

**U.S. Environmental Protection Agency  
Office of Solid Waste and Emergency Response**

# **OSWER Cross-Program Revitalization Measures**

*March 17, 2009*

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## I. PURPOSE OF THE REPORT ON OSWER CLEANUP AND REVITALIZATION CROSS-PROGRAM PERFORMANCE MEASURES

This report seeks to define how much contaminated or potentially contaminated land the U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response (EPA OSWER) cleanup programs address and how much progress OSWER has made in making sure these lands are protective for use now, as well as for the foreseeable future. OSWER provides policy, guidance and direction for these programs, including:

- developing guidelines for the land disposal of hazardous waste and underground storage tanks;
- providing technical assistance to all levels of government to establish safe practices in waste management;
- administering the Brownfields Program, which supports state and local governments in redeveloping and reusing potentially contaminated sites, and;
- managing the Superfund Program to respond to abandoned and active hazardous waste sites and accidental oil and chemical releases, as well as encouraging innovative technologies to address contaminated soil and groundwater.

**EPA 2006-2011 Strategic Plan, Sub-objective 3.2.2: Clean Up and Revitalize Contaminated Land:**

*“By 2011, control the risks to human health and the environment at contaminated properties or sites through cleanup, stabilization, or other action and make land available for reuse.”*

[http://www.epa.gov/ofco/plan/2006/goal\\_3.pdf](http://www.epa.gov/ofco/plan/2006/goal_3.pdf)

The primary objective of OSWER cleanup programs is to ensure that the cleanup of contaminated sites is protective of human health and the environment. During the cleanup process, EPA considers the future use or reuse of the site to help ensure that the land will remain protective for continued use/reuse over the long term. EPA developed the new national cross-program revitalization measures (CPRM) to measure, report and communicate the progress that is being made towards enabling reuse at sites overseen by OSWER cleanup programs. These data collection efforts were predicated by the EPA cleanup programs looking beyond completing construction of the remedy to the next stages in the land use cycle, such as the implementation of institutional controls. To date, hundreds of thousands of acres of land have been assessed and/or remediated and determined protective for current and reasonably anticipated future uses. As a result, hundreds of communities across the country have reclaimed properties for ecological, recreational, commercial, residential and other productive purposes.

CPRM are composed of the *Universe Indicator (UI)*, *Protective for People Under Current Conditions (PFP) Performance Measure*, and *Ready for Anticipated Use (RAU) Performance Measure*.

This report presents the data results through FY08 for the Universe Indicator and Protective for People (PFP) and Ready for Anticipated Use (RAU) performance measures<sup>1</sup>. The measures are defined as follows:

***Universe Indicator***

The number of actual, potentially or previously contaminated sites and associated surface acres for which OSWER cleanup programs have an oversight role for assessment and/or response action.

<sup>1</sup> Two voluntary indicators were also developed to describe the status and type of land: *Status of Use Indicator* and *Type of Use Indicator*. These are not currently reported on an annual basis.

***Protective for People (PFP)  
Performance Measure***

The number of acres and sites at which there is no complete pathway for human exposures to unacceptable levels of contamination based on current site conditions.

***Ready for Anticipated Use  
(RAU) Performance Measure***

The number of acres and sites at which: 1) there is no complete pathway for human exposures to unacceptable levels of contamination based on current site conditions (PFP), and 2) all cleanup goals have been achieved for media that may affect current and reasonably anticipated future land uses of the acres or site so that there are no unacceptable risks, and 3) all institutional or other controls identified as part of the response action to help ensure long-term protection have been put in place.

## **II. BACKGROUND**

In September 2004, the OSWER Land Revitalization Outcomes and Benefits Workgroup (Workgroup) was convened to develop a set of new, cross-programmatic indicators and performance measures with clarity and reliability as driving principles.

In September 2006, the Workgroup completed a report titled, “Measuring Revitalization of Contaminated Properties in America’s Communities: Past Accomplishments and Future Opportunities”.<sup>2</sup> The report presented information explaining:

- Why cleanup and land revitalization are important and why measuring EPA’s efforts is important;
- How the OSWER cleanup programs are currently measuring their revitalization activities and accomplishments;
- What opportunities exist for new or enhanced approaches for measuring and characterizing cleanup and revitalization accomplishments across OSWER programs; and
- What the next steps are for the successful development and implementation of new or enhanced revitalization measures.

Based on the Workgroup’s findings, on October 20, 2006, OSWER issued Interim Guidance for implementing a consistent set of cross-program revitalization measures. This guidance applied to the following cleanup programs: the Brownfields, Superfund (including federal facilities), Resource Conservation and Recovery Act (RCRA) Corrective Action, Underground Storage Tanks (UST), and Emergency Response programs.<sup>3</sup> The Interim Guidance established the overarching concepts for the CPRM to promote greater consistency in how OSWER cleanup programs measure their accomplishments. Additionally, the measures better promote and communicate cleanup and revitalization related accomplishments and associated benefits and values to society.

In order to consistently communicate OSWER revitalization efforts across the cleanup programs, “acre” and “site” were identified as the units of measure to be used to quantify these efforts. Historically, EPA tracked a variety of metrics for sites or releases at sites, but did not account for the considerable variability in site size possible across EPA cleanup programs. For example, a leaking underground storage tank site may be only one acre, while some federally-owned Superfund sites can be thousands of acres. Using acres-based performance measures, in addition to site-wide performance measures, can

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<sup>2</sup> <http://www.epa.gov/landrevitalization/docs/revitalizationmeasuresreport9-06.pdf>

<sup>3</sup> <http://www.epa.gov/oswer/landrevitalization/docs/cprmguidance-10-20-06covermemo.pdf>

help demonstrate incremental progress at portions of a site which may result in faster return of portions of sites to communities for beneficial uses or reuses.

Since some cleanups take a considerable amount of time to complete, EPA uses the PFP Performance Measure to communicate the intermediate milestone of acres determined to be protective for current uses. The RAU performance measure is a longer term measure that communicates when cleanup goals—appropriate for current as well as reasonably expected uses—are achieved. The RAU measure also includes a provision to ensure that any needed land or water use controls (i.e., institutional or other controls) have been put in place.

The CPRM Interim Guidance contains additional information, detailed definitions of the indicators and performance measures, and the methodologies supporting the CPRM effort. More detailed information regarding program-specific approaches for implementing CPRM is presented in the guidance developed by the Superfund and Federal Facilities Response<sup>4</sup> and RCRA Corrective Action<sup>5</sup> programs.

The information contained in this report will also serve as a tool to update the data contained in the land chapter of EPA's Report on the Environment (ROE).

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<sup>4</sup> "Guidance for Documenting and Reporting Performance in Achieving Land Revitalization, The Office of Superfund Remediation and Technology Innovation (OSRTI) and Federal Facilities Restoration and Reuse Office (FFRRO)", OSWER 9200.1-74 ([www.epa.gov/fedfac/sf\\_ff\\_final\\_cprm\\_guidance.pdf](http://www.epa.gov/fedfac/sf_ff_final_cprm_guidance.pdf)).

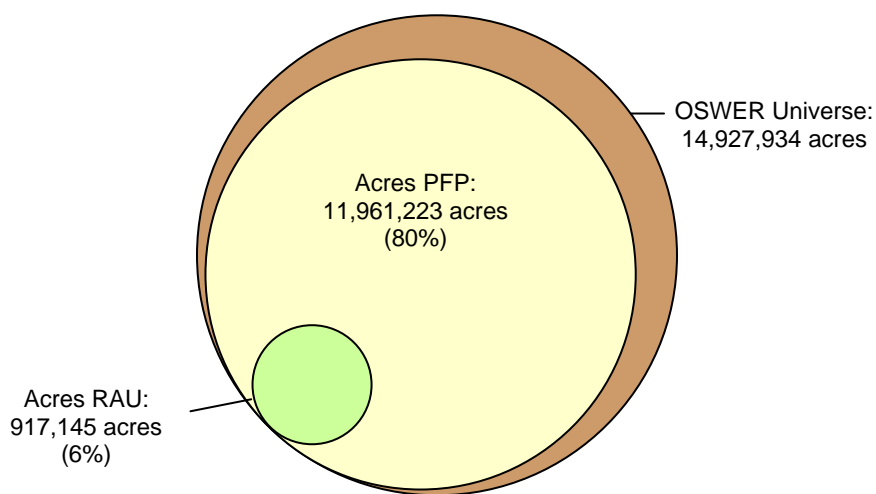
<sup>5</sup> "Guidance for Documenting and Reporting RCRA Subtitle C Corrective Action Land Revitalization Indicators and Performance Measures" ([www.epa.gov/epawaste/hazard/correctiveaction/resources/guidance/brfields/lr\\_guid.pdf](http://www.epa.gov/epawaste/hazard/correctiveaction/resources/guidance/brfields/lr_guid.pdf))

### III. OSWER - CPRM CROSS-PROGRAM RESULTS

This section briefly describes the CPRM data for OSWER as a whole. Figure 1 and Table 1 present the overall magnitude of OSWER cleanup and revitalization efforts to date. The CPRM Universe includes almost 490,000 sites and close to 15 million acres. This is similar to the total acreage of the state of West Virginia (15.4 million acres), 0.6 percent of the total land in the United States, or 15 percent of the developed land in the United States<sup>6</sup>. Of the OSWER CPRM Universe, approximately 80 percent of the acres are PFP and 6 percent of the acres have met both the PFP and the RAU.

Figure 1 presents data regarding the acreage of contaminated land being addressed by the OSWER programs for which cross-program revitalization measures have been developed. Acres that meet the more stringent criteria for RAU also satisfy the criteria for PFP. For this reason, the data are presented in a Venn diagram format to convey that the amount of contaminated land that is protective for people is a subset of the total contaminated lands Universe and that the amount of land that is ready for anticipated use is a subset of the PFP Universe. The circles in the diagram are drawn to scale (e.g., the area of the circle representing PFP acres is 80% of the area of the circle representing the OSWER Universe in acres). A similar format is used throughout the document to portray the CPRM data for specific programs.

**Figure 1**  
**Summary of OSWER CPRM Data, EOY FY 2008**



<sup>6</sup> Developed land accounts for 102.5 million acres or 5% of total land in the US. 2008 EPA's Report on the Environment. Chapter 4 - Exhibit 4-2, <http://www.epa.gov/ncea/roe>.

Table 1 presents the same information as Figure 1 in tabular format, and includes CPRM site counts as well. CPRM data were available for FY 2008, and this data is used as the baseline from which future trends in CPRM data will be referenced.

**Table 1**  
**Summary of Cross-OSWER CPRM Data, FY 2008**

Program	Baseline (cumulative total by the end of FY)	Overall CPRM Universe		PFP		RAU	
		Sites	Acres	Sites	Acres	Sites	Acres
Brownfields	FY 2008	5,413	50,712	987	9,160	987	9,160
Emergency Removal	Mid-Year FY 2008	TBD <sup>7</sup>	TBD	85	221	NA	NA
RCRA Corrective Action	FY 2008	1,968	10,187,208	1,893	9,938,942	230	97,880
Superfund Program	FY 2008	1,710	4,210,197	1,351	1,635,881	343	433,086
Leaking USTs <sup>8</sup>	FY 2008	479,817	479,817	377,019	377,019	377,019	377,019
Total	---	488,908	14,927,934	381,335	*11,961,223	378,579	**917,145
				*80% of CPRM Acres Universe		**6 % of CPRM Acres Universe	

The lack of CPRM Universe data for the Emergency Removal program as of this date may also result in underestimation of the CPRM Universe data.

#### **IV. OSWER - CPRM PROGRAM-SPECIFIC RESULTS**

This section presents the baseline for each EPA cleanup program in terms of the number of sites and acres for which the cleanup programs have an oversight role for assessment and/or response action. It also presents the number of sites and acres for each of EPA’s six cleanup and revitalization programs that have achieved PFP and RAU. Additionally, details about each program’s CPRM data collection, reporting and their results are offered. The data presented herein represent the CPRM accomplishments as of end-of-year FY 2008.

Each OSWER program is responsible for collecting and maintaining its own information for the CPRM effort. OSWER then compiles the data across the programs to present an OSWER-wide report. Each program developed guidance to measure sites and acres.<sup>9</sup>

<sup>7</sup> The Emergency Removal Program has not yet calculated its CPRM Universe. While the program is exploring options to do so, it may not be possible to establish a past Universe given that the program does not revisit sites where the emergency has been addressed.

<sup>8</sup> As described in the October 2006 CPRM guidance, “A limitation in applying the RAU measure to UST sites is the UST Program’s inability at this point in time to identify whether any institutional controls, if needed, are in place. OSWER recognizes this limitation as an inconsistency with the general guidance for the RAU measure described in Section IV.A., above.” Also, one LUST cleanup achieves both PFP and RAU at the same time because a LUST cleanup must achieve applicable risk-based cleanup standards before being considered “complete.”

<sup>9</sup> Program-specific guidance for the PFP and RAU measures can be found in Appendix A of the Interim Guidance document. Likewise, guidance for estimating acreage can be found in Appendix B of the Interim Guidance document.

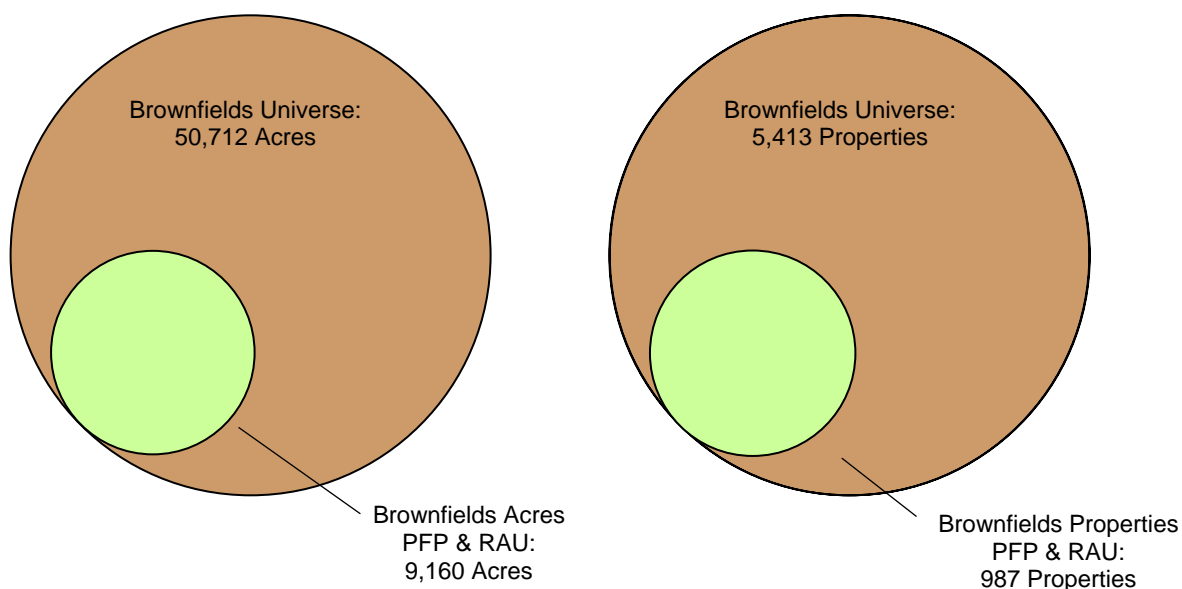
## CPRM Results for the Brownfields Program

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. The passage of the Brownfields Law that amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 2002 provided guidance on criteria for grants to be awarded to communities to address brownfields. The purpose of the grants is to provide seed funding and technical assistance to communities to identify, assess and clean up properties. Every year, the CPRM Universe of brownfields that benefit from EPA funding increases as the program funds new communities to assess and clean up properties.

Figure 2 illustrates the CPRM-related accomplishments of the Brownfields Program. For this program, PFP is not treated as an interim accomplishment, but rather, when a property is designated as Ready for Reuse, it is determined to be RAU and PFP for CPRM purposes, as outlined in the CPRM Interim Guidance. Figure 2 shows that through FY 2008, Brownfields grants awarded resulted in the assessment and/or cleanup of almost 5,500 properties and over 50,000 acres.<sup>10</sup>

**Figure 2**

### Summary of Brownfields CPRM Data, EOY FY 2008



<sup>10</sup> EPA is seeing similar successes in State and Tribal Response Programs. Based on data from 2006 and 2007 alone, over 18,900 sites were cleaned, with required institutional controls in place, through State and Tribal Response Programs, totaling over 250,000 acres.

### CPRM Results for the Emergency Removal Program

OSWER is responsible for responding to the release of oil and hazardous substances where state and local first responder capabilities were exceeded or where additional support is needed. For the purpose of reporting the CPRM, the Emergency Removals Program reports the PFP measure, but not the RAU measure. OSWER’s main focus on responding to these releases is to remove the immediate threat in order to protect human health and the environment. The results reported in Table 1 represent CPRM PFP data for the first two quarters of FY08. OSWER plans to have complete yearly PFP data starting in 2009. It may not be possible to establish a past Universe of sites since the program does not revisit sites where the emergency has been addressed.

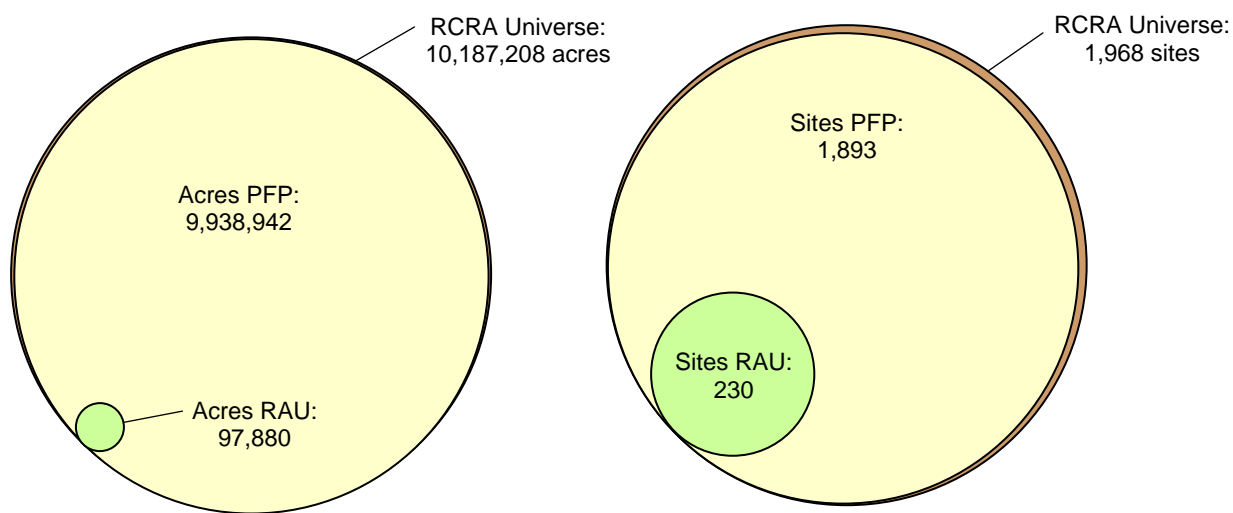
### CPRM Results for the RCRA Corrective Action Program

The RCRA Corrective Action Program, run by EPA and 43 authorized states and territories, compels responsible parties to investigate and cleanup hazardous releases. The Universe currently being reported for the RCRA cleanup program is the corrective action GPRA 2008 Universe (1,968 sites). EPA originally set a goal of controlling current unacceptable risks to human health at sites that present the greatest risks. This priority of addressing the greatest risk sites first is reflected in the large number of sites and acres have already achieved PFP. Beginning in FY09, the RCRA program will report on the corrective action 2020 Universe (3,746 sites). EPA is working toward the 2020 goal of implementing final remedies<sup>11</sup> at all facilities requiring corrective action.

RCRA Corrective Action Program began collecting data for the CPRM in Fiscal Year 2007. Figure 3 reflects reporting through FY 2008. From a Universe of approximately 2,000 sites and 10 million acres, about 96 percent of sites and 98 percent of acres meet the PFP measure. About 12 percent of sites and less than 1 percent of acres meet the RAU measure, reflecting the program’s focus on controlling the greatest risks before pursuing final remedies. The majority of the acres included under RCRA corrective action are on federal facilities.

Figure 3

Summary of RCRA Corrective Action CPRM Data, EOY FY 2008



<sup>11</sup> See [www.epa.gov/epaoswer/hazwaste/ca/backgnd.htm#11](http://www.epa.gov/epaoswer/hazwaste/ca/backgnd.htm#11) for a brief definition of a “final remedy.”

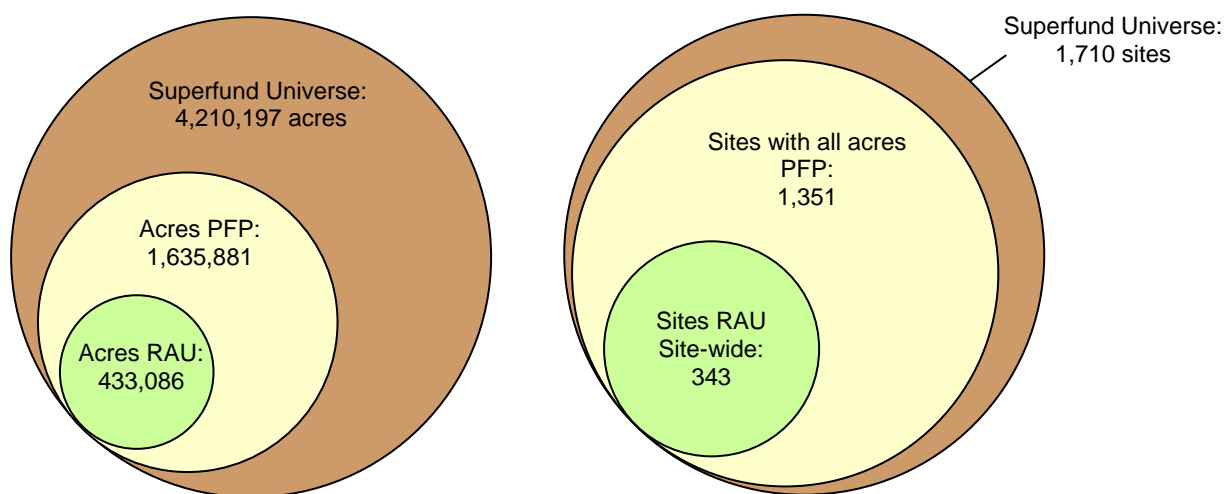
### CPRM for the Superfund Program

The Superfund Program addresses abandoned hazardous waste sites. Superfund sites are the most seriously contaminated abandoned properties and require long-term cleanup efforts. Superfund also provides technical assistance and oversight at federal Superfund sites where work consists of two core components: the Superfund Federal Facilities Response Program and the Base Realignment and Closure (BRAC) Program.

Superfund has recently undergone an extensive effort to collect and ensure quality assurance and quality control (QA/QC) of its CPRM data. Figure 4 reflects the data collected through FY 2008. From a Universe of about 1,700 sites and more than 4 million acres, about 39 percent of acres meet the PFP measure and 10 percent of acres meet the RAU measure. About 20 percent of sites have met the RAU accomplishment and about 79 percent have achieved PFP.<sup>12</sup>

**Figure 4**

#### Summary of Superfund Non-Federal Sites and Superfund-Related Federal Facilities CPRM Data, EOY FY 2008



Note that the federal facilities Universe also includes sites and acreage for which a Finding of Suitability for Lease (FOSL) or Finding of Suitability for Transfer (FOST) will apply. Some FOSL/FOST acreage cannot be considered PFP or RAU.

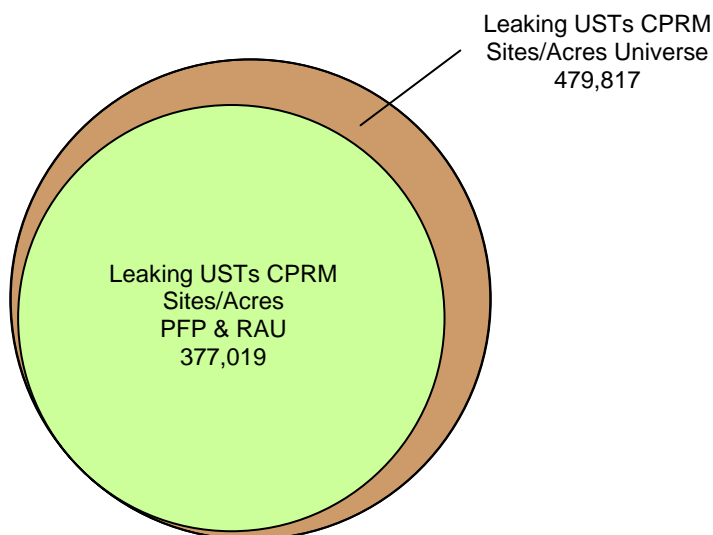
<sup>12</sup> This includes 138 Non-NPL sites with all acres at least PFP, and 1,213 NPL sites with all acres at least PFP. The Superfund program has a unique GPRA measure which measures the number of sites which are ready for anticipated use sitewide, often referred to as Sitewide Ready for Anticipated Use (SWRAU). Once all OU's or parcels have been designated as RAU at a specific site, and the site is an NPL site which is already Construction Complete, the site meets the criteria for becoming SWRAU. The 343 RAU sites reported in this report represents only the Superfund program's GPRA SWRAU accomplishment. It is important to note that there are non-NPL sites at which all acres are RAU, but do not meet this measure due to their NPL status. Those sites are not counted in the 343.

### CPRM Results for the Underground Storage Tank Program

OSWER works with states and tribes to regulate and clean up leaking underground storage tanks. While the vast majority of these tanks are located on sites with relatively small acreage, the large total number of OUST sites demonstrates that, collectively, these sites represent a significant amount of land. For the purpose of the CPRM, one confirmed UST release is measured as one site and one acre for the Universe Indicator. One cleanup completed equals one acre for the PFP, as well as one acre of RAU.<sup>13</sup>

Figure 5 reflects data through FY 2008 CPRM for the LUST cleanup program. Based on these assumptions, with a total Universe of almost 480,000 sites and acres, approximately 79 percent of OUST sites and acres are considered PFP and RAU.

**Figure 5**  
**Summary of Leaking Underground Storage Tank CPRM Data, EOY FY 2008**



<sup>13</sup> The decision to equate each LUST cleanup to one acre was reached through a combination of industry data as well as consultation with and best professional judgment of state and regional program managers.

## **V. SUMMARY**

The CPRM data show the significant percentage of acres and sites in OSWER's contaminated land inventories that are protective for people under current conditions.

EPA OSWER cleanup programs have an oversight role for assessment and/or response action at almost one half million sites encompassing almost 15 million acres of our Nation's land, which translates into more than 15% of all developed land in the U.S.<sup>14</sup>. EPA and its partners have made significant strides in ensuring that these lands are protective for use now and in the foreseeable future. To date, hundreds of 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, previously contaminated properties for ecological, recreational, commercial, residential and other productive purposes.

More than 380,000 sites where OSWER has an oversight role have been determined to be protective for people under current conditions. This represents about 78 percent of the sites in the CPRM Universe. Close to 12 million acres have been determined to be protective for people, which is about 80 percent of the overall OSWER CPRM Universe. The CPRM data also indicate that more than 900,000 acres in OSWER's contaminated land Universe have had a determination made that they are ready for reasonably anticipated future uses; therefore, directly contributing to returning the sites back to the communities.

Taken as a whole, the CPRM results demonstrate that EPA and its partners have made significant progress in completing assessment and cleanup processes at a large number of sites and acres, and, through this collaboration, they are helping to revitalize contaminated or potentially contaminated land so that it can once again be a positive resource to communities. The PFP Performance Measure is a particularly useful interim milestone for large and/or complex sites. In these areas, significant strides have been made in stabilizing exposures, while longer-term cleanup objectives are pursued.

These CPRM results are the beginning of an ongoing OSWER process to provide some insight into the status of cleanup and the nature of the work remaining to cleanup and revitalize the Nation's contaminated and potentially contaminated land.

OSWER is aware of the millions of acres and thousands of properties that remain in the Universe of sites that have yet to achieve the PFP and RAU milestones. It is also aware that this Universe is expected to increase in the future; new properties will receive cleanup funding through the Brownfields Program, additional properties will be entered into the RCRA Corrective Action Universe, additional lands may be addressed through the expanded efforts from the Superfund Program, and there will be new emergency removals. OSWER cleanup and revitalization programs will continue to address these issues, and it is anticipated that the cross-program revitalization measures will continue to inform the public about these challenges and the progress being made.

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<sup>14</sup> Developed land accounts for 102.5 million acres or 5% of total land in the US. 2008 EPA's Report on the Environment. Chapter 4 - Exhibit 4-2, <http://www.epa.gov/ncea/roe>.