array of the accomplishments resulting from the assessment and cleanup of properties, and may also improve how they report on environmental progress. Through the assessment and/or cleanup of properties under OSWER's cleanup programs, land is being revitalized, and can once again be used by communities and ecosystems in a sustainable, protective, and productive way. This measure of accomplishment for OSWER's cleanup programs is not currently being captured and reported to the public in a consistent or systematic way.

Moreover, as Section 3 of this report shows, measuring revitalization may provide a mechanism for presenting cleanup accomplishments in terms of properties and acres of land determined protective for current and reasonably anticipated uses. Much like the EPA water program's current use of "fishable, swimmable" waters, such a measure would convey that contamination concerns have been addressed and that the land can be used, while remaining protective of human health and the environment. This will present cleanup accomplishments in a way that is more meaningful to the public than simply reporting the number of properties cleaned up.

There is also the opportunity to use such outcome-oriented measures across all of OSWER's cleanup programs to present accomplishments in a comprehensive and consistent manner. Statements about land determined protective for use could be further bolstered when a property continues to be used or where there is a new use, further demonstrating EPA's (or a state's) accomplishments in improving the environmental condition of the property. Additional information about a property being used or reused could communicate the impact that cleanup has had on the community, such as its socio-economic impacts (including jobs, taxes, and property values).

In terms of the program evaluation objective, measuring status and type of land use would enable EPA's cleanup programs to better understand whether and how land is being used during or after it is assessed and cleaned up. Such measures could help EPA evaluate the

A Call for Improved Performance Measures

A recently issued report by the Government Accountability Office (GAO) examines the performance measures used by the Brownfields program. According to GAO, EPA needs to measure progress toward cleaning and redeveloping properties and to assess the extent to which the program achieves key outcomes, such as reducing environmental risks. Similarly, EPA's Inspector General found that the Brownfields performance measures do not demonstrate the program's contribution to reducing or controlling health and environmental risks. The report suggests the need for EPA to improve its performance measures to capture both the environmental and revitalization accomplishments of its cleanup programs. The Brownfields program has since developed a "ready for reuse" measure and is currently exploring other revitalization measures. (See Brownfield Redevelopment: Stakeholders Report—"EPA's Program Helps to Redevelop Sites, but Additional Measures Could Complement Agency Efforts" at <http://www.gao.gov/new.items/d0594.pdf>)

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impacts of revitalization efforts on cleanup performance (e.g., whether integrating revitalization concepts in the cleanup process helps encourage investment in redevelopment and speeds the pace of cleanup). Performance measures enable EPA to adjust its processes and activities so that it can reach its objectives. In doing so, measuring its performance allows EPA to plan and carry out its cleanup activities more strategically. For example, measuring revitalization could help the Agency to track and subsequently enhance the tools that it uses to support revitalization at properties. By establishing revitalization-related measures, EPA could also demonstrate the importance of revitalization and provide the necessary incentives to help make revitalization happen.

2. Existing Approaches to Measure Revitalization

“...Agency cleanup programs are developing ways to measure the number of sites ready for reuse and the area of land now in use or ready for reuse. Once in place, such measures of effectiveness can supplement or replace objectives, sub-objectives, and targets in future EPA strategic plans.”

2003-2008 EPA Strategic Plan—Direction for the Future

For over a decade, OSWER's cleanup programs have been collecting revitalization-related data either systematically or anecdotally. The type, quality, and consistency of the data collected depends on the cleanup program collecting it and its specific needs or characteristics. More recently, OSWER's cleanup programs are making substantial progress in developing revitalization-related performance measures. While these programs have only recently begun to implement these measures, the revitalization accomplishment data currently available serve as an early indication of the possibilities that revitalization-related measures hold for communicating the progress and accomplishments of EPA, as well as other federal and state, cleanup programs.

This section provides an overview of terms and efforts to track revitalization, followed by summaries of revitalization-related data for each OSWER program. This section concludes with examples of how several other federal and state agencies measure revitalization in the context of their programs.

2.1 Overview of Key Terms and Tracking Revitalization in OSWER Cleanup Programs

EPA and other federal and state cleanup programs may use the terms “reuse,” “redevelopment,” and “revitalization” to refer to the use of a property during and after an investigation and/or cleanup.¹⁸ However, there is a growing preference within OSWER to use the term “revitalization” because it captures accomplishments associated with properties regardless of how the property is being used (e.g., revitalization of an operating industrial facility in continued use can include improvements to ecologic habitats, recreational amenities, etc).

To date, most cleanup programs within OSWER have collected anecdotal information on sites that have been returned to use to inform stakeholders about the efforts being made and the possibilities and benefits of revitalization. The Superfund, RCRA Corrective Action, UST, Brownfields, and Federal Facilities programs each post property-specific revitalization success stories on their respective Web sites. Efforts to capture EPA's success in returning once contaminated land to productive use are evolving, and include more robust and systematic approaches to collecting land revitalization data. Several programs have been systematically collecting a range of land revitalization information for several years; these programs have

¹⁸For EPA's Brownfields program, “redevelopment” may include non-commercial uses (e.g., parks, wildlife refuges, nature trails, green spaces, or a non-profit community health care facility), as well as commercial or industrial uses (e.g., the expansion or remodeling of an existing manufacturing facility, or the construction of a new retail space) and residential and public purpose uses (e.g., a courthouse or public health clinic). **Appendix C** provides specific definitions of these revitalization-related terms used by the Superfund and Brownfields programs, as well as those used by Region 3 as part of their use/reuse Assessment Pilot project.

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also developed systematic processes to report this data to Congress and the public. Now that returning contaminated properties to environmental and economic vitality has become one of EPA's top priorities, it is becoming clear that tracking revitalization-related information is critical to measuring accomplishments. As a result, other programs within OSWER are currently considering approaches for capturing revitalization accomplishments.

Ready for Reuse: Tracking the Number of Sites and Acres of Land

“Ready for reuse” is a relatively new revitalization measure that is increasingly being used by some of OSWER's cleanup programs. As of FY 2005, EPA's Superfund and Brownfields programs were tracking ready for reuse GPRA performance measures.¹⁹ These performance measures generally capture the number of sites and number of acres that have either been investigated and require no further action or that have been cleaned up to meet site-specific cleanup goals.

Ready for Reuse Performance Measures vs. Ready for Reuse Determinations²⁰

It is important to note the distinction between ready for reuse performance measures and Ready for Reuse (RfR) Determinations.

Several EPA programs have established ready for reuse performance measures to capture an estimate of the number of sites and acres that have been evaluated and considered ready for reuse. The performance measures are an internal reporting mechanism that typically only require basic supporting documentation. Site-specific performance measure information is not typically provided to the public; rather, performance measure information is provided in the form of aggregate numbers of sites and acres that are ready for reuse.

On the other hand, an RfR Determination is a site-specific technical determination that allows EPA (or a State or Tribe) to inform stakeholders interested in reuse that a specific site or portion of a site is protective for a particular type of use. An RfR Determination provides potential users of sites with information on the environmental conditions of a site and EPA's (or a State's or Tribe's) determination that all or a portion of a site is protective of specified types of uses. An RfR Determination requires detailed information on the geographic boundaries of the site or portion of the site that is ready for reuse, the environmental conditions, the types of uses that can be supported, and specific use restrictions and limitations. RfR Determinations have been issued at many Superfund, RCRA Corrective Action, UST, Federal Facility, Voluntary Cleanup Program, and Brownfields sites.²¹

Given this distinction, a site that has received an RfR Determination would qualify as a site that has land ready for reuse, and could be counted in a ready for reuse performance measure. However, not all sites that are counted in the ready for reuse measures have received RfR Determinations, as these Determinations are site-specific documents intended to inform potential users of sites about environmental conditions and protectiveness levels.

¹⁹To hold federal agencies systematically accountable for achieving results from their programs, Congress passed the Government Performance and Results Act of 1993. The Act requires EPA and other federal agencies to develop strategic plans covering at least five years and submit them to Congress and the Office of Management and Budget. GPRA also requires agencies to set annual performance goals related to the goals and objectives stated in the strategic plan and to prepare annual reports comparing actual performance with annual goals. As part of this process, agencies may need to establish baseline data, as well as study the feasibility of establishing goals prior to setting goals.

²⁰The term “Ready for Reuse” may be used in other programs outside of the EPA Land Revitalization Office.

²¹As of November, 2005, a total of 33 RfR Determinations have been issued by EPA. Twelve RfR Determinations have been issued at Superfund sites, including: Southern Maryland Wood Treating, MD; Arlington Blending & Packaging, TN; Southpoint, OH; H.O.D Landfill, IL; Tex-Tin OU1 and OU2, TX; and Sharon Steel, UT. EPA Region 6 has issued 3 RfR Determinations at RCRA Corrective Action sites, including: Sheffield Steel Corporation, OK; Shell Motiva, LA; and Remington Arms Co., AR. Four Federal facilities in Region 6 were issued RfR Determinations, including: Brooks City - Base, TX; Ft. Chaffee, AR; Sheppard AFB, TX; and England AFB, LA. RfR Determinations were issued for three Voluntary Cleanup Program sites, including: Emerson Motors, AR; University of Arkansas, AR; and ExxonMobil Baton Rouge Plastics Plant, LA. Additionally, two RfR Determinations were issued for UST sites, including: Sayre, OK (19 sites); and ExxonMobil, LA (5 sites). One Brownfields property, Heifer Projects International, AR, and one Formerly Used Defense Sites (FUDS) site, General Services Administration, TX, were also issued RfR Determinations.

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The UST and RCRA Corrective Action programs—primarily implemented by states—do not currently track acreage and sites ready for reuse information at the national level, nor do they have revitalization-specific performance measures.²² However, some Regions (Regions 1, 3, 5, 6 and 9) have conducted or are planning to compile revitalization information, and some States (e.g., Texas, Louisiana, Arkansas, and Oklahoma) actively collect data on RCRA sites, including whether they have received a Ready for Reuse (RfR) Determination.

Other Revitalization Measures

In addition to the number of acres and sites that are ready for reuse, OSWER cleanup programs (i.e., Brownfields, Superfund, RCRA, UST, and Federal Facilities) collect a limited amount of other revitalization-related data, which may illustrate whether the site is in continued or new use and the type of use, if any, occurring, as well as available information on jobs and other local impacts resulting from revitalization. Much of this information is being collected and reported anecdotally through case studies and fact sheets on properties in use, while some is tracked in databases developed by the individual programs at Headquarters and in the Regions.

2.2 Measuring Revitalization in OSWER Cleanup Programs

Each of the five OSWER cleanup programs addressed in this document measure land revitalization activities in different ways. While some current land revitalization reporting mechanisms are more comprehensive than others, the goal of reporting accurate information remains universal. In addition to the efforts of the Headquarters' offices, several Regions (Regions 1, 3, 5, 6, and 9) have conducted or are planning to conduct revitalization information collection efforts. EPA Region 3 conducted a Pilot project to collect information related to the surficial use or reuse of land at RCRA Corrective Action GPRA facilities, Federal Facilities and non-Federal Facility Superfund sites, and is maintaining the information in a comprehensive spreadsheet.²³ Collecting and reporting revitalization information in EPA's cleanup programs is central to improving the dissemination of land revitalization information.

2.2.1 Superfund Sites (Federal and Non-Federal Facility)

Beginning in FY 2007, EPA's Office of Superfund Remediation and Technology Innovation (OSRTI), in coordination with the Federal Facilities Restoration and Reuse Office (FFRRO), will implement a new performance measure to report the Superfund Program's accomplishments in making land ready for reuse. This measure is included in the Strategic Plan and is a targeted measure.

²²Region 6 currently tracks basic information on RfR Determinations using RCRAInfo.

²³See "Response Selection and Enforcement Approach for Superfund Alternative Sites Guidance" (the "SAS Guidance"), U.S. Environmental Protection Agency, June 24, 2002, available at <http://www.epa.gov/compliance/resources/policies/cleanup/superfund/sas-enf-02.pdf>.

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The new "Sitewide Ready-for Reuse" Superfund performance measure is defined as:

The number of final and deleted construction complete National Priorities List (NPL) sites where, for the entire site:

- (1) All cleanup goals in the Record(s) of Decision or other remedy decision document(s) have been achieved for media that may affect current and reasonably anticipated future land uses of the site, so that there are no unacceptable risks; and*
- (2) All institutional or other controls required in the Record(s) of Decision or other remedy decision document(s) have been put in place.*

This performance measure was developed to comply with, and fulfill in part, the Agency's responsibility for reporting accomplishments under GPRA. The measure applies to all private, non-Federal, and Federal Facility sites proposed for, or listed on, the NPL, Superfund Alternative Sites (SAS),²² and NPL and non-NPL sites where non-time-critical removal actions have been conducted. FFRRO will also use this measure for Federal Facility NPL sites.

The measure requires that any controls (engineered as well as institutional) used as part of the justification for considering that a site is ready for Sitewide Ready-for-Reuse should be *in place*. In the case of deleted sites, they are counted only when required institutional controls are in place. Depending on the type of institutional controls used at a site, the term "in place" could include, for example: the enactment of ordinances (e.g., groundwater use restrictions), codes, or regulations by local government; recording of legal instruments in the chain of title for a property; issuance by a regulatory authority of enforcement tools or permit; agreements between the regulatory authority and the property owners or facility operators; listing of property on a state registry of contaminated sites; and recording of deed notices or hazard advisories in local land records; and for active military bases, use of base master plan, instructions, orders, and dig permit systems.

2.2.2 Non-Federal Facility Superfund Sites

In addition to the ready for reuse measure described in Section 2.2.1, the non-Federal Facility Superfund Program will continue to implement the following two additional ready for reuse measures it has tracked since FY 2004:²⁴

- Number of Superfund sites with land that is ready for reuse; and
- Number of acres of land at Superfund sites that are ready for reuse.

***Foundational question
for national Superfund
revitalization measures:***

How many Superfund National Priorities List sites and acres of land at these sites have been identified through assessment and/or cleanup as ready for reuse or are currently in use?

²⁴See "Guidance for Documenting and Reporting the Superfund Revitalization Performance Measures," U.S. Environmental Protection Agency, (OSWER 9202.1-26, September 2004), available at: <http://intranet.epa.gov/oerrinet/topics/revitalize/index.htm>. Note: the Superfund Revitalization Performance Measures do not capture the number of Ready for Reuse Determinations awarded at Superfund sites.

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For these two additional ready for reuse measures, the Superfund program distinguishes the types of uses for which the site is suitable by categorizing acres as being ready for either residential or non-residential reuse, depending on the cleanup goals attained. The program specifically avoids using the terms ready for unrestricted or restricted uses, which some states have adopted.²⁵ The important distinction is that some sites may be suitable for residential use, yet still have certain restrictions on the site (e.g., no use of the groundwater). For this reason, the Superfund program uses residential and non-residential categories to provide a more informative description of the type of use for which a property would be suitable following cleanup.

Regions will continue reporting both sites with land ready for reuse and associated ready for reuse acreage. (Included in these performance measures are those sites and acres where EPA determines, at the conclusion of a remedial investigation, that a portion of the land does not require cleanup.) The original implementing guidance for these measures will be updated to include Federal Facilities, revise criteria for meeting institutional controls, and address the new Sitewide Ready-for-Reuse measure described in 2.2.1. The Sites with Land Ready for Reuse and Acres Ready for Reuse measures will not be part of the Sitewide Ready-for-Reuse GPRA measure and will not have targets.

At this time, the Non-Federal Facility Superfund ready for reuse measures apply only to the land portion of the site. The measures do not apply to sites where the only media being addressed is groundwater. However, land over contaminated groundwater (e.g., a migrating plume) is counted as ready for reuse when EPA has taken a response action on that land (e.g., soil investigation and/or remediation). Regions can report on making land ready for reuse only when EPA addresses the sources of contamination or performs other response activities on the land portion of the site.

Land use data used to support the original two land revitalization performance measures (“Sites with Land Ready for Reuse” and “Acres Ready for Reuse”) have been stored in the CERCLIS database. **Exhibits 2-1 and 2-2** summarize this data. The data have been reported in the SCAP-15 Report on Land Reuse in CERCLIS.²⁶ This report provides both national summary and regional site summary land reuse information. **Appendix D** provides Superfund land reuse data for the two original measures that were available from the End of Year (EOY) FY04 SCAP-15 Report on Land Reuse.

²⁵According to *State Response Programs: Measuring Success, 2003*, prepared by the Association of State and Territorial Solid Waste Management Officials (ASTSWMO), four states (Illinois, Indiana, Minnesota, and Wisconsin) track the number of sites cleaned up and suitable for unrestricted or residential use. The report is available at <http://www.astswmo.org/Working%20Folder%20with%20Publications%20-%20Sept.%2026%202005/FINAL%20MEASURES%20DOC.pdf>.

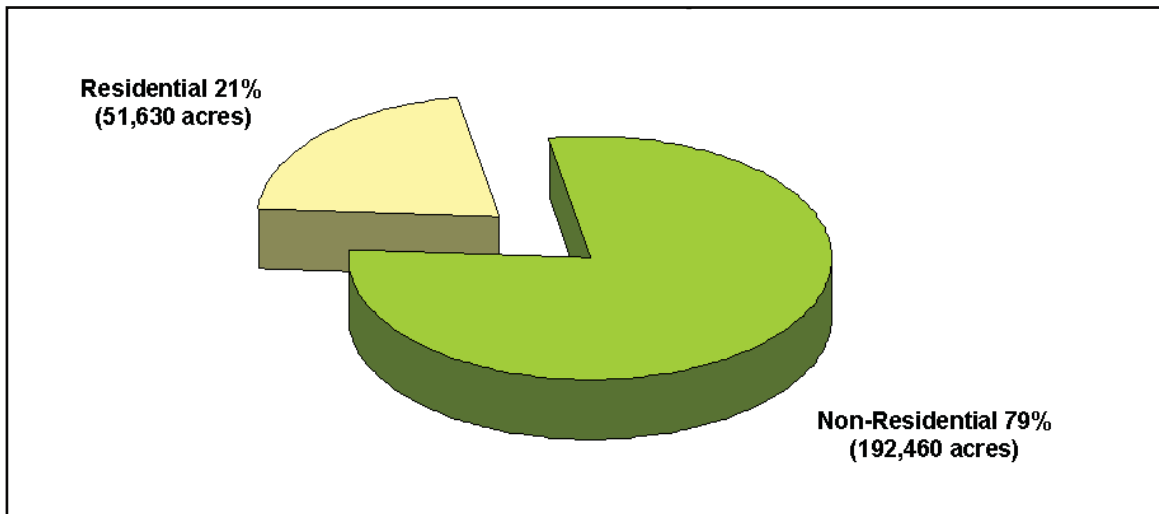
²⁶The SCAP-15 Report on Land Reuse is a standard report in CERCLIS which provides ready for reuse data associated with Superfund and Federal Facility sites.

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Exhibit 2-1: Non-Federal Facility Superfund Ready for Reuse Data²⁷

Region	# of Non-Federal Sites with Acres Ready For Reuse	Acres Ready for Non-Residential Reuse	Acres Ready for Residential Reuse	Total Acres Ready for Reuse	# of Non-Federal Sites in Reuse
1	26	826	518	1,344	7
2	37	1,583	87	1,670	1
3	78	3,569	554	4,123	43
4	55	3,042	605	3,647	24
5	93	11,776	603	12,379	31
6	37	1,300	215	1,515	2
7	34	2,192	18,648	20,840	25
8	24	159,040	28,048	187,088	19
9	57	5,742	2,111	7,853	47
10	31	3,390	242	3,632	27
Total	472	192,460	51,631	244,090	226

Exhibit 2-2: Acres Ready for Reuse at 472 non-Federal Facility Superfund Sites (Residential vs. Non-Residential)²⁸



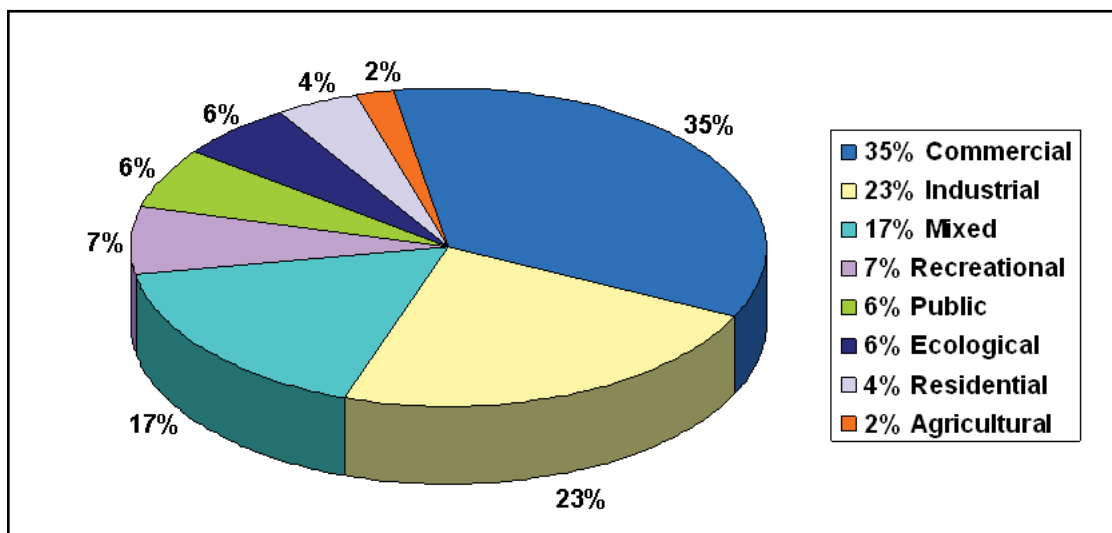
²⁷Data obtained from CERCLIS EOY 04 SCAP-15 Report on Land Reuse. Ready for reuse data applies to Superfund sites proposed for, or listed on, the NPL, SAS sites, and NPL and non-NPL sites where non-time-critical removals have been conducted. The number of sites in reuse may include sites in continued use. The EOY 2004 SCAP-15 report pulled both Federal and Non-Federal Facilities sites to generate this report. However, at the time (EOY 2004), this data was not complete. The numbers in the chart are not inclusive of all Federal Facilities (NPL and non-NPL) sites.

²⁸Data obtained from CERCLIS EOY 04 SCAP-15 Report on Land Reuse. Forty-eight sites currently have zero acres entered in for acres ready for reuse. These sites are included in the number of sites with land ready for reuse.

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For sites that have been identified as being “in use” in CERCLIS, Headquarters has conducted additional inquiries into how Superfund sites are being used. The Superfund Redevelopment program has informally tracked Superfund sites in reuse, continued use, restored use, and planned reuse since 1999, leading to the development of the Superfund Redevelopment (SURE) database²⁹ in December 2003 to catalogue this information. The SURE database, which is populated with data collected through the EPA Regions, local governments, and the private sector, stores a variety of site-specific information, including status of use, former use, types of use, and local economic impacts (e.g., jobs, total annual income, tax revenues) for those sites at which information is available.³⁰ SURE is also populated with a limited amount of information from CERCLIS, including site detail, contaminants of concern, site remediation, institutional controls, and ready for reuse data including reuse type and reuse status.

**Exhibit 2-3: Types of Reuse at Non-Federal Facility
Superfund Sites³¹**



Information related to the revitalization of Superfund sites is also tracked anecdotally in a series of success stories, site summaries, and case studies posted on EPA's Web site. The Web pages, including the Superfund program's Web page and the Superfund Redevelopment program's Web page, currently contain land use information on 171 sites, and generally describe site cleanup and revitalization processes.³² When it is available, the web pages provide local economic impact data. New success stories, site summaries, and case studies are added to these Web pages periodically.

²⁹Access to SURE database is provided only to OSRTI staff, Regional staff, and their contractors.

³⁰Definitions contained in SURE and used by the Superfund Program can be found in **Appendix C**. Land use data extracted from SURE can be found in **Appendix D**.

³¹Data obtained from the SURE database. SURE has information on 189 out of 226 sites flagged as in use in CERCLIS. 33 sites are mixed use sites and 156 sites have only one reuse type. These figures do not represent a subset of data presented in Exhibit 2-2. Reuse type data does not correspond to the number of acres of land ready for reuse.

³²Visit Superfund Redevelopment Program's Web page at <http://www.epa.gov/superfund/programs/recycle/index.htm> for information related to the revitalization of Superfund sites.

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In addition to EPA's national efforts to collect Superfund revitalization information, EPA's Regional offices are undertaking separate efforts to track information related to revitalization. Region 3 has conducted a pilot project with support from EPA Headquarters' Land Revitalization Office to collect information related to the surficial use or reuse of land at RCRA Corrective Action GPRA facilities, Federal Facilities and Superfund sites, and is maintaining the information in a comprehensive spreadsheet.³³ Region 3 intends to use the results of this pilot project to:

- Establish a regional baseline on current land use enabling EPA to track over time the number of sites and acres that are either in continued use, have been reused, have a planned use, or have no current use;
- Determine the types of use occurring at cleanup sites in order to identify interested stakeholder groups with whom EPA and states can develop partnerships in order to promote the beneficial use of contaminated lands;
- Track and subsequently enhance EPA and state tools used to facilitate revitalization;
- Collect information to demonstrate the positive local impacts (economic and ecological) resulting from revitalization;
- Provide a better understanding of the relationship between the status of cleanups and use; and
- Identify challenges in collecting this kind of information prior to developing and promoting broader national measures.

Additionally, Region 6 has created WISDOM,³⁴ a database in the early stages of development that currently includes land use information on 126 sites.

Exhibits 2-4 and **2-5** show data collected in Region 3's pilot project focusing on the surficial use and reuse of land at Region 3's Superfund sites.³⁵

Foundational question for Region 3 approach to measuring revitalization at Superfund sites:

What is the status and type of use at Region 3's sites on the National Priorities List?

³³A copy of the Region 3 report is available at <http://www.epa.gov/region/region03/revitalization/>.

³⁴Limited reuse information from the Region 6 WISDOM database can be found in **Appendix D**.

³⁵Data Current as of March 2005

Exhibit 2-4: Region 3 Non-Federal Facility Superfund Sites Current Land Use

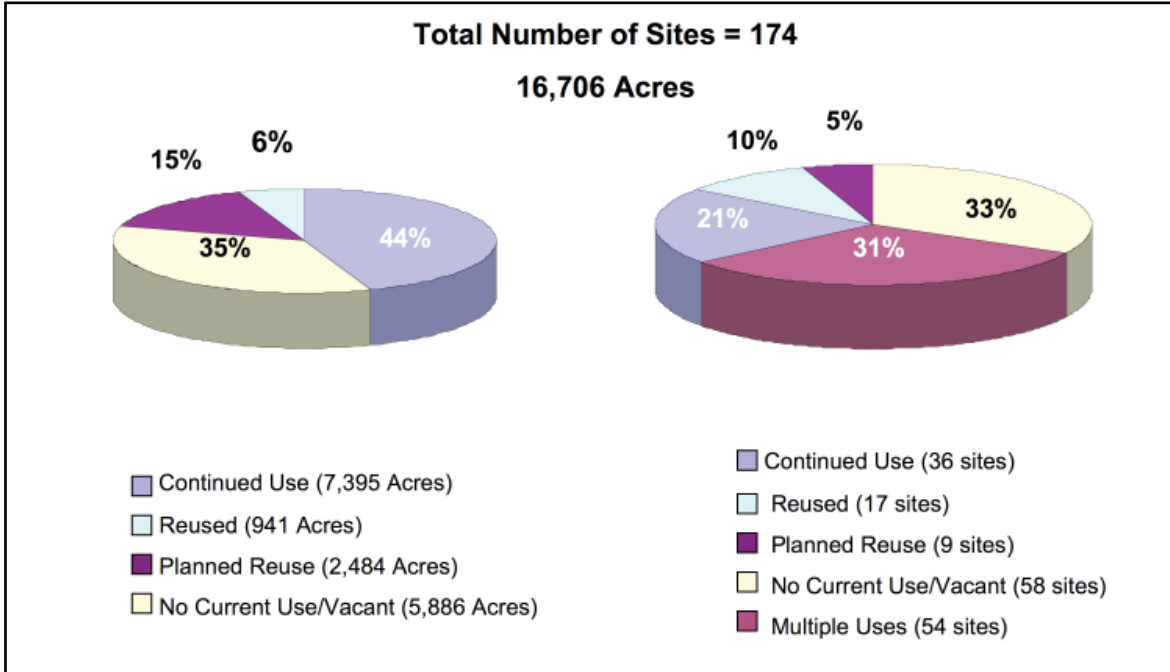
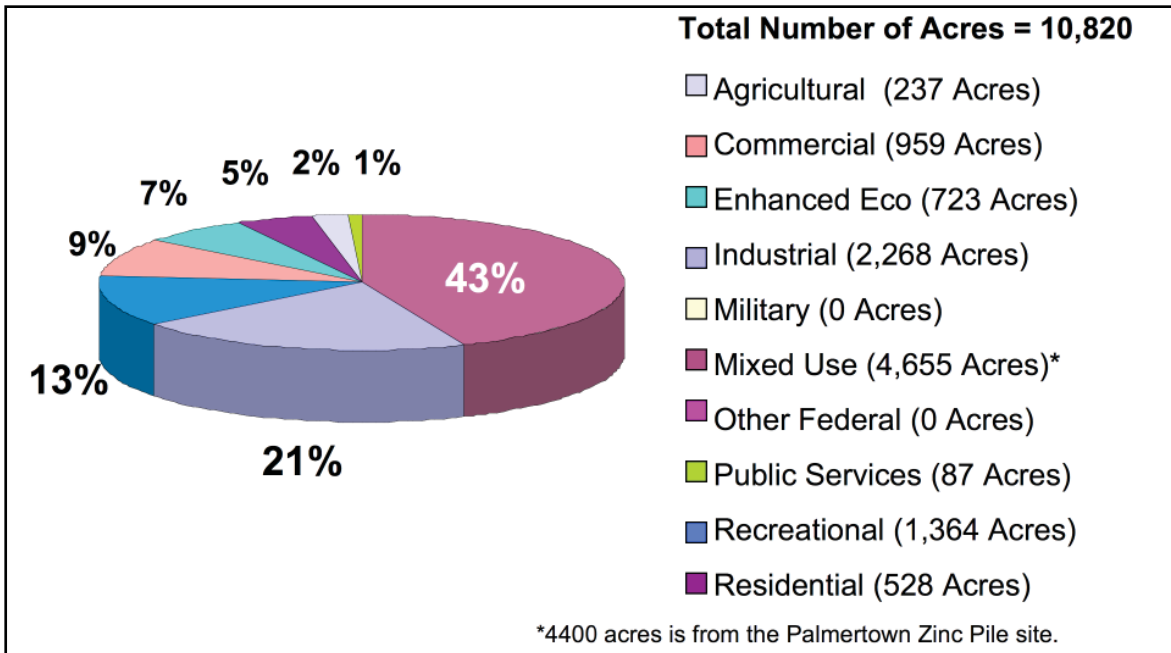


Exhibit 2-5: Types of Reuse at Region 3 Non-Federal Facility Continued Use, Reused, and Planned Reuse Superfund Sites



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2.2.3 Superfund Federal Facilities Response Program

As part of the GPRA performance measure for Superfund revitalization, FFRRO is beginning to track “ready for reuse” site and acreage information for the Federal Facility sites which are on the NPL. For this effort, FFRRO’s companion guidance to the Superfund program’s “Guidance for Documenting and Reporting the Superfund Revitalization Performance Measures” (in effect November 2004) will be incorporated into OSRTI’s forthcoming revision (referred to on page 17) in order to ensure “ready for reuse” data are appropriately collected in the Federal Facilities program.

While the GPRA measure reflects “ready for reuse” for NPL sites only, the scope of the Federal Facilities Response program is more broad. The Federal Facilities program is also often involved in cleanup and/or property transfer activities at certain non-NPL Federal Facility sites; the majority of that involvement is accomplished at those Department of Defense (DoD) Base Realignment and Closure (BRAC) facilities that are not listed on the NPL.

Foundational question for measuring revitalization at Federal Facilities:

How many Superfund Federal facilities, both those on the NPL and non-NPL BRAC sites where EPA is involved, have acres of land that has been identified through assessment and/or cleanup as ready for reuse?

Ensuring that property is environmentally suitable for transfer or lease out of federal government control is one of the main objectives of the BRAC program. Therefore, documentation for BRAC NPL and non-NPL sites includes information about acreage available for reuse via property transfer or lease. Since 1997, FFRRO has used CERCLIS to track information at BRAC properties where EPA was involved in the site cleanup. FFRRO is able to calculate (i.e., measure) the number of acres “ready for reuse” for the BRAC property subset of all potential sites managed under the Federal Facilities program.

Appendix G provides available information on the revitalization data already collected as part of these measures. **Exhibits 2-6** and **2-7** present the Federal Facility ready for reuse information graphically.

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Exhibit 2-6: Number of Acres of Land Ready for Reuse at NPL and Non-NPL Federal Facility Sites (1992-2004)³⁶

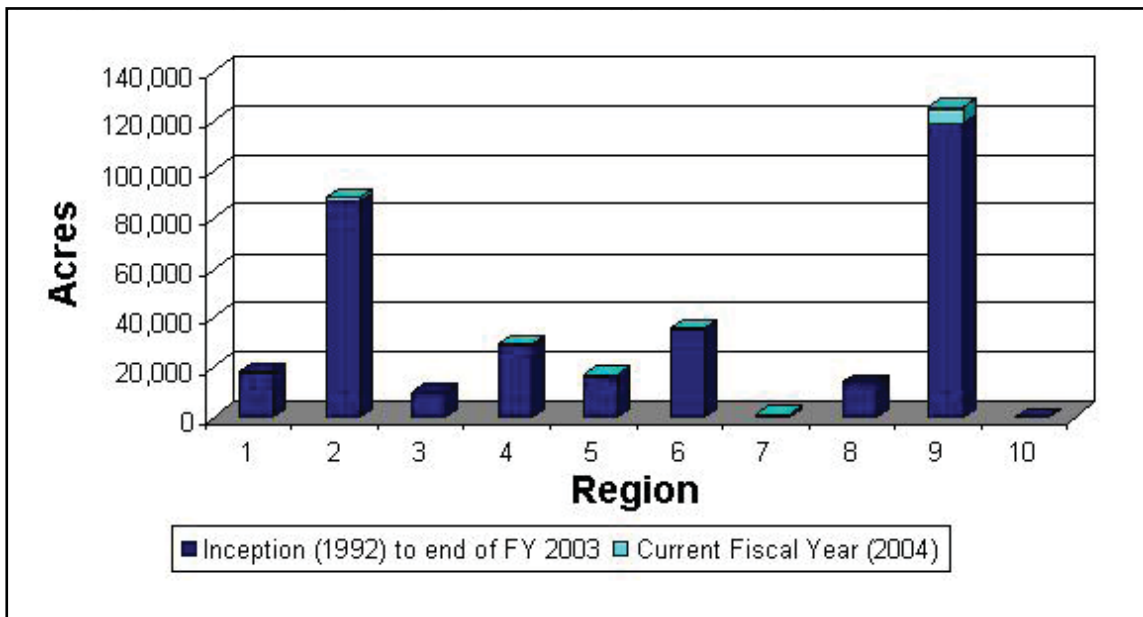
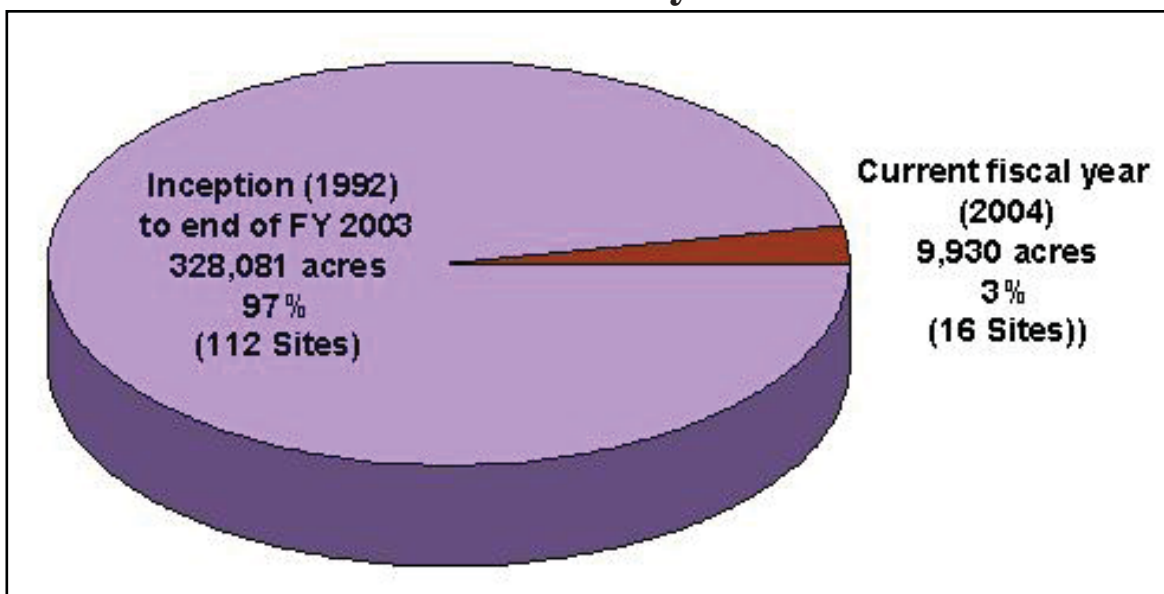


Exhibit 2-7: Federal Facility Acres of Land Ready for Reuse³⁷



³⁶Data obtained from CERCLIS EOY 04 SCAP-15 Report on Land Reuse. Note: This represents EPA data and does not include the data reported by DoD, DOE, or other federal agencies.

³⁷Data obtained from CERCLIS EOY 04 SCAP-15 Report on Land Reuse. Note: This represents EPA data and does not include DoD, DOE, or other civilian federal agency data.

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2.2.4 RCRA Corrective Action

The Office of Solid Waste (OSW) is currently in the process of developing revitalization measures, although there will be a number of issues to address. For example, the measures will need to consider that many RCRA sites are in continued use and how that may impact criteria to be used in defining whether such properties are protective of current conditions and reasonably anticipated uses. OSW also faces the challenge of implementing revitalization performance measures in the context of a primarily state-run program within which most states assume the burden of collecting and maintaining site-specific data. Furthermore, most states do not systematically collect reuse data, and those states that may collect this kind of information do not currently send it to EPA for national compilation.

Despite not having a formal revitalization measure in place, EPA has collected land use data on RCRA Corrective Action facilities anecdotally, and several Regions have undertaken a more systematic collection of revitalization data. For example, OSW has developed fact sheets on RCRA Brownfields Pilots for 2000 and 2001 (<http://www.epa.gov/swerosps/rcrabf/success.htm>), and RCRA Cleanup Reform Success Stories to highlight facility-specific revitalization accomplishments. Several Regions (e.g., Region 3 – http://www.epa.gov/reg3wcmd/ca/bf_facilities.htm) have developed success stories on RCRA facility cleanup and revitalization. Additionally, Regions 1, 3, 5, 6, and 9 have collected information pertaining to the actual or expected status of use or reuse of RCRA facilities and are tracking the data in either databases or fact sheets. **Appendix E** presents revitalization data that have been collected or maintained for the RCRA program, including information for RCRA corrective action at Federal Facilities.

Foundational question for Region 1 approach to measuring revitalization at RCRA facilities:

What was the original use, current use, and potential future use of RCRA Corrective Action Facilities on the 2005 GPRA baseline?

Specifically, Region 1 maintains basic land revitalization information on its RCRA Corrective Action facilities that includes acreage, as well as the original use (that caused the facility to enter the RCRA Corrective Action universe), the current use and potential future uses.

Region 3's pilot project, with support from EPA Headquarter's Land Revitalization Office, has collected numerous data related to the surficial use or reuse of land at RCRA Corrective Action GPRA facilities and Superfund sites.

Foundational question for Region 3 approach to measuring revitalization at RCRA facilities:

What is the use status and type of use occurring at GPRA RCRA Corrective Action Facilities on the 2008 GPRA baseline?

Exhibits 2-8 and **2-9** show preliminary data from the Region 3 pilot on current land use status and type of use for RCRA corrective action facilities as of March 2005. These data were submitted by site managers in Region 3 through the Use/Reuse Assessment Forms which were created to collect land revitalization data at the 289 (2008 Region 3 Corrective Action GPRA high priority baseline) RCRA Corrective Action sites targeted by the pilot.³⁸

³⁸Two Superfund Alternative sites are included in the 289 sites targeted by the Region 3 pilot.

Exhibit 2-8: Current Land Use Status of RCRA Sites in Region 3³⁹

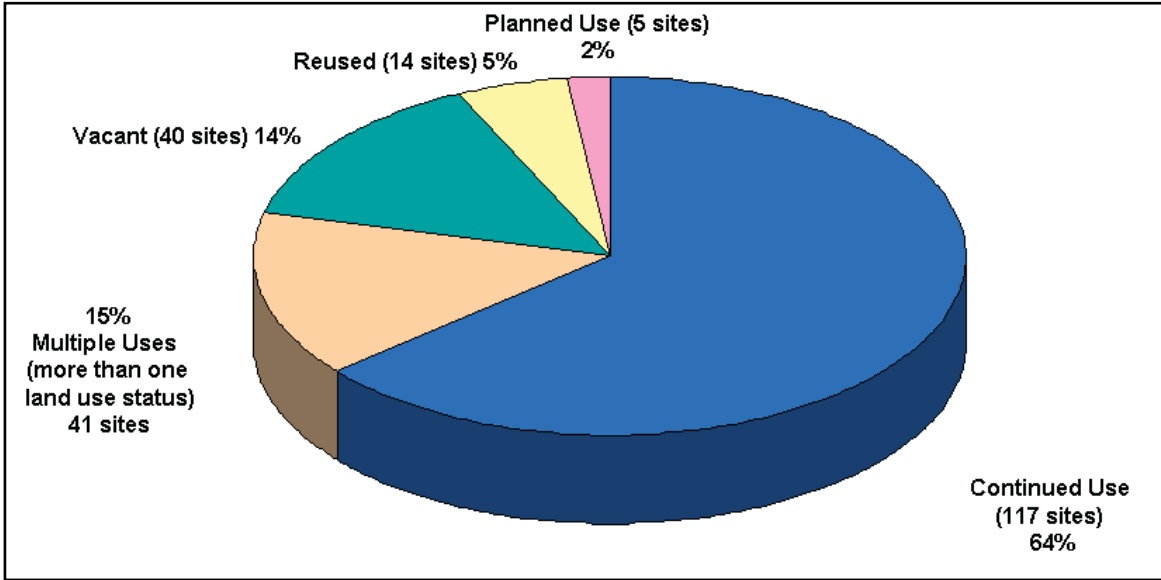
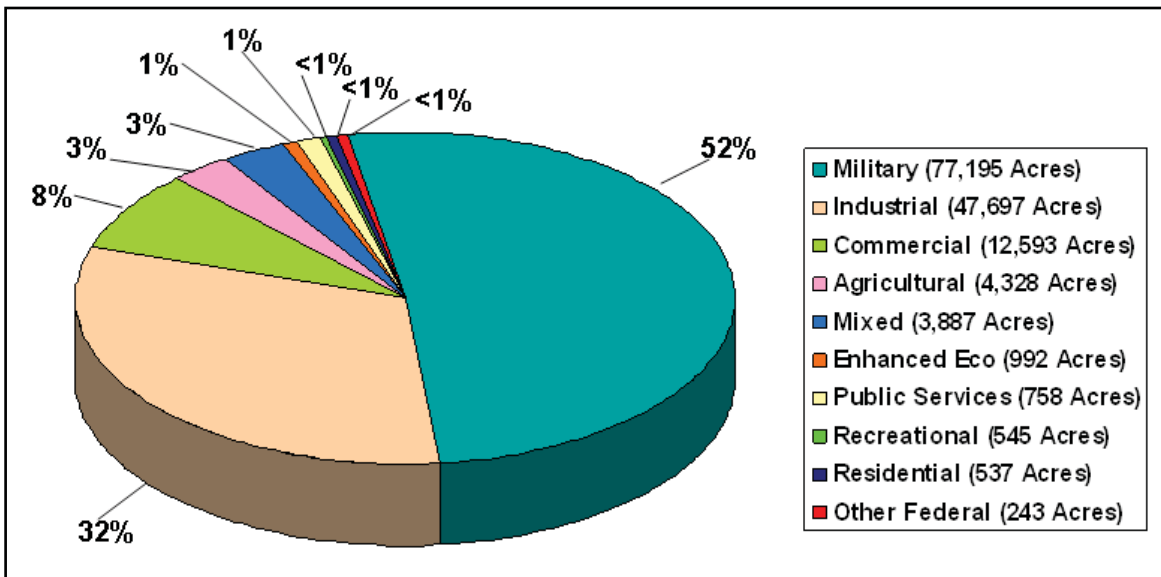


Exhibit 2-9: Type of Use (by Acres) at Region 3 RCRA Sites in Continued Use, Reuse, and Planned Reuse



³⁹This data corresponds to 277 out of the 289 sites targeted by the pilot. These data do not include nine Federal Facilities that are part of the 2008 GPRA RCRA Corrective Action facility baseline.

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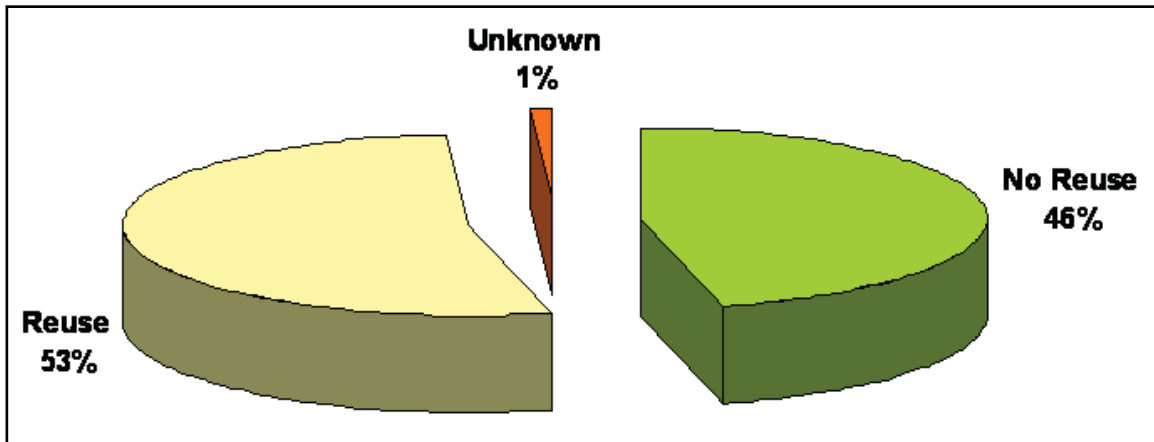
Region 5 conducted a survey in the spring of 2001 of EPA project managers assigned to 155 GPRA federal-lead RCRA facilities regarding potential future use of the sites. As part of this survey, Region 5 calculated the percentage with "Reuse Potential" and "No Reuse Potential,"⁴⁰ (see **Exhibit 2-10**) and determined site reuse potential by reuse type (see **Exhibit 2-8**). According to the results of the Region 5 survey, the following number of potential future reuse options were identified for RCRA facilities:⁴¹

Foundational question for Region 5 approach to measuring revitalization at RCRA facilities:

What do EPA project managers believe is the reasonably expected use of high priority RCRA Corrective Action facilities?

- Habitat/Eco: 49 facilities
- Industrial: 42
- Recreational: 14
- Commercial: 11
- Other: 12
- Residential: 3

Exhibit 2-10: Region 5 RCRA Federal Lead Sites with No Reuse vs. Reuse Potential



⁴⁰According to Region 5, a facility has no reuse potential when the facility does not have vacant property that can be redeveloped, including facilities in continued use. See fact sheet available at <http://www.epa.gov/swerosps/rcrabf/pdf/surveyfs>.

⁴¹Definitions of terms used in this survey can be found in **Appendix E**.

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Region 6 has established a module in the RCRAInfo database to capture basic information on RCRA facilities where RfR Determinations have been issued either by EPA or a state.⁴²

Foundational question for Region 6 approach to measuring revitalization at RCRA facilities:

For the subset of RCRA Corrective Action GPRA sites that a Region has given an RfR Determination to, how many have gone into a new use?

2.2.5 Underground Storage Tanks (USTs)

Authority to implement the UST program is delegated to most states and territories. There is no national database of site specific information and only a very limited amount of information is required to be reported by the states to EPA. On a semi-annual basis, states report the number of active and closed UST systems, number of confirmed releases, number of cleanups initiated and cleanups completed, and number of emergency responses. The number of cleanup actions completed does not equate to the number of sites or acres available for use or returned to use. The vast majority of sites with UST systems remain active fueling stations even when there has been a release and a cleanup has been initiated. The number of releases does not necessarily correlate to the same number of sites, as fueling stations typically have multiple tanks and releases from any of them (and/or their connected piping) may be counted as separate releases even though they are at the same site. These facets of the UST program complicate any efforts to systematically track information related to revitalization.

The Office of Underground Storage Tanks (OUST) has been considering how to develop and implement a performance measure that captures protective uses and reuses of sites; however, there are many challenges to collecting reuse data. As a state-delegated program, it is up to the states to identify how and when the sites are being used. In addition, there is currently no mechanism for compelling state regulators to report any of this information to EPA. Others privy to this information are site owners, including oil companies that may keep detailed inventories of site use, but their confidential business practices and legal concerns typically preclude sharing of this data. Other information on land use comes in the form of anecdotal information developed by both Headquarters and Regions through case studies on sites that have been returned to use, articles appearing in newsletters and local newspapers, and through marketing literature from oil companies with sites available for purchase and service organizations (e.g., consultants, developers, and financial entities) highlighting their interest/support of ongoing petroleum revitalization projects.

Several years ago, the OUST program implemented a pilot program called USTfields.⁴³ USTfields are defined as abandoned or underused industrial and commercial properties where revitalization is complicated by real or perceived environmental contamination from

⁴²As of March 3, 2005, three RCRA Corrective Action Ready for Reuse Determinations have been issued in Region 6, including: the Sheffield Steel Corporation facility in Oklahoma, the Shell Motive facility in Louisiana, and the Remington Arms Co. facility in Arkansas.

⁴³Visit <http://www.epa.gov/oust/rags/ustfield.htm> for additional information on OUST's USTfields Initiative.

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underground storage tanks. The purpose of the pilot program was to promote public-private partnerships (e.g., coordination between various federal, state, tribal, local, and private partners), highlight the role of the state as the primary implementing agency (e.g., overseeing most if not all petroleum release sites), and focus attention on the ability to leverage public and private funds to maximize cleanups (e.g., surmount activity and use restrictions associated with select funds). OUST awarded 50 USTfields pilots with up to \$100,000 each from the LUST Trust Fund to assess, clean up, and make ready for reuse high-priority petroleum impacted sites. The USTfields pilot program was successful in returning contaminated sites to use and identifying implementation opportunities and impediments. With the 2002 passage of the Brownfields Law and the associated 25 percent statutory requirements to address relatively low-risk priority petroleum, OUST does not plan to award additional USTfields pilots.

During the initial USTfields pilots, an attempt was made to identify and secure performance data from participating state regulatory programs. State regulators immediately described their inability to provide the recommended data for the performance measures and acknowledged that other parties would be in a better position to supply the requested information. As mentioned previously, obtaining revitalization data would most likely require developing public-private partnerships with those stakeholders interested in the revitalization of underground storage tank and other regulated petroleum sites. Neither OUST nor the state, tribal, or local governments are likely to have the necessary resources to identify sites that are available for use or in new use; therefore, private entities such as site owners or prospective purchasers and developers would be key to collecting and maintaining this data. As part of the Region 3 pilot project involving the collection of land use/reuse data at Superfund and RCRA sites, the Region and EPA Headquarter's Land Revitalization Office are working with Delaware to explore the possibility of collecting county land use data at non-operating UST facilities where an investigation or cleanup has been completed. If feasible, this pilot project may provide an approach that could be used in other states where counties or localities maintain such data.

The lack of a more comprehensive national database further impeded the development of the above-referenced service station revitalization partnerships. An alternative course of action taken by OUST to secure relevant data involved encouraging state UST regulatory programs and other eligible grant recipients to apply for available petroleum Brownfields grants (e.g., assessment, cleanup, and revolving loan funds). EPA's Office of Brownfields Cleanup and Redevelopment (OBCR) also received a clearance from the Office of Management and Budget (OMB) to collect required grantee reporting information via the Brownfields Property Profile Form.⁴⁴ If eligible petroleum Brownfields grants recipients coordinated with their respective State or Tribal Brownfields/Voluntary Cleanup Programs (VCP) to provide this data, that information could be used to fulfill aspects of the land revitalization performance measures information needs. To date, approximately five state UST regulatory programs have secured available petroleum Brownfields funds and a number of eligible grant recipients have secured available petroleum Brownfields resources (e.g., refer to the FY 2003 and FY 2004 Petroleum Brownfields Grant Recipients). Outreach efforts to encourage more eligible petroleum Brownfields grant recipients (e.g., especially state UST programs) continue.

⁴⁴See <http://www.epa.gov/brownfields/pubs/rptforms.htm> to access the Property Profile Form.

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2.2.6 Brownfields

Since its inception as an initiative in 1995, EPA's Brownfields program has promoted the sustainable revitalization of brownfields. Initially, competitive grants⁴⁵ were offered using the authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund). This initiative or "Pilot" program provided funding for brownfields assessments, revolving loan funds (RLF) for cleanup activities, and job training. Among the performance measures that the "Pilots" reported on, several captured revitalization data including:⁴⁶

Foundational questions for brownfields measures (questions pertain only to Brownfields properties that have been addressed or are being addressed by an EPA Brownfields grant):

- 1) How many brownfields properties have redevelopment underway?
- 2) What are some of the economic outcomes of brownfields activities associated with these properties?
- 3) How many properties and acres at brownfields properties been made ready for reuse?
- 4) How many acres of greenspace have been created at brownfields properties?

- Number of brownfield properties with redevelopment underway;
- Number of cleanup/redevelopment jobs leveraged from brownfields activities; and
- Amount of cleanup and redevelopment funds leveraged at brownfields properties.

On January 11, 2002, the President signed the Small Business Liability Relief and Brownfields Revitalization Act (Pub. L. No. 107-118, 115 stat. 2356, "the Brownfields Law"). Among other changes, the Brownfields Law amended CERCLA to allow the Brownfields program to fund direct cleanup grants. In addition, following enactment of the Brownfields Law, the newly-created OBCR began collecting data on additional performance measures related to revitalization for grantees:

- Number of brownfield properties made ready for reuse;
- Number of brownfields property acres made ready for reuse; and
- Number of brownfield property acres of green space created.

⁴⁵Since enactment of the Brownfields Law, the term "competitive grants" refers to the Brownfields Law subtitle A (Assessment, Cleanup, Revolving Loan Fund, and Job Training) grants. The Brownfields program also provides grants for State and Tribal Responses Programs.

⁴⁶As of FY2004, the Brownfields program reports the following measures under GPR: "Brownfields Properties Assessed"; "Cleanup and Redevelopment Jobs Leveraged"; "Cleanup and Redevelopment Dollars Leveraged"; "Percentage of Trainees Placed"; and "Acres Made Ready for Reuse."

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Although the performance measures are mandatory reporting requirements for the grantees, they remain voluntary for the pilots.⁴⁷ Therefore, OBCR does not have complete and consistent data across all of the brownfields sites that have received funding from EPA.

Appendix C of this document provides summaries of the Brownfields program definitions related to these revitalization performance measures. The full definitions are contained in the form instructions attached to two OMB-approved forms, the Property Profile Form and the Job Training Reporting Form, that the brownfields grant recipients must complete. After the passage of the Brownfields Law, OBCR developed the Property Profile Form to standardize grantee reporting. The Property Profile Form provides detailed information on each property addressed by EPA grantees. OBCR began collecting information using these forms in FY 2004; therefore, the data available from this new source are limited.

The Brownfields program developed and maintains the Assessment, Cleanup, & Redevelopment Exchange System (ACRES) database at Headquarters to house data on brownfield properties that have received EPA grant funding. Although ACRES was not designed as a revitalization database, it nonetheless contains the above-referenced performance measures information to help with program management at Headquarters and in the Regions. ACRES data are extracted from Quarterly Reports and Property Profile Forms provided by EPA grantees. Therefore, the revitalization measures cited above all are directly reported on by EPA grantees.

Appendix F provides revitalization-related data on properties that have received Brownfields grants. In addition, both Headquarters and the Regions have prepared many revitalization success stories. These often provide site descriptions and economic data, subject to the information reported by grant recipients.

2.3 Measuring Revitalization in Other (non-EPA) Cleanup Programs

Many federal and state programs also capture information on land revitalization, although they may use different terms. These terms may be defined in different ways and require different levels of investigation and cleanup. For example, for some states, a No Further Action letter (NFA) or Cleanup Complete letter is used as an indicator that the land is ready for reuse, while for other states, a site-specific determination that land is ready for either unrestricted or restricted use is made.

2.3.1 General Services Administration

As one of the services within the General Services Administration (GSA), the Public Buildings Service (PBS) serves as the federal government's builder, developer, lessor, and manager of government-owned and leased properties. Under PBS, the Office of Property Disposal serves as the federal property disposal agent for the entire federal government; all Federal Land Management agencies (i.e. DOE, USDA, DOI, DoD, etc) must involve GSA's Office of Property Disposal and follow their procedures to transfer or lease land outside the federal government.

⁴⁷Grantees refer to those entities who received EPA funding after the 2002 Act, while pilots are those that received funding before.

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Before land can be transferred or leased, GSA is required under CERCLA 120(h) to demonstrate that environmental conditions have been assessed and contamination on the property has been addressed. GSA periodically reports on federal property disposal.

The Office of Property Disposal aims to play an important role in revitalizing communities by facilitating the most effective reuse of unneeded federal property. To facilitate revitalization, this office has developed a searchable database of federal sites available for use that is available online to the public. In addition, PBS has developed the Community Development Index (CDI) to measure the potential economic and social benefits of federal land revitalization. The CDI is a composite index made up from available data on community elements such as education, public safety, home ownership, transportation, employment, and income.⁴⁸ While not all the properties included are contaminated, the CDI represents a significant effort to capture revitalization accomplishments.

2.3.2 Department of Defense

DoD has been delegated property disposal authority from GSA for BRAC property transfers. As such, DoD is also required under CERCLA 120(h) to demonstrate that environmental conditions have been assessed and contamination on the property has been addressed. DoD tracks information and metrics for BRAC property acreage environmentally suitable for transfer or lease. This information is contained in “Military Base Closures: Updated Status of Prior Base Realignments and Closures” reports produced by the Government Accountability Office.

2.3.3 State Cleanup Programs

Many state voluntary cleanup, brownfields, and other response action programs collect and record information related to the revitalization of investigated or cleaned up properties. Many state cleanup programs capture whether sites are ready or available for use through the completion of cleanup activities, and quantify the associated acreage. The terms “ready for reuse” and “available for reuse” are often used interchangeably and generally mean the same thing, namely, that future revitalization activities can occur with no further cleanup of the land, and that the land will be protective of human health and the environment for the uses specified. In a few states, a specific ready for reuse determination is made, while in other states, NFA letters or cleanup complete certifications serve as an indicator that a site is ready for reuse. According to a report prepared by the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) on state efforts to measure success, approximately 25 State VCP and Brownfields programs currently track sites considered ready or available for reuse (including those that track NFAs or cleanups completed), seven states currently track the number of acres ready for reuse, and four states track the number of sites cleaned up and suitable for unrestricted or residential use.⁴⁹ In most cases, the State VCP programs are non-RCRA programs.

⁴⁸For more information on GSA’s CDI, see the Office of Property Disposal Web site: <http://www.propertydisposal.gsa.gov>.

⁴⁹The ASTSWMO report, *State Response Programs: Measuring Success*, 2003, is available at: <http://www.astswmo.org/Working%20Folder%20with%20Publications%20-%20Sept.%2026%202005/FINAL%20MEASURES%20DOC.pdf>.

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Few states collect information related to the use of a site, such as types of use, jobs created or retained, and tax revenue increases that may result. Typically, a state response program ceases its involvement at a site prior to the completion of the development. Although developers can provide estimates months or years before the development is complete, such developments can change significantly, may not occur due to market conditions, or the actual data may differ significantly from the estimates. Moreover, state response programs typically do not have the resources to go back to these sites at a later date to confirm or verify the revitalization outcomes and impacts. According to ASTSWMO, six states collect economic data on the number of jobs created or retained due to the remediation process.⁵⁰ A few states collect data on specific types of use, although typically for different purposes. For example, California is able to track the number of new public schools built on former waste sites because the State's Department of Toxic Substances Control must review and approve all environmental documents for proposed school sites that use state funds for construction.

States that collect revitalization data do so primarily as a way to promote or facilitate land revitalization. While much of the collected information is included in annual reports and can be utilized to measure the success of the state in promoting land revitalization, it should be noted that it is not usually intended to serve as a measure of program performance. By compiling data on completed cleanups or redevelopment projects, their principle objective is to provide data for those interested in potential redevelopment and facilitate land revitalization. In addition, these databases allow states to demonstrate that revitalization is occurring to the public and other interested stakeholders.

Efforts to develop revitalization-related measures vary by state. While some states have yet to capture their accomplishments, several states have made significant progress towards promoting the revitalization of contaminated sites and have established comprehensive mechanisms for collecting and reporting revitalization-related information. Examples of state-run programs that have comprehensive revitalization data collection and reporting mechanisms include:

- Pennsylvania's Land Recycling Program. Since its inception in 1995, Pennsylvania's Land Recycling Program, also known as Act 2, is a leader in the area of promoting and tracking land revitalization. The Pennsylvania Department of Environmental Protection (PA DEP) collects and tracks a variety of revitalization data. Each site manager is required to submit a Final Report Summary (FRS)⁵¹ which includes the size of the site in acres; information about existing institutional controls; cleanup costs; jobs saved or created as a result of remediation; revitalization contact information; pictures of the site; and a narrative that describes the site assessment and remediation process as well as the proposed future property use. Pennsylvania's revitalization data are merged into the eFacts database, which is accessible to the public online.⁵² In addition, PA DEP created

⁵⁰Ibid.

⁵¹A sample FRS is available at: https://www.dep.state.pa.us/wm_apps/finalreportsummary/landrecycling/Example.htm.

⁵²<http://www.dep.state.pa.us/dep/efacts/>

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a publicly-accessible, online search utility based on this data along with data collected through the Brownfield Inventory Grant program called the PA SiteFinder⁵³ as a “one-stop shop” for potential brownfields buyers and sellers. PA SiteFinder has received many awards for its efforts to compile information, as well as the resources it offers to promote land revitalization.

- ❑ Texas Commission on Environmental Quality (TCEQ). In the past few years, the Texas Commission on Environmental Quality (formerly the Texas Natural Resource Conservation Commission) has taken several steps to promote and track land revitalization. In May 2003, the Texas Industrial and Hazardous Waste (IHW) Corrective Action program (which includes the RCRA CA and VCP cleanup programs) implemented a new performance measure known as Ready for Reuse. The TCEQ’s Ready for Reuse Determination⁵⁴ may be issued when a site has achieved final cleanup, or when the remedy standard is not yet achieved but the property is remediated to the extent that it is safe for redevelopment based on the current or planned use. The TCEQ has also established a VCP which provides incentives and administrative support to encourage the cleanup of contaminated sites. Sites that are cleaned up receive a final Certificate of Completion.⁵⁵ The VCP has developed a database that includes information from all sites enrolled in the program. Tracked site information includes: site acreage; the existence of institutional controls; and other general information pertaining to site conditions. The database is publicly available online.⁵⁶

- ❑ Ohio EPA. The Ohio Environmental Protection Agency (OH EPA) has also established a Voluntary Action Program (VAP) to promote cleanup and redevelopment of contaminated lands. This is taken to include all sorts of contaminated properties, including urban and rural sites. The program allows for privately-funded cleanups and redevelopment programs with OH EPA oversight and approval. When a state-certified professional believes that a site has been investigated and, if necessary, cleaned up to the standards contained in the program rules, he or she can prepare a No Further Action Letter.⁵⁷ The issuance of such a letter is taken to indicate that the site is ready for use. The VAP catalogues information related to revitalization, including the number of sites ready for reuse; acreage ready for reuse; anticipated land use to which the property has been cleaned up; number of jobs created; and information relating to the presence of contaminants or existing institutional controls. This information is available online along with several land revitalization success stories and links to the necessary contact information and forms necessary to become involved in the VAP.⁵⁸

⁵³<http://www.pasitefinder.state.pa.us/>

⁵⁴Please visit the TCEQ’s Ready for Reuse Program web site at www.tnrc.state.tx.us/permitting/remed/coract/rfr_main.html for additional information on the Ready for Reuse Determinations.

⁵⁵A sample Certificate of Completion is available at: <http://www.tnrc.state.tx.us/permitting/remed/vcp/finvcp.pdf>

⁵⁶<http://www.tnrc.state.tx.us/permitting/remed/vcp/>

⁵⁷Cleanup standards described in Ohio Administrative Code Chapter 3745-300

⁵⁸<http://www.epa.state.oh.us/derr/volunt/volunt.html>

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3. Opportunities for Enhancing OSWER Revitalization Measures

As Section 2 demonstrates, OSWER's cleanup programs have been collecting information to more fully express revitalization accomplishments. Nonetheless, significant opportunities remain for OSWER cleanup programs to express revitalization accomplishments, more fully communicate these accomplishments, promote greater public understanding, and garner increased support for these important programs.

This section describes possible measures that could be used to capture revitalization-related information across OSWER programs. The purpose of presenting these measures is to promote and guide discussions related to systematic and, ideally, cross-programmatic approaches to capture OSWER's revitalization accomplishments.

This section describes the need for enhanced revitalization measures, elements of the possible measures, potential benefits of the measures, and implementation considerations. Future activities that could be pursued to refine and implement the cross-program measures are discussed in Section 4.

3.1 Challenges for Measuring Revitalization

Good performance measures have the following characteristics:⁵⁹

- ❑ *Quality over quantity:* Measures should be relevant to the core mission of the program and to the outcomes that the program is intended to achieve. Quality of measures is more important than quantity.
- ❑ *Importance to budget decisions:* Measures should provide information that helps the program make budget decisions.
- ❑ *Public clarity:* Measures should be understandable to interested stakeholders.
- ❑ *Feasibility:* Measures should be feasible, but not the path of least resistance. Measures should be chosen based on the relevancy of the information.

The following additional two characteristics are important for measures that would be applied across programs:

- ❑ *Compatibility:* Outcomes measured by program-specific performance measures should align with and support the outcome measured by the cross-program measure, and data should be presented in units that can be compiled across programs.

⁵⁹Adapted from U.S. Office of Management and Budget, Performance Measurement Challenges and Strategies, June 18, 2003.

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- ❑ *Consistency:* Implementation of program-specific performance measures should produce data of sufficiently consistent quality and reliability to enable compilation across programs and support cross-program decision-making.

The existing revitalization measures described in Section 2 embody these characteristics to a certain degree, but face several challenges and opportunities, including:

- ❑ One of the principal criticisms of many of the existing revitalization performance measures has been that they do not express outcomes that are aligned with EPA's key mission—protection of human health and the environment. As discussed in Section 1, GAO and other commentators have suggested that EPA's revitalization measures do not address key outcomes, such as reducing environmental risk. In addition, OMB has consistently encouraged EPA cleanup programs to develop more outcome-oriented cleanup measures.
- ❑ In 2003, EPA launched the One Cleanup Program (OCP - see <http://epa.gov/oswer/onecleanupprogram/index.htm>) so that the activities, resources, and results of EPA's cleanup programs are effectively coordinated and communicated to the public. A key initiative under the OCP is the development of performance measures that demonstrate the overall effectiveness and benefit of the nation's combined cleanup efforts. Many of the revitalization measures discussed in Section 2 provide different programs with similar information; however, there is no current mechanism for combining results across programs.
- ❑ There are or may be concerns with the public's perception of the revitalization data collected by EPA. In certain situations, EPA may not have access to all revitalization data and therefore may not be able to accurately convey overall revitalization activities for the site. For example, at Federal Facility NPL sites, EPA/FFRRO is not the federal agency responsible for cleanup. The responsible federal agency (DoD, DOE, etc.) is designated as the federal lead. As such, EPA may not see or have access to the full amount of reuse data (i.e., economic data) about the site.
- ❑ In 2003, EPA issued the first Draft ROE, which reports on the status of and trends in environmental conditions and their impacts on human health and the nation's natural resources. With regard to the state of the nation's land, the 2003 Draft ROE examines land use, chemicals in the landscape, waste generation and management, and extent of contaminated lands. The report identifies the lack of national-level indicators of the extent of contaminated lands as a key data gap.

The possible measures outlined below would help address these challenges and opportunities and could help create overarching, cross-program measures that are consistent with the characteristics described by OMB.

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3.2 Possible OSWER Cross-Program Measures

To meet these challenges and opportunities, the Workgroup recommends for discussion purposes that the following performance measure and indicators could be used across OSWER cleanup programs:

- ❑ **Performance Measure:** Number of properties and acres determined protective (based on assessment and cleanup accomplishments) for current and reasonably anticipated future uses.⁶⁰

- ❑ **Indicators:**
 - **Universe Indicator:** Number and acres of actually or potentially contaminated properties addressed by OSWER cleanup programs (provides denominator, gives context to numerator);⁶¹
 - **Status of Use Indicator:** Number and acres of properties in continued use, reused, planned reuse, and vacant (provides useful progress and planning information, especially when overlapped with the land protectiveness measure); and
 - **Type of Use Indicator:** Number and acres of properties in commercial, industrial, greenspace, residential, and government use (provides more detailed use information that can help in facilitating partnerships and conducting impacts/benefits analyses).

The possible cross-program measures are illustrated in **Exhibit 3-1** and are highlighted below.

3.2.1 OSWER Cleanup Programs Universe Indicator

The possible measures propose that programs track both the number and acreage of properties being addressed.⁶² These data could be tabulated across all programs to communicate the overall scope and scale of the properties being addressed by OSWER cleanup programs. This indicator would provide important context, or a national baseline, for interpretation of the measures of status and type of land use and properties confirmed protective for current and reasonably anticipated future uses. For example, information associated with other possible measures would be more meaningful when described in the context of a national baseline.

Foundational question for universe indicator:

How many contaminated and potentially contaminated properties and acres of properties are addressed by OSWER cleanup programs?

⁶⁰Identification of reasonably anticipated future uses for the purpose of this measure would reflect cleanup decision-making for the property, which involves evaluation of best available information (e.g., input from the property owner and other interested stakeholders, master plans, local land use trends) and professional judgment. For sites not cleaned up to residential levels, this measure would be counted only if appropriate engineering and institutional controls are being maintained and followed.

⁶¹The acreage metric used for these measures is land surface area.

⁶²For example, the universe of sites “addressed” by the Superfund program could be defined as just NPL sites or all sites that are subject to the requirements of federal or state programs developed to implement CERCLA’s provisions. Each program can define the universe of sites included in this measure, and the cross-program measure will articulate and account for individual program definitions. See Section 3.4, Implementation Considerations.

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In addition to providing context, a key benefit of the measure would be that it could eventually form the basis for a measure of the extent of the nation's contaminated lands. The universe indicator could also be linked to the land protectiveness performance measure, such that changes in the acreage of contaminated and potentially contaminated properties over time could be explained in terms of site discovery and accomplishments in confirming that land is protective for current and future uses.

3.2.2 Land Protectiveness Performance Measure

The land protectiveness performance measure is intended to clearly draw the connection between revitalization and cleanup. For land to be considered protective, it should be able to support the specific type of use or uses.⁶³ To meet the needs of individual programs, the possible measure would allow individual programs to rely on existing cleanup-related performance measures when determining whether land will support current and reasonably anticipated future uses and remain protective. These could include:

Foundational question for land protectiveness performance measure:

How many properties and acres of properties addressed by OSWER cleanup programs have been determined protective for current and reasonably anticipated future uses?

- A determination that no remedial action is required based on site assessment alone;
- A determination that there are no unacceptable human exposures to contamination above levels of concern;
- A determination that cleanup goals related to reasonably anticipated future uses have been met; or
- A determination that controls, if any are required for the remedy to be protective, are in place and effective.

Potential benefits of the land protectiveness measure would include:

- Expression of accomplishments of OSWER and related state cleanup programs in terms of the revitalization outcomes that result from assessment and cleanup;
- More complete expression of revitalization accomplishments across OSWER and related state cleanup programs;
- Integration of site assessment data in a way that would help programs identify assessment outcomes, in terms of removing barriers to the future use of uncontaminated land;

⁶³The land protectiveness performance measure incorporates the concepts of the Ready for Use Guiding Principles issued by EPA in 2004, which state that a "ready for use" determination connotes that "the land can support a specific type of use or uses, while being protective of human health and the environment." "Protective for current and future uses" is identified as a possible measure in lieu of "ready for use" as a way to be more transparent with respect to perceptions of ambiguity associated with terms "ready" and "use." http://www.epa.gov/landrevitalization/readyreue/guiding_principles.htm

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- ❑ Improved accessibility of cleanup and land use information that could promote interest in revitalization and speed the pace of cleanup;
- ❑ Clearer communication to Congress and OMB of the relationships between OSWER's revitalization measures and EPA's core mission - protection of human health and the environment; and
- ❑ Provision of information to help explain trends in the extent of contaminated lands, which could provide important input for the "contaminated lands" section of the ROE.

3.2.3 Type of Use Indicator

The type of use indicator could be divided into five categories such as: industrial, commercial, greenspace, residential, and government.⁶⁴ An overall benefit of this measure would be that it would allow program managers to quantify how properties that are being or have been addressed by OSWER are being used. More specific benefits of this measure could include:

Foundational question for possible type of use indicator:

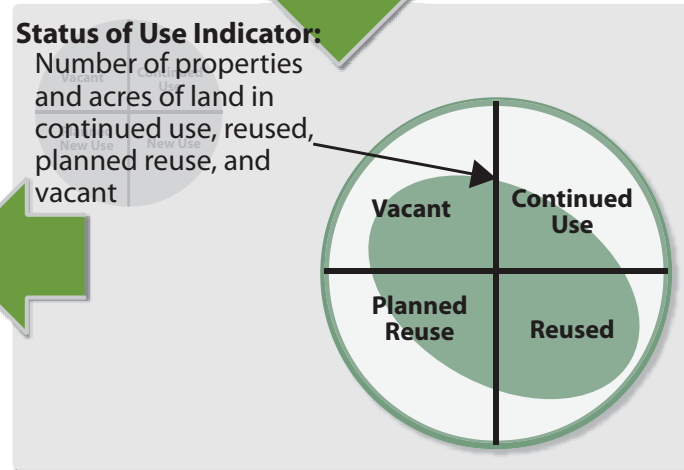
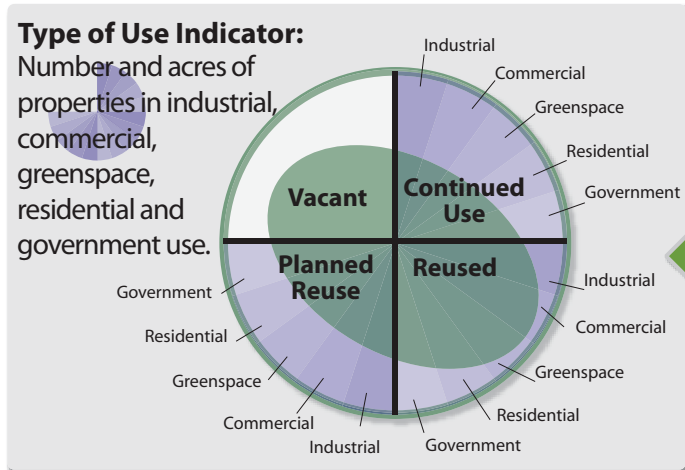
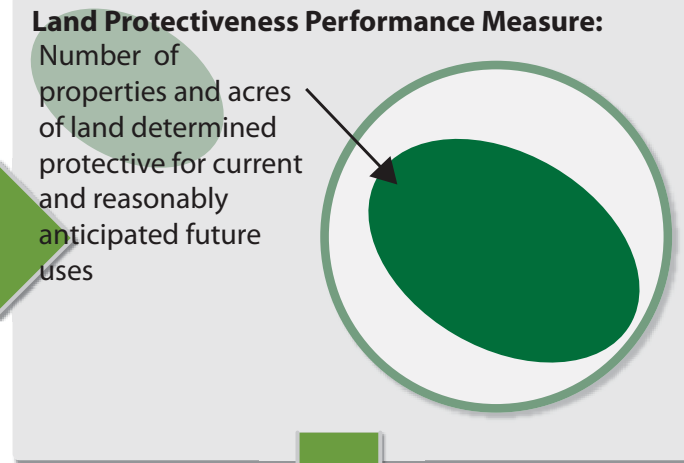
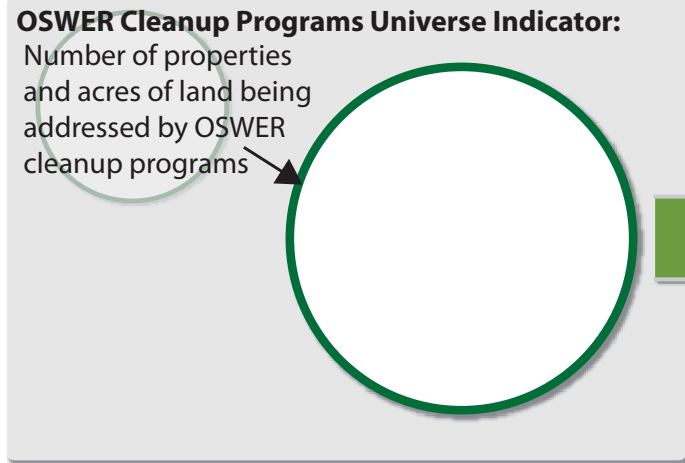
How many properties and acres of properties addressed by OSWER cleanup programs are being used for industrial, commercial, greenspace, residential, and government purposes?

- ❑ The ways in which properties are used during and following assessment and cleanup would help further evaluate and communicate the impacts and benefits of revitalization, including ecological habitat enhancements and economic and other community impacts.
- ❑ Understanding and quantifying the type of use could help OSWER program managers better understand the impacts of cleanup and property reuse and more effectively identify and develop partnerships with key stakeholder groups. For example, better quantifying the acreage of greenspace created through assessment, cleanup, and other revitalization actions could help facilitate partnerships with national recreational associations or environmental groups.
- ❑ Understanding type of use would provide greater detail in support of the "status of use" measure and would allow OSWER programs to communicate more tangible information regarding program accomplishments to the Administration, Congress, and the general public.

⁶⁴While only five type of use categories are illustrated in Figure 3-1, some programs may find it helpful to use additional categories such as enhanced ecological use, military, public service, recreational, and mixed.

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Exhibit 3-1: Possible OSWER Revitalization Measures



Important Note: The above representations of distributions is purely illustrative. It is intended to convey the concept of the possible measures and does not represent actual data.

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3.2.4 Status of Use Indicator

A possible status of use indicator could be divided into four generalized land use status categories: continued use, reused, planned reuse, and vacant. Programs could categorize whole properties according to land use type or apply acreage estimates to distinguish between different land uses on a single property.

Foundational question for possible status of use indicator:

How many properties and acres of properties addressed by OSWER cleanup programs are currently in continued use, planned reuse, reused, or vacant?

The acreage and number of properties could be summed across categories to provide total number of properties or acreage being addressed by a single program or by all OSWER cleanup programs combined.

Some of the benefits of the status of use indicator include:

- ❑ Compiled “continued use” status data would allow program managers to describe national trends in the number of properties that remain in operation during assessment and cleanup, which can have positive economic impacts for the surrounding community (e.g., by avoiding movement of jobs and by maintaining the tax base) and can reduce pressure on greenfield development.
- ❑ Tracking status of use would enable programs to better communicate interim accomplishments. Most cleanup programs address both properties that remain in use during cleanup as well as those that remain vacant until cleanup is complete. In addition, it is often the case at larger properties that some part of the property remains in use while another part is vacant during cleanup. The status of use measure would help provide flexibility to account for and communicate interim accomplishments for part of a property prior to completion of cleanup across the entire property.
- ❑ The status of use categories would help address differences among cleanup programs and facilitate a cross-program approach. The types of properties addressed by different programs vary significantly. As discussed in Section 2, the past focus on the “ready for reuse” measures has created a challenge to find a transparent approach for measuring revitalization outcomes for programs where a significant proportion of properties remain in continued use during cleanup and are anticipated to remain in the same use after cleanup (e.g., RCRA Corrective Action).

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3.3 Overall Potential Benefits of Possible Cross-Program Revitalization Measures

In addition to the measure-specific benefits described above, these measures could help guide enhancement and development of revitalization measures in a coordinated way and facilitate cross-program reporting, including defining the OSWER universe and agreeing upon a definition for a land protectiveness performance measure. These possible measures have been conceived to be flexible enough to achieve this while enabling individual programs to refine or develop measures that meet their own program management and reporting needs.

In addition, the possible measures are conceptually feasible, though not all programs are able to compile all needed national information at this point in time. Even with this limitation, the possible measures could build on existing program-specific assessment, cleanup, and revitalization measures. By using these existing measures to the maximum extent possible, the possible measures would accomplish the goals of cross-program collaboration and outcome-oriented reporting, while minimizing new data requirements.

Overall, the possible measures would promote greater understanding of EPA accomplishments by the Administration, Congress, and the general public. Moreover, by embodying the characteristics of a good performance measure—outcome-oriented, aligned with budget decisions, clear, feasible, and collaborative—the possible measures would help EPA meet the need to demonstrate outcome-oriented program accomplishments to OMB and the Administration.

3.4 Implementation Considerations

Each cleanup program has its own set of challenges with enhancing or implementing new program measures, reflecting the nature of different program authorities, operations, and data collection processes. There are several, more general barriers to implementing the revitalization measures that all programs share:

- Data Availability.** Each cleanup program could face certain difficulties in obtaining information to support the performance measures. Some key data availability issues include: 1) collecting information for EPA programs (e.g., RCRA Corrective Action and UST Program) delegated to states that do not currently send to EPA (or in some cases even collect) all information needed to support these measures; 2) identifying when a site assessment alone determined that a specific land use would be protective; 3) collecting acreage data at the sub-site level (e.g., at facilities where multiple land use status categories may apply); 4) tracking cleanup data; and 5) tracking changes in land use status after assessment and/or cleanup. The impact of these issues on the feasibility of the measures will differ depending on the nature of the different programs.
- Resources.** A significant concern for all cleanup programs is the resource requirement needed to support development and maintenance of new measures. With growing budgetary constraints, cleanup programs may have difficulty devoting significant resources

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to the collection of new performance data. For some programs, including those that are state-delegated, additional resources may be needed to negotiate and modify agreements, change grant terms and conditions, develop Information Collection Requests, and perform other activities to implement the measures.

- ❑ Capturing Historical Data. Because several of EPA's cleanup programs have been operating for many years, significant revitalization accomplishments have already occurred, but have not all been captured. Thousands of sites have been assessed and/or cleaned up resulting in land that is "protective for current and future uses." For many programs, the ability to collect historical data either may be limited or a significant level of resources would be needed to capture such data.
- ❑ Maintaining Information. A key challenge facing each cleanup program, and one that has profound implications on program resources, is the maintenance of revitalization information. Because land use may change over time, EPA can decide whether and how often to update the data. In some situations, ongoing operation and maintenance (O&M) may be conducive to periodic data collection/updating. However, for other sites, EPA may cease its involvement prior to the completion of the development, redevelopment, or reuse of a property. Without authority to collect land use information following this cessation point, the collection of data for these sites may pose a significant burden.

In addition, the compilation of data across programs would create the following challenges:

- ❑ Interpreting site universe and revitalization accomplishments. Due to differences in the nature and statutory authority of the OSWER cleanup programs, they "address" properties under their purview in different ways. Development and interpretation of the universe indicator and land protectiveness performance measures will need to articulate and account for these differences. Additionally, OSWER would need to take steps to determine how to avoid double counting acres when compiling cross-program information.
- ❑ Aligning existing revitalization measures with cross-program measures. As discussed in Section 2, several cleanup programs have begun to systematically collect and report revitalization accomplishments (e.g., "ready for reuse" performance measures being reported under GPRA by EPA's Superfund Program). The definition of these existing measures may not align with the definitions or outcomes (e.g., protective for current and future uses) expressed in the cross-program measures. This may require that definitions within this report be refined, existing program-specific measures be refined, or existing measures be cross-walked with the possible cross-program measures identified herein to ensure that accomplishments are compiled and reported appropriately.
- ❑ Standardizing definitions of land use type and land use status. Land use types are described differently for different purposes (e.g., land use planning, zoning enforcement, etc.). The implementation of the "type of use" measure will require the development of

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a nationally standardized definition of land use type. In addition, implementation of a “status of use” measure will require definition of land use status categories, clarifying, for example, issues such as the difference between vacant sites and sites that have remained in continued “ecological use.”

These are some of the cross-cutting challenges that the OSWER cleanup programs would face, individually and as part of a joint effort, in implementing revitalization measures. While they are presented separately, these challenges are inter-related and affect one another. Section 4 discusses next steps that EPA could take to address these issues and continue to enhance and develop OSWER revitalization measures.

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4. Next Steps

This section of the report is presented to promote discussion and may be considered as part of a strategy for moving forward, building on existing efforts, and addressing the unique challenges of each of EPA's cleanup programs. According to the OSWER Assistant Administrator, the implementation of a cross-program revitalization measure by FY 2007 is a top priority. The development of a cross-OSWER revitalization measure will allow OSWER cleanup programs to begin capturing and tracking revitalization accomplishments in a uniform manner and better report land revitalization accomplishments.

The CPRM Workgroup was established to follow up on the work of the Land Revitalization Outcomes and Benefits Workgroup, provide input on implementation issues, and help OSWER meet its priority. The CPRM Workgroup has focused initial implementation efforts on the proposed land protectiveness performance measure and the universe indicator. In addition, the CPRM Workgroup has identified and addressed implementation issues and provided key input on cross-OSWER revitalization measure and indicator definitions.

4.1 Long-term Considerations

Although initial efforts may focus on implementation of the OSWER universe indicator and land protectiveness performance measure, future efforts could focus on implementing new revitalization measures, such as the status of use and type of use indicators, integrating the revitalization measures with EPA's ROE, thoroughly assessing the extent of contaminated land in the U.S., measuring socio-economic impacts of revitalization, and overcoming implementation barriers. These long-term considerations are discussed below.

4.1.1 Conduct Pilot(s) to Evaluate the Viability of New/Enhanced Revitalization Measures

OSWER programs should consider implementing pilot projects to develop and evaluate the viability of new revitalization measures across EPA's cleanup programs. Such pilots could build upon the existing pilot effort occurring in Region 3 in which consistent revitalization measure were developed for the RCRA, Federal Facility and Superfund programs. This effort is exploring the collection of property revitalization data (acres and types of actual use) through a survey instrument among the program site managers. Headquarters is supporting Region 3 and the results of the effort will be shared with the other cleanup programs to consider in implementing the measures. FFRRO would also need to examine whether and how it could work with other federal agencies to collect data on properties in use following the transfer or lease of property at Federal Facilities. One alternative is to approach the development and implementation of new use measures in a phased approach.

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4.1.2 Assess the State of Contaminated Lands in America's Communities

Given the state of EPA's data collection mechanisms, any assessment of the state of contaminated lands in America's communities will represent, at best, a rough estimate. There are significant limitations and gaps in the data on the number of properties, as well as the number of acres with real or perceived contamination at properties across the country. Gaps in the data are due to characteristics of the programs themselves and how they collect information, as well as the absence of a nationwide initiative to determine the state of contaminated land in America.

When it comes to collecting data, federal-led programs enjoy a distinct advantage over primarily state-lead programs, such as RCRA, UST, and Brownfields. Federal-lead site data are collected directly by the responsible program or agency, while state-lead programs can only catalogue data provided by states, local communities, and other grant recipients. As a result, the quality of the data collected by state-led programs varies and the quantity depends on the available resources and willingness of the state to provide it to EPA. There is significant variation in the data collection efforts of states. While some states and local communities collect an impressive array of information, others have yet to develop the necessary mechanisms. Due to these variations in the type, quality and quantity of data collected on the state of America's land, it is difficult to provide anything more than a general estimate.

A thorough cataloging of the nation's contaminated lands and the area they encompass would provide a valuable baseline for new revitalization measures. A baseline could be established for practitioners to set goals, analyze trends, and gauge the progress of cleanup and revitalization. This baseline and the approaches used to track land contamination trends would also address a critical gap in EPA's ROE.

An assessment of the extent of the nation's contaminated lands will likely require a significant research effort. As discussed above, the data are imperfect, fragmented, and in many cases incompatible. Researchers will need to work with DoD, DOE, other civilian agencies, and professional associations, as well as with various state programs. It may be necessary to work with private-sector groups who possess an exhaustive understanding of local conditions. To ensure that the data stay current, a mechanism for collecting these data will have to be crafted based on the lessons learned throughout the initial effort. While such an undertaking would likely require a substantial amount of time and resources, obtaining an accurate portrayal of the state of America's land will provide practitioners with a yardstick to gauge the progress of their efforts, as well as the utility of the measures they develop.

**4.1.3 Consider Using Revitalization Measures to Support Development of an
Environmental Indicator for the Usability of Contaminated Land**

Revitalization performance measures can help EPA track and communicate information regarding the state of the environment and progress in returning actual or perceived contaminated land to use. Revitalization performance measures could concisely communicate when the threshold condition

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that land is protective of human health and the environment has been met. This information could be coupled with information regarding the extent of contaminated lands (see Section 4.1.2) to help explain changes in the extent of contaminated lands over time and explain how OSWER cleanup programs contribute to these trends.

4.1.4 Explore the Opportunities and Challenges of Measuring the Socio-Economic Impacts Resulting from the Revitalization of Properties

An additional area that EPA may wish to explore when tracking or reporting its revitalization accomplishments covers the economic impacts and other types of benefits that result from the revitalization of properties. While EPA is exploring the use of enhanced or new revitalization measures, and the mechanisms for collecting data and implementing the measures, EPA should continue to explore the opportunities to develop methods to measure the positive impacts of revitalization, and to address the unintended negative consequences of reuse.

4.1.4.a Quantify the Economic Impacts and Other Benefits of Revitalization

Several efforts that have been undertaken or are currently underway seek to quantify the economic impacts and other benefits of revitalization. The results may form the foundation for additional efforts to refine and establish a standard method of capturing the outcomes of revitalization. For example, OSWER is studying ways to quantify the benefits stemming from the ecological revitalization of waste sites; OSRTI has developed a draft guide for quantifying the economic impacts resulting from the industrial or commercial use of properties, and has examined the economic impacts stemming from several recreational activities (e.g., soccer tournaments).

OSWER and the National Center for Environmental Economics (NCEE) are also partnering to develop a handbook that examines the benefits and impacts of land reuse using benefit-cost analysis (BCA) and economic impact analysis. BCA calculates the total social benefits and total social costs associated with a policy that measures the change in overall social welfare. Economic impact analysis examines how the positive and negative economic impacts are distributed in society. This handbook will explain the differences between these two types of analyses as they are applied to revitalization. It will also explore in detail the different categories of social benefits that are associated with revitalization, how the categories fit into the framework for BCA, and how best to measure and value each category. The document will provide a comprehensive discussion of the external effects of revitalization, including the potential impact on greenfield development at the urban fringe.

4.1.4.b Consider the Examination of the Unintended, Potentially Negative Impacts of Revitalization

Although the various benefits of revitalization have been discussed in this report, it should be noted that there may be unintended, negative impacts associated with these efforts. In the report titled *Unintended Impacts of Redevelopment and Revitalization Efforts in Five Environmental Justice Communities*, the National Environmental Justice Advisory Council (NEJAC) argues that

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EPA must “thoroughly and rigorously examine any and all unintended consequences of emerging urban cleanup policies.”⁶⁵ The report points out that several urban redevelopment projects have unintentionally exacerbated gentrification and displacement forces in low-income communities.

Given the complexity and difficulty associated with predicting revitalization impacts, EPA should consider taking several steps as a part of its land revitalization initiatives. To begin with, a coordinated, community involvement strategy should be considered; this strategy should provide decision-makers with additional information, while giving communities an important role in the revitalization of their neighborhoods. Increased public involvement should be supplemented by useful, accurate assessments of community demographics, as well as the potential displacement of residents and small, locally-owned businesses. As EPA promotes and supports land revitalization across the country, it needs to address the potential for unintended impacts and implement strategies that maximize the amount of information involved in the decision-making process.

4.2 Other Initiatives

4.2.1 Explore Opportunities to Engage the Private Sector in the Development and Implementation of Revitalization Measures

EPA cleanup programs may want to, or, in some cases, need to explore opportunities to work with the private sector to obtain land use data and identify additional meaningful measures that promote revitalization.

4.2.1.a Develop a Problem Definition/Site Assessment Progress Measure

EPA's cleanup programs define environmental contamination at properties through a site assessment process that typically involves phases from an initial screening, to a more detailed inspection, to a highly detailed investigation involving sampling. For the Brownfields program, this typically involves Phase I and II environmental site assessments; for Superfund, this includes site screening, preliminary assessments, site inspections, and remedial investigations; and for the RCRA program, this involves RCRA facility assessments and facility investigations. To develop a revitalization-related performance measure around the definition or clarification of environmental conditions at a property, EPA's cleanup programs should determine the level of information (i.e., the type of assessment) that the private sector can rely upon to make sound real estate decisions. EPA programs should identify the appropriate stage or type of assessment that EPA may conduct, oversee, or fund to ensure that the Agency relies upon the appropriate assessment mechanism to demonstrate the connection between defining environmental conditions to supporting property use/reuse. One approach may involve an analysis of the private sector's use of the industry standard Phase I and II site assessment process developed by

⁶⁵December 21, 2004 Draft, Page 1.

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ASTM International⁶⁶ to find levels of equivalency among the programs. Otherwise, EPA should consider working with private sector organizations (e.g., developers, lenders, and insurance companies) to identify the appropriate level of information needed to proceed with decisions on the use/reuse of a contaminated property.

**4.2.1.b Explore the Use of Public-Private Partnerships to Obtain
Revitalization Data**

There are a variety of stakeholders that may have access to revitalization-related information, including the owners of properties, companies established to market and manage property transactions, and lending and other financial institutions who manage property transactions and seek credit under the Community Reinvestment Act. OUST is currently exploring the viability and use of public-private partnerships to support revitalization, and identifying opportunities where both sectors have a mutual interest in sharing information. For example, stakeholders interested in obtaining RfR Determinations may be interested in providing revitalization-related information as part of an agreement. Other cleanup programs have established partnerships with organizations that may be able to support the systematic collection of land use data to support EPA's revitalization measures, including the U.S. Soccer Foundation, Habitat for Humanity, and the Wildlife Habitat Council. Using these possible information sources in conjunction with other Agency data collection efforts may provide the needed data to support revitalization performance measures. Specific opportunities for public-private partnerships ought to be explored on a pilot basis to determine their viability and ability to provide the necessary data.

* * * * *

The implementation of a cross-OSWER revitalization measure and indicators, along with the review of long-term considerations suggested in this section would help in the development and enhancement of meaningful, revitalization-related measures across OSWER's cleanup programs that reflect each program's circumstances and operating contexts. In doing so, EPA will be able to fulfill the responsibilities identified in its strategic plan to adjust its approaches and activities to improve results, and to be able to report to the American people on the performance and accomplishments of the Agency and its partners in fostering the revitalization of contaminated (actual or perceived) properties.

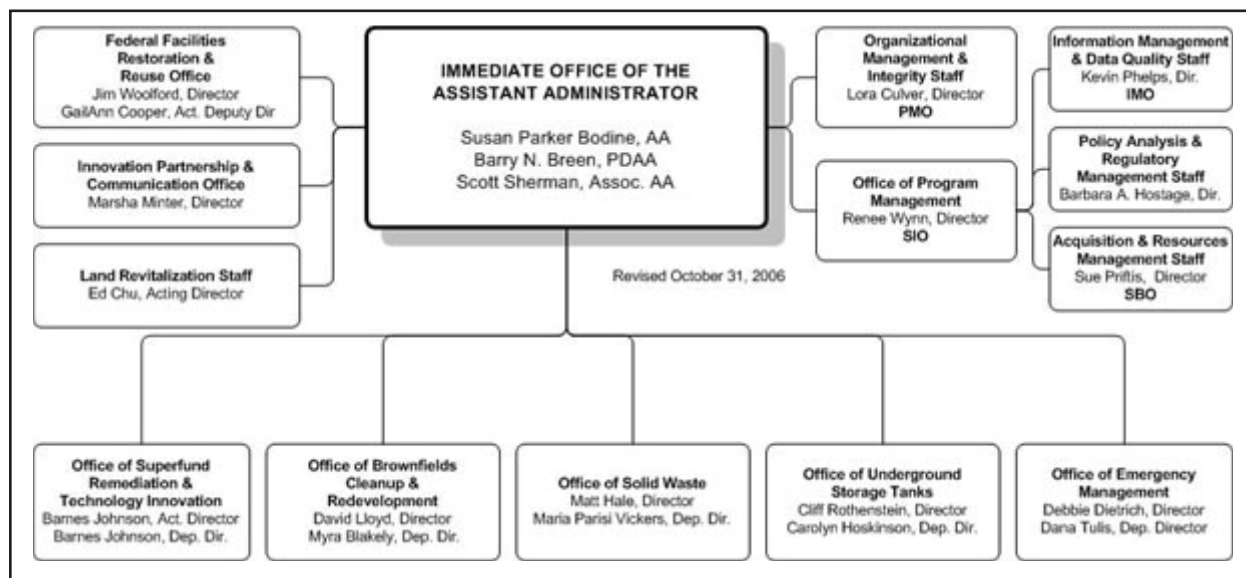
⁶⁶See ASTM E1527-05, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," and ASTM E1903-97(2002), "Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process," ASTM International. For referenced ASTM standards, visit the ASTM website at www.astm.org.

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Appendix A: OSWER Organizational Chart and Selected Program Descriptions



Land Revitalization Staff Office

As part of its mission to protect human health and the environment, EPA is undertaking an Agency-wide initiative to revitalize land by restoring and reusing contaminated, and potentially contaminated, sites. The Land Revitalization Staff Office, established September 2004, is working with EPA programs and external partners to implement this initiative, with continued emphasis on: developing land revitalization statistics, measures, and outcomes; conducting land revitalization public outreach and providing training; promoting effective tools that address barriers to land revitalization; enhancing government coordination to promote land revitalization; and building strong land revitalization partnerships.

Office of Superfund Remediation & Technology Innovation

The Office of Superfund Remediation & Technology Innovation (also known as the Superfund Office) oversees the federal government's program to clean up the nation's privately-owned uncontrolled hazardous waste sites. Under the Superfund Program, abandoned, accidentally spilled, or illegally dumped hazardous substances that pose a current or future threat to human health or the environment are cleaned up. To accomplish its mission, EPA works closely with communities, Potentially Responsible Parties (PRPs), scientists, researchers, contractors, and state, local, tribal, and federal authorities. Together with these groups, EPA identifies sites contaminated with hazardous substances, tests the conditions of the sites, formulates cleanup plans, and cleans up the sites.

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EPA's Superfund Redevelopment Program helps communities return some of the nation's worst contaminated sites to safe and productive uses. While cleaning up these Superfund sites and making them protective of human health and the environment, the Agency is working with communities and other partners in considering future use opportunities and integrating appropriate reuse options into the cleanup process. EPA's Superfund Redevelopment Program is working to encourage communities at every cleanup site to consider anticipated future reuses early so that cleanups can accommodate those uses, while maintaining standards that protect human health and the environment.

Office of Brownfields Cleanup & Redevelopment

EPA's Office of Brownfields Cleanup & Redevelopment oversees the Brownfields Program which is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields. Brownfields are 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. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment.

Office of Solid Waste

The Office of Solid Waste regulates all household, industrial, and commercial solid and hazardous waste under the Resource Conservation and Recovery Act (RCRA). RCRA's goals are to: (1) Protect the public from the hazards of waste disposal; (2) conserve energy and natural resources by recycling and recovery; (3) reduce or eliminate waste; and (4) clean up waste, which may have spilled, leaked, or been improperly disposed. Accidents or other activities at RCRA treatment, storage and disposal facilities have sometimes released pollutants into soil, groundwater, surface water and air. The RCRA Corrective Action Program allows these facilities to address the investigation and cleanup of these hazardous releases themselves. The RCRA Corrective Action Program differs from Superfund in that it deals with sites that in most instances have viable operators and on-going operations.

Office of Underground Storage Tanks

The Office of Underground Storage Tanks (OUST) was created in 1985 to carry out a Congressional mandate to develop and implement a regulatory program for underground storage tank (UST) systems. OUST supports the cleanup and reuse of abandoned properties contaminated with petroleum from underground storage tanks. Congress created the Leaking Underground Storage Tank (LUST) Trust Fund in 1986 by amending Subtitle I of the Resource Conservation and Recovery Act. The LUST Trust Fund has two purposes. First, it provides money for overseeing and enforcing corrective action taken by a responsible party, who is the owner or operator of the leaking UST. Second, the Trust Fund provides money for cleanups at

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UST sites where the owner or operator is unknown, unwilling, or unable to respond, or which require emergency action. To receive money from the Trust Fund, a state must enter into a cooperative agreement with the federal government to spend the money for its intended purpose. Trust Fund money is divided among EPA Regional offices based on a formula that uses state data. States use Trust Fund money to oversee corrective action by a responsible party and to clean up sites where no responsible party can be found.

Federal Facilities Restoration and Reuse Office

The Federal Facilities Restoration and Reuse Office (FFRRO) works with other federal entities to facilitate faster, more effective, and less costly cleanup and reuse of federal facilities, including conducting cleanups pursuant to Superfund. By focusing on partnering and public involvement, FFRRO, and its counterpart offices in EPA Regions, have made great strides in improving federal facilities cleanup. FFRRO functions with the following specific goals in mind: protecting human health and the environment at and near federal facilities; promoting reuse of federal properties in a manner that is protective of human health and the environment; enhancing the cleanup process; and ensuring effective stakeholder involvement at Federal Facilities. FFRRO's work consists of two core components: the Superfund Federal Facility Response program and the Base Realignment and Closure program. FFRRO works internally within EPA, as well as with the Department of Defense, the Department of Energy, and other federal agencies to find protective, creative, and cost-effective cleanup solutions. Under FFRRO, EPA provides technical and regulatory oversight at Federal Facilities on the National Priority List (NPL) to ensure protection of human health, effective program implementation, and meaningful public involvement. FFRRO approves other federal agencies cleanup remedies.

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Appendix B: Cover Letter Requesting Review of Draft “Measuring Revitalization of Contaminated Properties in America’s Communities: Past Accomplishments and Future Opportunities” Report



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

August 17, 2005

MEMORANDUM

SUBJECT: Review of “Measuring Revitalization of Contaminated Properties in America’s Communities: Past Accomplishments and Future Opportunities” report and development of cross-OSWER land revitalization measures

FROM: Thomas P. Dunne, Acting Assistant Administrator /s/
Barry N. Breen, Deputy Assistant Administrator /s/

TO: OSWER Office and Staff Directors
Superfund, RCRA, Tanks, and Brownfields Regional Directors

Attached is “Measuring Revitalization of Contaminated Properties in America’s Communities: Past Accomplishments and Future Opportunities.” Please provide comments on the report and specific recommendations on how to move forward in developing cross-OSWER revitalization measures to Guy Tomassoni (Land Revitalization Staff project lead) by September 16.

The Land Revitalization Office produced the attached draft report developed with input from representatives of your offices serving on the Outcomes and Benefits Workgroup. The primary objectives of the report include: describing why revitalization and measuring revitalization is important to cleanup programs (Chapter 1); summarizing existing measures being used by OSWER cleanup programs as well as associated data (Chapter 2 and Appendices); identifying opportunities for possible cross-program revitalization measures (Chapter 3); and, conveying possible next steps for development of new or enhanced revitalization measures (Chapter 4). For a quick overview, the report also includes a three-page executive summary.

This is a high OSWER priority. We hope that this report will help launch a consistent, unified approach to measure and report cross-program revitalization accomplishments. We have asked the Land Revitalization Office to work with your offices, Region 6 (as the sub-lead region for land revitalization) and the states (through ASTSWMO) to schedule a series of cross-program discussions through which we can develop measures and an implementation plan. We hope to begin using at least one measure in FY07.

We thank your workgroup members in helping to produce this draft report, and your offices in general for the upcoming collaborative effort.

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Appendix C: Program Revitalization Definitions¹

Brownfields

Number of Properties with Redevelopment Underway: The number of properties where redevelopment activities were initiated (the grant recipients are also asked to provide the redevelopment start date). In addition, any required Institutional Controls must be in place at the property in order for it to be considered ready for reuse.

Number of Cleanup/Redevelopment Jobs Leveraged: The total number of all jobs leveraged during the term of the grant at the property. The number listed should include jobs of a short-term nature (i.e., with a duration of less than one year) typically leveraged during the assessment, cleanup, and construction stage; and jobs of a long-term nature that typically occur as a result of the new or enhanced reuse at the property (i.e., with a duration of more than one year). Only actual jobs should be reported; planned or expected jobs should not be reported until they are realized.

Amount of Cleanup/Redevelopment Funding Received or Leveraged: All funds linked and leveraged by the grant to support additional, related activities at the property. Only funding committed to the property should be reported; anticipated funding should not be reported until it is committed. Redevelopment may include non-commercial reuses (e.g., parks, wildlife refuges, nature trails, and green spaces, non-profit community health care facility) as well as commercial or industrial uses (e.g., the expansion or remodeling of an existing manufacturing facility, the construction of a new retail space) and residential and public purpose uses (e.g., courthouse, public health clinic). Redevelopment activities conducted and funded prior to the awarding of the grant should not be provided (i.e., pre-award activities are not considered leveraged and should not be reported). Leveraged funds may be used to support allowable activities (e.g., inventory, assessment, cleanup) and activities that cannot be funded by the EPA grant (e.g., demolition, site preparation, redevelopment construction, transportation improvements).

Number of Job Training Participants Completing Training: The number of participants taking the grant-funded training who have completed the training program.

Number of Job Training Participants Obtaining Employment: The number of graduates from the grant-funded training who have obtained employment of any kind.

Number of Properties Ready for Reuse: EPA does not provide definitions to the grant recipients for this measure because ACRES calculates the data. ACRES was programmed to determine the Number of Properties Ready for Reuse based on the Number of Properties Assessed that Do Not Require Cleanup and the Number of Properties Cleaned Up.

¹Some of these performance measures use the term “leveraged” to refer to those non-EPA brownfields grant funds and activities that have some link or nexus to the efforts of an EPA grant-funded activity, or where the EPA grant-funded activity was a catalyst for the leveraged accomplishments.

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Number of Acres Ready for Reuse: EPA does not provide definitions to the grant recipients for this measure because ACRES calculates the data. ACRES was programmed to determine the Number of Acres Ready for Reuse based on the Number of Acres Assessed that Do Not Require Cleanup and the Number of Acres Cleaned Up. In addition, any required Institutional Controls must be in place at the property in order for the associated acreage to be considered ready for reuse.

Number of Acres of Green Space Created: The number of acres that have been newly created or made available as green space (i.e., acres of green space created). This includes only the acreage for the portion of the property that constitutes green space. Green space typically refers to vegetated or water-covered space that is in a natural or unbuilt condition, meaning not covered with buildings, roads, or other paved areas, thus providing environmental, recreational, and other benefits (e.g., parks, wildlife refuges, nature trails).

Superfund

Acres Ready for Reuse: Under the Superfund GPRA performance measure, a site is considered to be ready for reuse if any of the following apply: (1) the site or a portion of a site is already being used; (2) Superfund response actions are unnecessary for the site or portion of the site as a result of an investigation of the property, and the Agency is not aware of other EPA, State, Tribal, or local government environmental or land use restrictions for that property; or (3) the cleanup goals established for the site or portion of the site have been attained (i.e., engineering controls for the land component have been implemented and are operating as intended).

Sitewide Ready for Reuse: The new "Sitewide Ready-for Reuse" Superfund performance measure is defined as:

The number of final and deleted construction complete National Priorities List (NPL) sites where, for the entire site:

- (1) All cleanup goals in the Record(s) of Decision or other remedy decision document(s) have been achieved for media that may affect current and reasonably anticipated future land uses of the site, so that there are no unacceptable risks; and
- (2) All institutional or other controls required in the Record(s) of Decision or other remedy decision document(s) have been put in place.

Definitions of reuse status from the SURE database glossary:

Actual Continued: The status of a site where EPA has undertaken or has overseen the cleanup at the site, which allowed the site to be used productively during and after the cleanup.

Actual Reuse: The status of a site where new commercial, residential, ecological, recreational, agricultural, governmental or other new use is occurring at the site. This means that the developed site, or portion of the site, is "open" or actually being used by customers, visitors, employees, residents, etc.

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Definite Planned: The status of a site where a detailed plan for a new use is in place. This means that the redevelopment of the site has either been initiated (i.e., broken ground), the developers are planning to break ground in the near future, or where there is a contract with a developer and finances are secured.

Early Stages of Planning: The status of a site where a site-specific reuse plan is completed or very near completion, and that the reuse options have been determined to be viable (e.g., have been adopted or RAFLU).

Monitored: The status of a site where the Regions have had contact with the community and where stakeholder meetings are occurring and reuse options are being discussed, as well as sites where reuse is being discussed as reported in local or national print or other media.

Restored: The status of a site where pre-existing use has been halted during cleanup, and was resumed after the site was cleaned up.

Definitions of reuse type used by the SURE database (Note: these definitions are not included in the SURE glossary):

- Agricultural Reuse** – Communities are reusing cleaned-up sites for agricultural purposes such as farmland for growing crops and pasture for livestock. Agricultural reuse can encompass other activities as well, such as growing orchards, supporting research and development, and irrigating existing farmland.
- Commercial Reuse** – While all types of reuse provide some level of economic benefit, most is generated by commercial reuse. Retail shops, grocery stores, offices, restaurants, and other businesses bring employment, shopping, and other opportunities to residents in these communities, and can spur related development projects in the area.
- Ecological Reuse** – The ecological reuse of sites restores and sustains natural areas, providing wildlife sanctuaries, nature preserves, meadows, and wetlands. These cleaned-up sites provide habitat for terrestrial and aquatic plants and animals, and areas for low-impact recreation such as walking and bird watching. While some “passive” recreational opportunities may result from the restoration of natural areas, in ecological reuse, nature is the primary beneficiary.
- Industrial Reuse** – refers to sites used for traditional industrial purposes such as processing and manufacturing products from raw materials; and fabrication, assembly, treatment and packaging of finished products. Examples of industrial use sites include factories, power plants, storage facilities, warehouses, waste disposal sites, land fill operations, and junk yards.

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- ❑ **Public Service Reuse** – Public service reuse refers to the redevelopment of sites by local, state, or federal government agencies to serve citizens' needs. This type of reuse can include transportation services such as rail lines and bus depots, community libraries and schools, government offices, public infrastructure such as roads, bridges, and utilities, and other services for the general public.
- ❑ **Recreational Reuse** – Recreational reuse allows communities to enjoy new sports facilities, trails, open space for hiking and picnicking, and other opportunities for indoor and outdoor leisure activities. Examples of recreational reuse include playgrounds, parks, golf courses, baseball fields, skating rinks, basketball courts, soccer fields, boat launches, and campgrounds.
- ❑ **Residential Reuse** – Many sites are being reused for residential purposes, including single-family homes, apartment complexes, condominiums, affordable housing, and assisted-care living facilities on cleaned-up Superfund sites. In addition to supporting new housing developments, these properties may include parks, playgrounds, and open space for residents to enjoy.
- ❑ **Industrial Reuse** – refers to sites used for traditional industrial purposes such as processing and manufacturing products from raw materials; and fabrication, assembly, treatment and packaging of finished products. Examples of industrial use sites include factories, power plants, storage facilities, warehouses, waste disposal sites, land fill operations, and junk yards.

Region 3 Superfund, Federal Facility, and RCRA Corrective Action Sites

Definitions Used in a Pilot Project Implemented with Support from EPA HQ's Land Revitalization Office:

Current Land Use:

- ❑ **Continued Use** – A site or portion of a site which is currently being used in the same general manner as it was when the site became contaminated. For example, continued use would be an appropriate description for a property where industrial operations resulted in the contamination and the property is still used as an operating industrial facility. The RCRA Program will count all acres of an active RCRA industrial facility as Continued Use, except for parcels specifically designated as Reused or Planned Reuse.
- ❑ **Restored Reuse** (Superfund site only) – Used for properties temporarily halted during cleanup and the same use was resumed after the site was cleaned up.

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- Reused** – Property where a new use, or uses, is occurring such that there has been a change in the type of use (e.g. industrial to commercial) or the property was vacant and now supports a specific use. This means that the developed site, or portion of the site, is “open” or actually being used by customers, visitors, employees, residents, etc.
- Planned Reuse** – A site where a plan for a new use or uses is in-place. This could include conceptual plans, a contract with a developer, secured financing, approval by the local government, or the initiation of site redevelopment.
- No Current Use** – A site or portion of a site which is currently vacant.

Types of Use:

- Agricultural Use** – Property used for agricultural purposes such as farmland for growing crops and pasture for livestock. Agricultural use can also encompass other activities such as growing orchards, agricultural research and development, and irrigating existing farmland.
- Commercial Use** – Property used for retail shops, grocery stores, offices, restaurants, and other businesses.
- Enhanced Ecological Use** – Property where proactive measures, including a conservation easement, have been implemented to create, restore or enhance an ecologic habitat for terrestrial and/or aquatic plants and animals, such as wildlife sanctuaries, nature preserves, meadows, and wetlands.
- Industrial Use** – Property used for traditional light and heavy industrial uses such as processing and manufacturing products from raw materials, as well as fabrication, assembly, treatment, and packaging of finished products. Examples of industrial reuse sites include factories, power plants, storage facilities, warehouses, waste disposal sites, landfill operations, and junk yards.
- Military** – Property used for training, operations, research & development, weapons testing, range activities, logistic support, and/or provision of services to support military or national security purposes.
- Mixed Use** – This category is for sites where no one use is dominant, or the multiple uses cannot be differentiated on the basis of acre. For example a condominium with retail shops on the ground floor and residential use on the upper floors would fall into this category. When selecting Mixed Use, the project manager will need to report the different types of uses in the mixed use.

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- Other Federal Use – Property used to support the federal government in federal agency operations, training, research, and/or provision of services for purposes other than national security or military.
- Public Service Use – Property which is being utilized by a local, state or federal government agency, or a non-profit group to serve citizens' needs. This can include transportation services such as rail lines and bus depots, community libraries and schools, government offices, public infrastructure such as roads, bridges, and utilities, and other services for the general public.
- Recreational Use – Property which is being used for recreational activities such as sports facilities, golf courses, ballfields, open space for hiking and picnicking, and other opportunities for indoor and outdoor leisure activities.
- Residential Use – Properties which are being used for residential purposes including single-family homes, apartment complexes, and condominiums.

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Appendix D: Non-Federal Facility Superfund Land Revitalization Data

Exhibit D-1: Private Sites CERCLIS Land Reuse Data by Region¹

Region	# of Sites with Acres Ready for Reuse	Acres Ready for Non-Residential Reuse	Acres Ready for Residential Reuse	Total Acres Ready for Reuse	# of Sites in Reuse
1	26	826	518	1,344	7
2	37	1,583	87	1,670	1
3	78	3,569	554	4,123	43
4	55	3,042	605	3,647	24
5	93	11,776	603	12,379	31
6	37	1,300	215	1,515	2
7	34	2,192	18,648	20,840	25
8	24	159,040	28,048	187,088	19
9	57	5,742	2,111	7,853	47
10	31	3,390	242	3,632	27
Total	472	192,460	51,631	244,090	226

Number of Sites with Acres Ready for Non-Residential Reuse	317
Number of Sites with Acres Ready for Residential Reuse	72
Number of Sites with Acres Ready for Non-Residential and Residential Reuse	35
Number of Sites with Zero Acres	48
Total Number of Sites with Acreage values > 0	424
Total Number of Sites with land ready for Reuse	472

Exhibit D-2: Data from the SURE database (as of EOY 04)

Excluding Mixed Use Sites:

Reuse Type	# of Sites
Agricultural	5
Commercial	93
Ecological	19
Industrial	45
Public	16
Recreational	31
Residential	20
Total	229

Including Mixed Use Sites:

Reuse Type	# of Sites
Agricultural	3
Commercial	66
Ecological	11
Industrial	44
Mixed	33
Public	12
Recreational	13
Residential	7
Total	189

¹Data obtained from EOY FY04 SCAP-15 Report on Land Reuse from CERCLIS.

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Note: As of September 30, 2004, SURE has information on 189 out of 226 sites flagged as in use in CERCLIS. The number of reuse types add up to more than 189 because some sites have more than one reuse type. 33 sites are mixed use sites (have more than one reuse type) and 156 sites have only one reuse type.

Region 6: Source: Wisdom Database (as of EOY 04)

Number of Usable Acres: 18,804

The Wisdom Database tracks 126 Superfund sites in Region 6 and includes the following data elements: basic site info; contacts; encumbrances; acres; usable acres; property improvements; zoning; contaminants; groundwater status; historic factors; EJ issues; potential for reuse; utilities; near mass transit; population (1 mile); demographics; unemployed rate; surrounding land use; incentive to buyer; comments; and reference information.

Exhibit D-3: Superfund Reuse Information Detail²

Superfund Reuse Information Tracked	Number
Superfund Sites and Acres Ready for Reuse	
Number of non-Federal Facility (FF) Superfund sites with land that is ready for reuse:	472
Number of acres of land at non-FF Superfund sites that are ready for reuse:	244,090
Number of acres of land at non-FF Superfund sites that are ready for non-residential reuse:	192,460
Number of non-FF Superfund sites that have land ready for non-residential reuse:	352
Number of acres of land at non-FF Superfund sites that are ready for residential reuse:	51,630
Number of non-FF Superfund sites that have land ready for residential reuse:	107
Number of non-FF Superfund sites that have land ready for both non-residential and residential reuse:	35
Number of Ready for Reuse (RfR) Determinations that have been issued for Superfund sites to date:	7
Superfund Sites in Actual Use³	
Number of sites identified as in use:	226
Number of sites in commercial use:	93
Number of sites in industrial use:	45
Number of sites in recreational use:	31
Number of sites in residential use:	20
Number of sites in ecological use:	19
Number of sites in public use:	16
Number of sites in agricultural use:	5

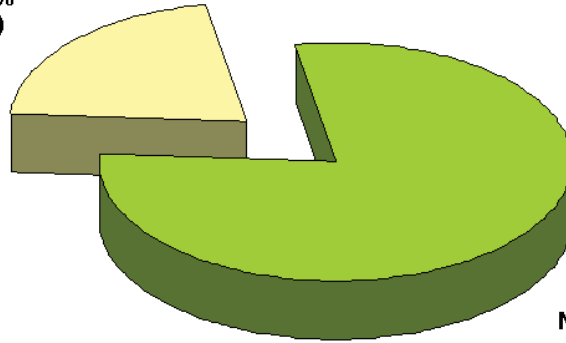
²Data obtained from EOY FY04 SCAP-15 Report on Land Reuse from CERCLIS.

³Reuse type information obtained from the SURE database as of EOY 04. SURE has information on 189 out of 226 sites flagged as in use in CERCLIS. This number includes sites that may have more than one reuse type.

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**Acres Ready for Reuse at 472 non-Federal
Facility Superfund Sites (Residential vs.
Non-Residential)**

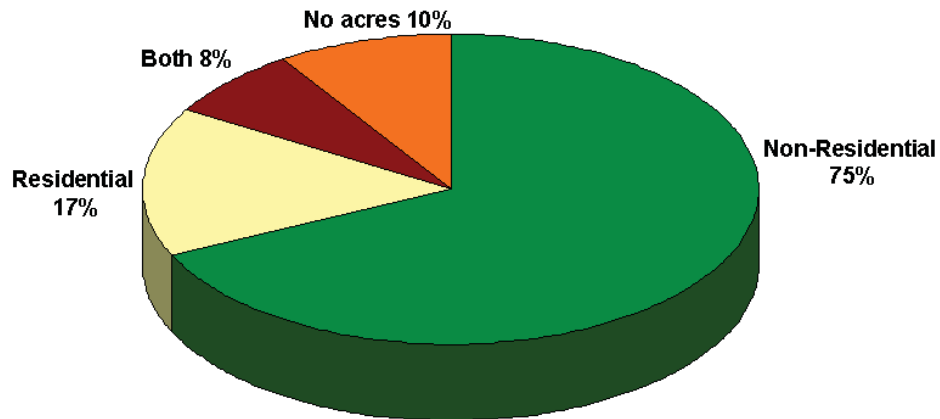
Residential 21%
(51,630 acres)



Non-Residential 79%
(192,460 acres)

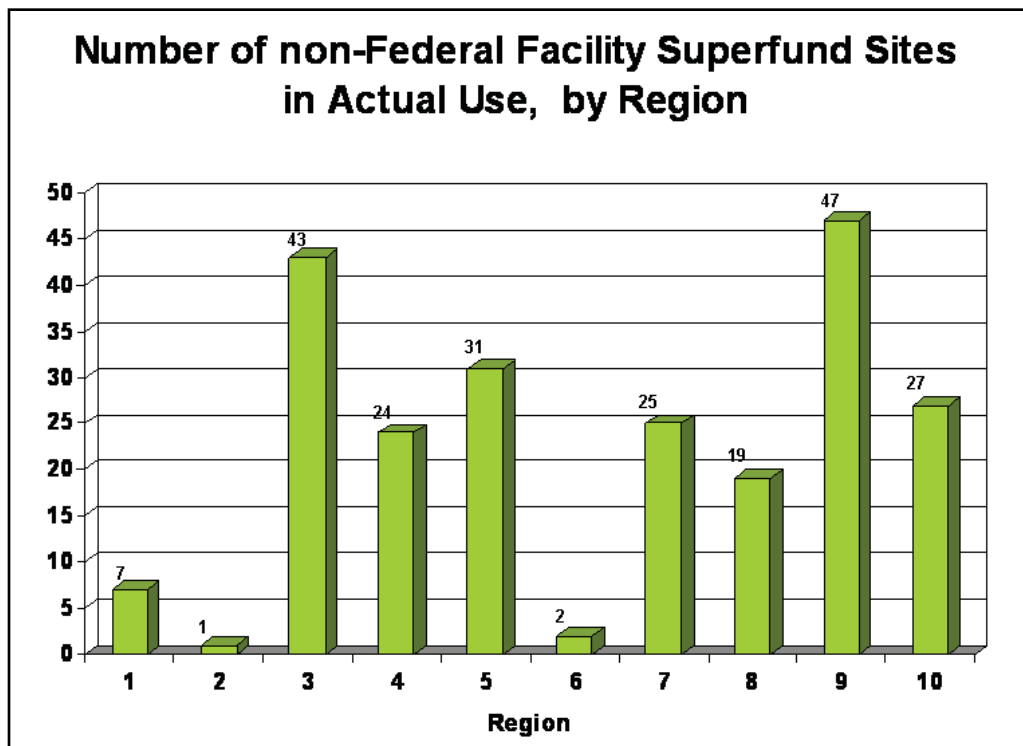
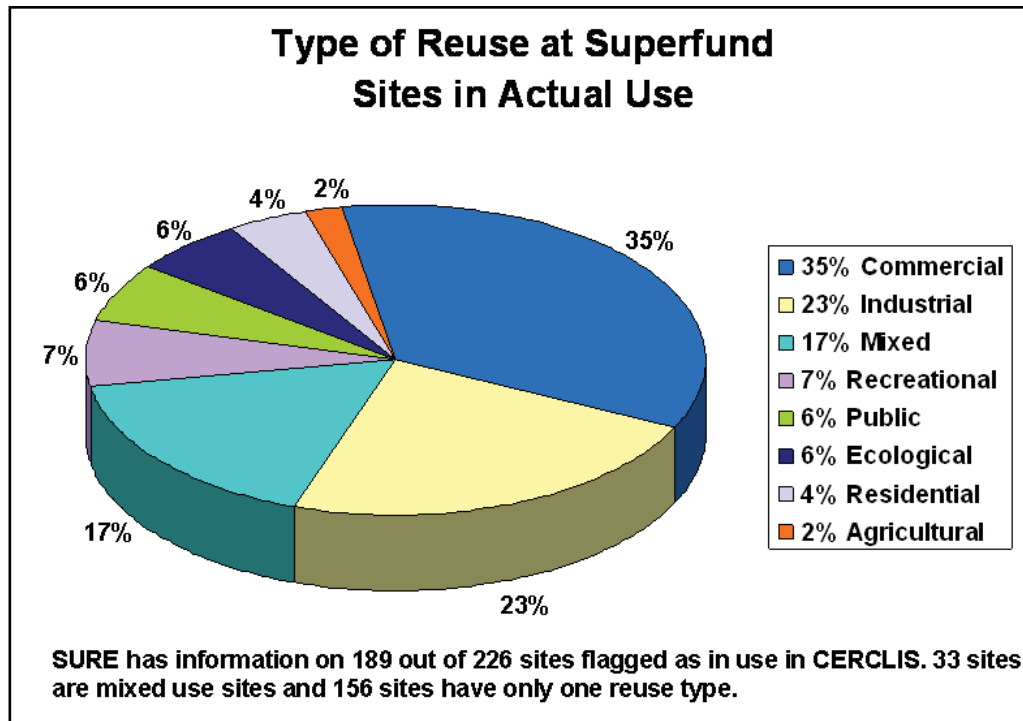
* 48 sites currently have zero acres entered in for acres ready for reuse. These sites are included in the number of sites with land ready for reuse.

**472 non-Federal Facility Superfund Sites
Ready for Reuse**



*48 sites currently have zero acres entered in for acres ready for reuse. These sites are included in the number of sites with land ready for reuse.

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Appendix E: RCRA Land Revitalization Data

Headquarters RCRA Land Revitalization Data

RCRA Brownfields Pilots

Information on the 9 RCRA Brownfields Pilots chosen in 2000 and 2001 and which focus on revitalization, as well as “Lessons Learned” reports for each round of pilots, can be found on EPA’s Web site at: <http://www.epa.gov/swerosps/rcrabf/success.htm>. These Pilot descriptions include information on the properties, cleanup activities, efforts to move properties toward reuse and reuse plans.

Examples of Ecological Reuse of RCRA Facilities

A list of remediated RCRA sites with ecological/recreational reuse is available at <http://www.epa.gov/swerosps/rcrabf/ecoreuse.htm>.

RCRA Targeted Site Effort Projects

In September 2001, seven RCRA facilities were selected as “targeted sites” where the RCRA Brownfields Prevention Initiative would conduct Targeted Site Efforts (TSEs). In 2002, EPA announced a second round of TSEs. The targeted sites were selected because they had one or a number of barriers that were preventing them from being cleaned up and/or redeveloped. The TSEs focus short term resources, (both human resources and some funding) to resolve these barriers to moving forward with cleanup and reuse of the RCRA site. The TSEs are designed to showcase Brownfields tools and RCRA Cleanup Reforms and also to emphasize the importance of addressing brownfields issues in RCRA cleanups. Information on these projects can be found on EPA’s Web site at <http://www.epa.gov/swerosps/rcrabf/tse.htm>.

Regional RCRA Land Revitalization Data

Several regions have information and factsheets on specific sites posted on their websites. Links to the Regional websites can be found at <http://www.epa.gov/rcrabrownfields/contacts.htm>.

Regional Success Stories, including 16 RCRA Cleanup Reforms Success Stories (2 of these focus on reuse: Region 3 and 5) are available on EPA’s Web site at: <http://www.epa.gov/epaoswer/hazwaste/ca/success.htm>. The success stories focusing on reuse are anecdotal and provide information on dollars spent on redevelopment; size of the site (often in acres); type of reuse; and the number of jobs created.

Region 1 Land Revitalization Data

Region 1 maintains basic land revitalization information on its RCRA Corrective Action facilities that includes acreage as well as the original use (that caused the facility to enter the RCRA Corrective Action universe), the current use and potential future uses.

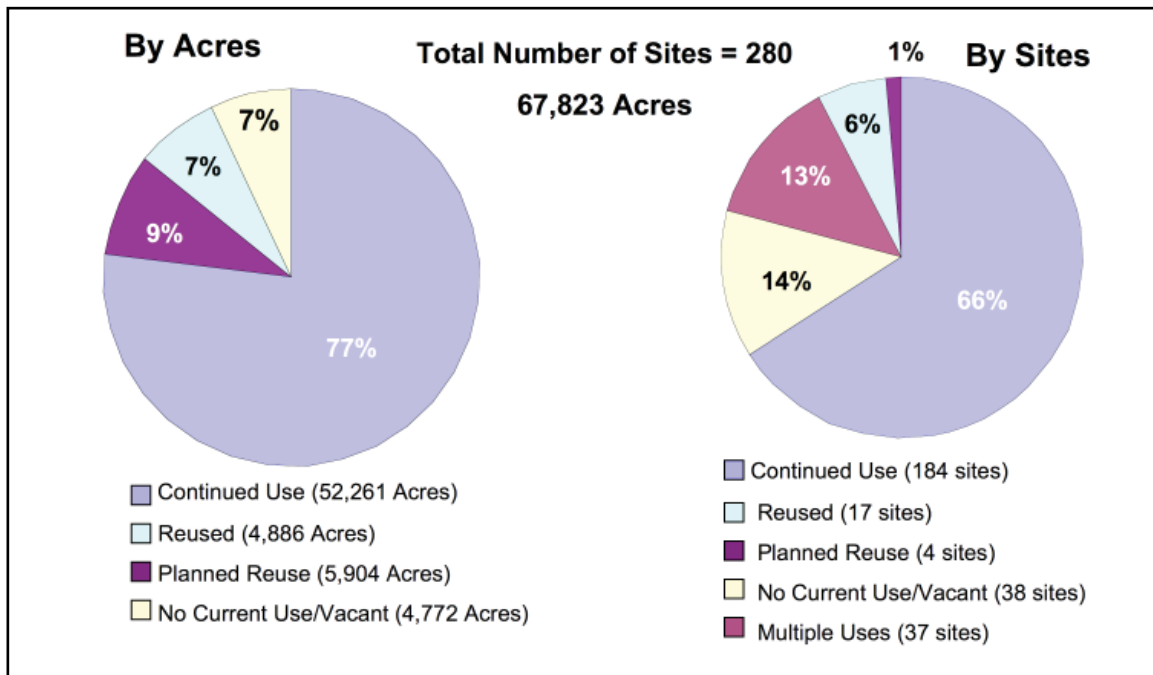
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Region 3 Land Revitalization Data

Information on 19 Redevelopment Success Stories posted is available on the Region 3 Web page at http://www.epa.gov/reg3wcmd/ca/bf_facilities.htm. These are 1 page success stories providing anecdotal information on the site cleanup and redevelopment. Generally, these success stories include site acreage information and reuse descriptions.

In 2005, in conjunction with EPA's Office of Solid Waste and Emergency Response (OSWER) and state agency partners, Region 3 participated in a regional inventory of hazardous waste sites use/reuse assessment. For RCRA, the Region collected reuse information on the 289 high priority facilities that comprise Region 3's 2008 Government Performance Results Act (GPRA) baseline, Project managers filled-out the Use/Reuse Assess Form with information on both the number of sites and the number of acres. Information was collected and analyzed on current land use, type of use, cleanup status, agency effort to facilitate use/reuse, and economic and environmental benefits. Refer to **Exhibit E-1** through **E-3** for results for Region 3 site use/reuse assessment.

Exhibit E-1: Region 3 RCRA Current Land Use



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Exhibit E-2: Region 3 RCRA Agency Involvement Reused/Planned Reuse

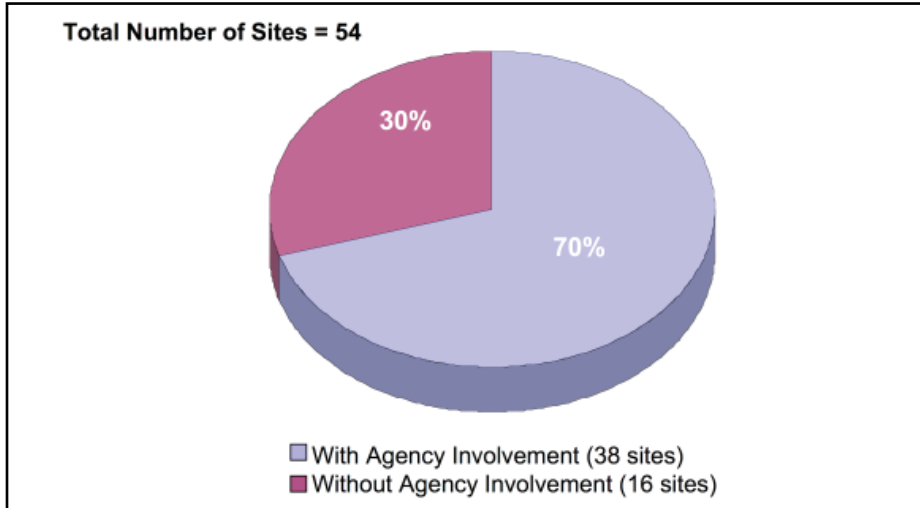
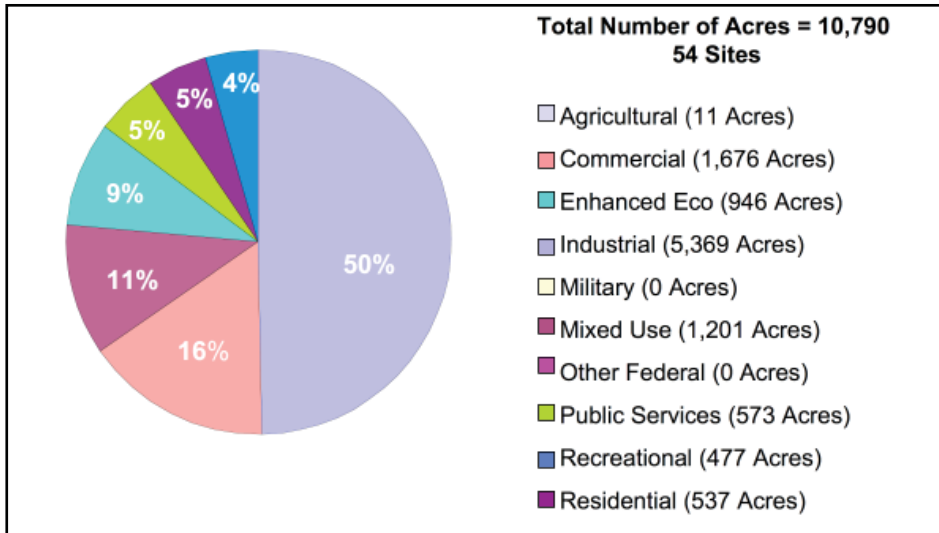


Exhibit E-3: Region 3 RCRA Type of Use Reused and Planned Reuse



Region 5: RCRA Federal Lead Sites (Spring 2001 survey of 155 high priority sites)

In 2001/2002 Region 5 conducted a survey of regional project managers about 155 Federal lead RCRA CA GPRA sites. Information from this survey provided the following information on possible future use of these RCRA sites. A factsheet on the methodology and results of this survey can be found at <http://www.epa.gov/swerosps/rcrabf/pdf/surveyfs.pdf>.

Reuse: 53%
No Reuse: 46%
Unknown: 1%

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Number of Potential Future Reuse Options

Habitat/Eco: 49

Industrial: 42

Recreational: 14

Commercial: 11

Other: 12

Residential: 3

Habitat/Eco Reuse Potential: 59%

Non-Habitat/Eco: 41%

Definition of terms used in the survey:

Reuse Potential: A site may have excess property that will not be used or is currently unused and would be available for redevelopment following the completion of corrective action.

No Reuse Potential: A facility does not have any unused property that can be redeveloped. Some operating facilities are completely built out to its property lines.

Habitat Area: Land that sustains local flora and fauna. This could include wetlands, prairies, woodlands, riparian areas, river banks, etc.

Industrial: Manufacturing facilities, refineries, assembling plants, power plants, etc.

Commercial: Department Stores, malls, gas stations, home improvement stores, etc.

Recreational: Parks, playgrounds, soccer/football fields, tennis courts, etc.

Residential: Homes, condominiums, etc.

Other: This could include uses such as farming, ranching, cemeteries, historical locations, highways, etc.

Multiple Reuses: When a site is redeveloped into a number of uses, such as commercial and recreations and habitat area. This may occur in large sites, such as military bases.

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Exhibit E-4: Region 5 RCRA Survey Data

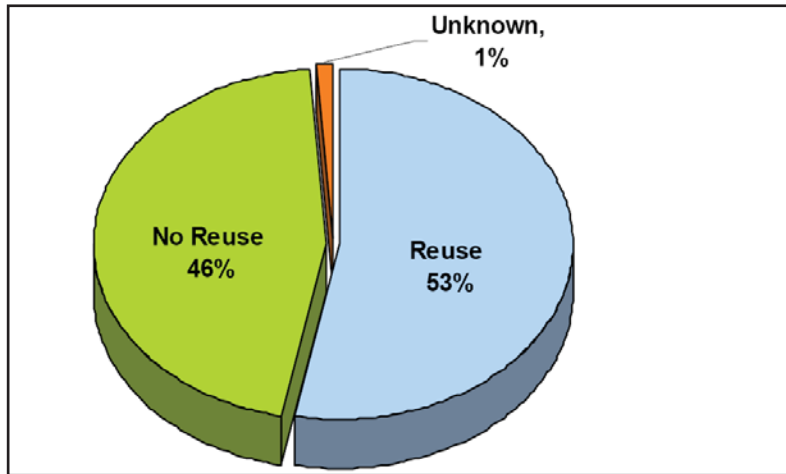


Exhibit E-5: Region 5 RCRA Survey Data

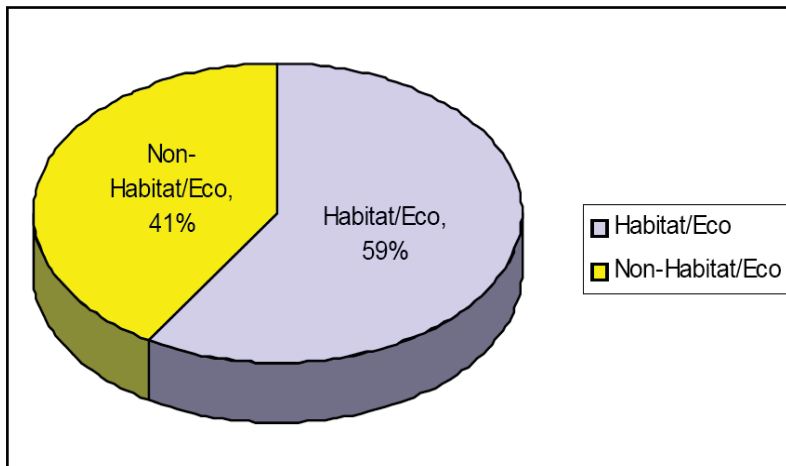
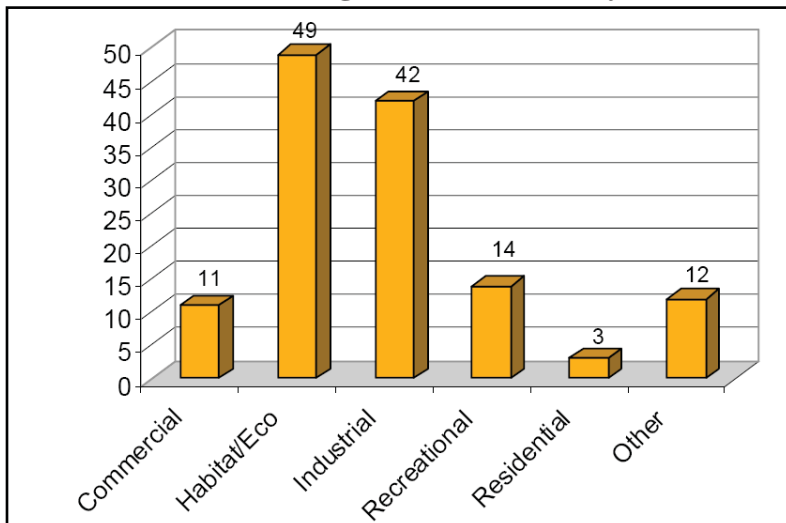
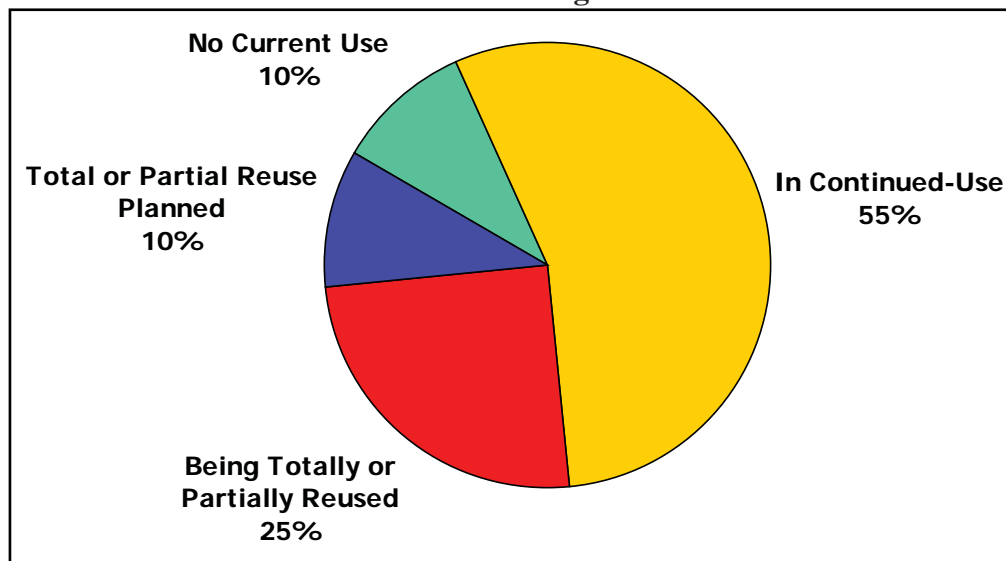


Exhibit E-6: Region 5 RCRA Survey Data



**Measuring Revitalization of Contaminated Properties in America's Communities:
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Exhibit E-7: Region 9



- Region 9 studied high-priority corrective action sites;
- Identified original site use, prior waste history, current property use, planned use;
- Estimated scale of reuse where possible;
- Gathered anecdotal information about barriers to reuse, future potential for underutilized sites, success stories; and
- Is updating this data for 2006 and adding medium and low priority sites.

Region 6 Land Revitalization Data from RCRAInfo¹

Number of RCRA sites with Ready for Reuse Determinations: 3

¹Region 6 is currently the only region which has enabled RCRAInfo to track sites that have been issued Ready for Reuse Determinations. This data is current as of March 3, 2005.

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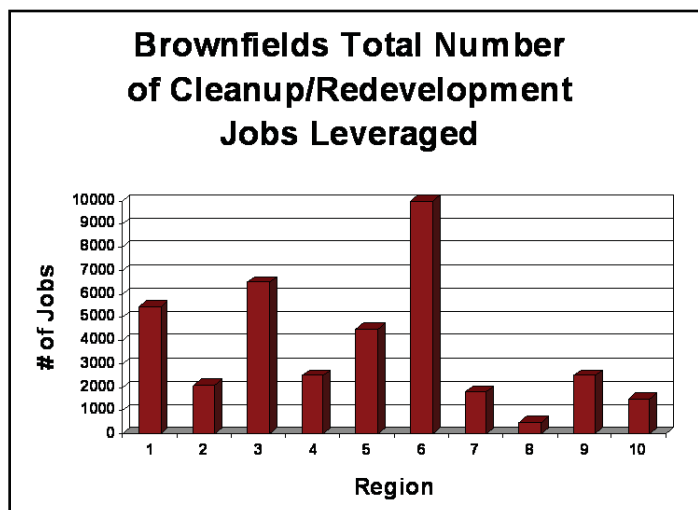
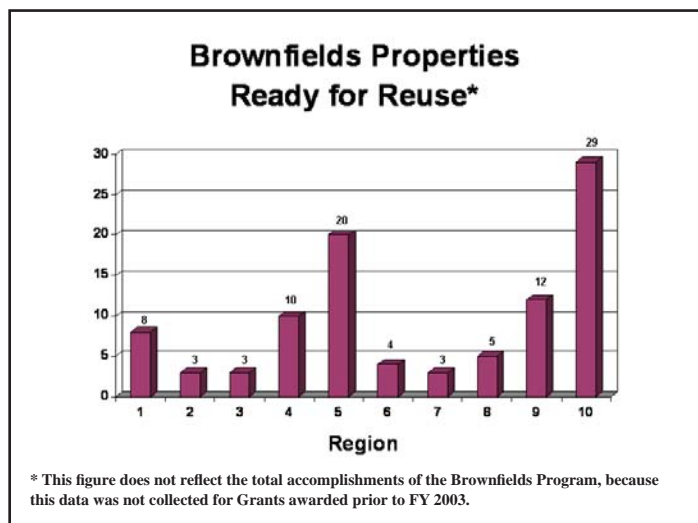
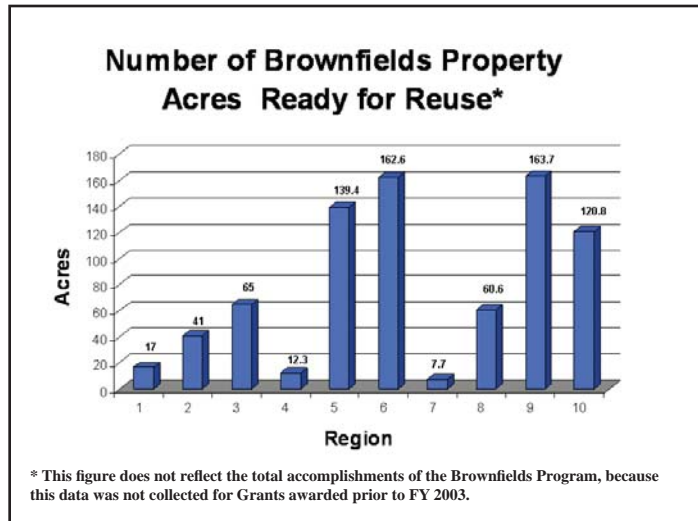
Appendix F: Brownfields Land Revitalization Data

Reuse Measure for Brownfields Program, by Region (FY1996 – FY2006/2) (from
Brownfields Management Summary Reports from July 2006)

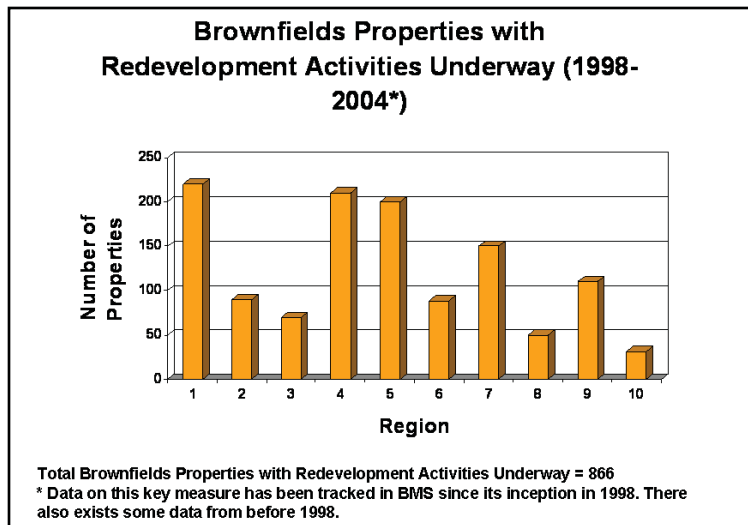
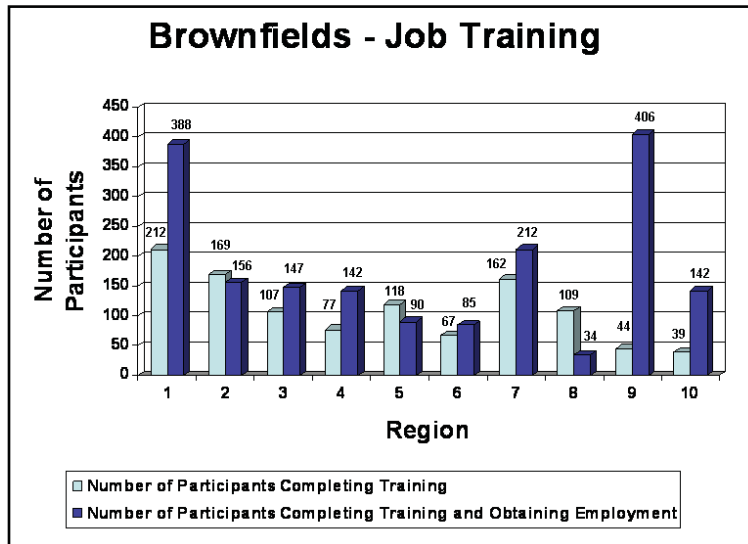
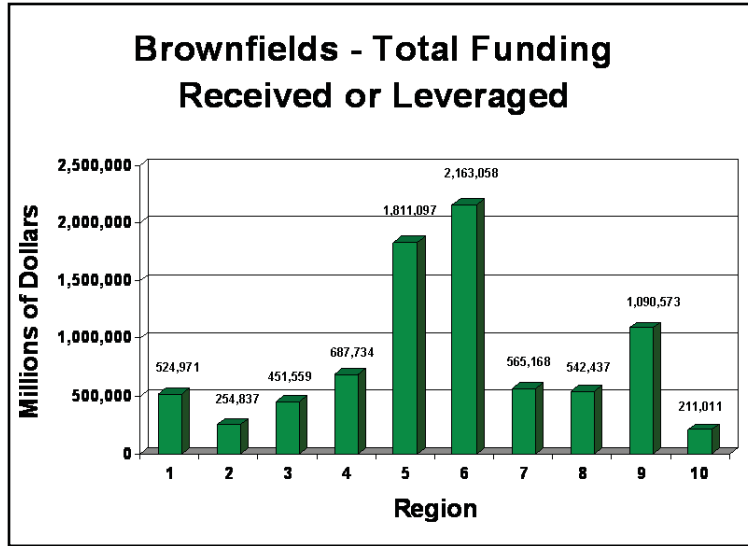
Region	Acres Ready for Reuse*	Properties Ready for Reuse*	Total Number of Cleanup/ Redevelopment Jobs Leveraged	Total Funding Received or Leveraged	Number of Participants Completing Training and Obtaining Employment	Number of Participants Completing Training but not Placed	Properties with Redevelopment Activities Underway	Acres of Green/ Open Space Created*
1	17	8	5739	\$524,971,000	388	212	228	7
2	41	3	2511	\$254,837,000	156	169	82	20
3	65	3	6403	\$451,559,000	147	107	78	25
4	12.3	10	2396	\$687,734,000	142	77	183	18
5	139.4	20	4290	\$1,833,097,000	90	118	174	67
6	162.55	4	10287	\$2,163,058,000	85	67	121	0
7	7.69	3	1921	\$565,168,000	212	162	148	0
8	60.56	5	768	\$542,437,000	34	109	54	1
9	163.67	12	2145	\$1,090,573,000	406	44	91	27
10	120.81	29	1402	\$211,011,000	142	39	39	0
Total	789.98	97	37,862	\$8,324,445,000	1,802	1,104	1,198	165

* This figure does not reflect the total accomplishments of the Brownfields Program, because this data was not collected for Grants awarded prior to FY 2003.

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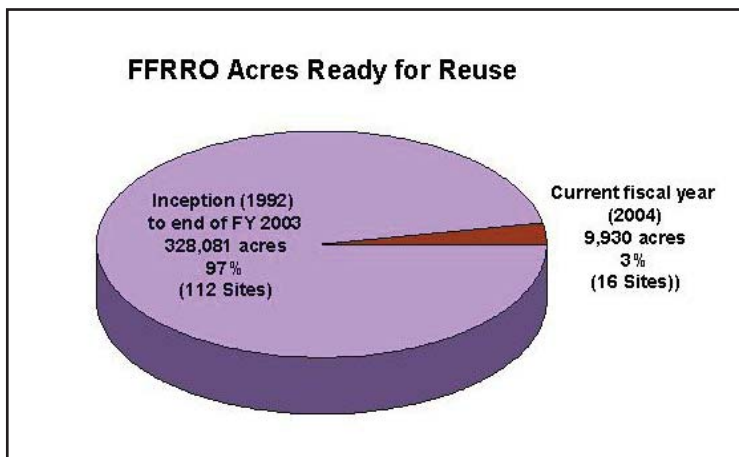
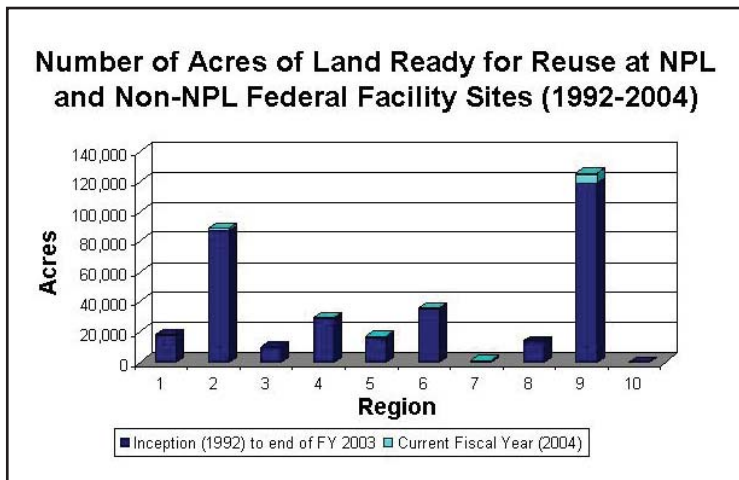
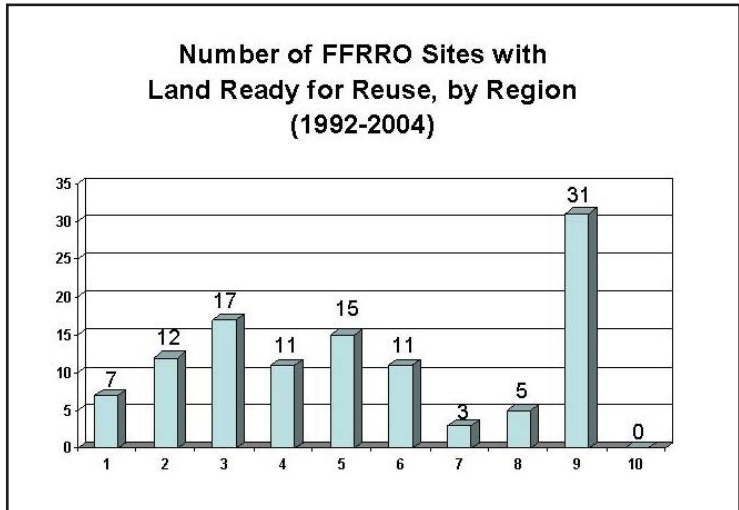
Appendix G: FFRRO Land Revitalization Data

FFRRO Ready for Reuse Data (from EOY 04 SCAP-15 Report on land Reuse)

Region	Inception to end of selected fiscal year		Current fiscal year	
	Number of Federal Facilities that have had land transferred/leased	Number of acres at NPL and non-NPL Federal Facilities with land ready for reuse	Number of Federal Facilities that have had Land transferred/leased	Number of Acres at NPL and non-NPL Federal Facilities with land ready for reuse
1	7	17,911	0	0
2	12	88,642	1	1,637
3	17	9,975	0	0
4	11	29,235	3	748
5	15	16,712	2	425
6	11	35,833	2	393
7	3	1,133	2	547
8	5	13,719	0	0
9	31	124,851	6	6,180
10	0	0	0	0
Total	112	338,009	16	9,929

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FFRRO Ready for Reuse Data¹



¹Data obtained from CERCLIS EOY 04 SCAP-15 Report on Land Reuse from CERCLIS. Note: This is EPA data and does not represent DoD, DOE, or other civilian federal agency data.