

Lessons Learned from FUSRAP - 16200

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ABSTRACT

The US DOE Office of Legacy Management (LM) is the long-term steward for 90 sites remediated under numerous regulatory regimes including the Formerly Utilized Sites Remedial Action Program (FUSRAP) sites. In addition, LM holds considerable historical information, gathered in the 1970s, to determine site eligibility for remediation under FUSRAP.

To date, 29 FUSRAP sites are in LM's inventory of sites for long-term surveillance and maintenance (LTS&M), and 25 are with the US Army Corps of Engineers (USACE) for remediation or in the process of being transitioned to LM. It is forecasted that 13 FUSRAP sites will transfer from the USACE to LM over the next 10 years; however, the timing of the transfers is strongly dependent upon federal funding of the ongoing remedial actions.

Historically, FUSRAP sites were generally cleaned up for "unrestricted" industrial use or remediated to the "cleanup standards" at that time, and their use remained unchanged. Today, these sites as well as the adjacent properties are now changing or envisioned to have changes in land use, typically from industrial to commercial or residential uses. The implication of land-use change affects DOE's LTS&M responsibility for the sites under LM stewardship as well as the planning for the additional sites scheduled to transition in time. Coinciding with land-use changes at or near FUSRAP sites is an increased community awareness of these sites. As property development increases near FUSRAP sites, the general public and interested stakeholders regularly inquire about the sufficiency of cleanups that impact their neighborhoods and communities. LM has used this experience to address a series of lessons learned to improve our program management in light of the changing conditions of our sites. We describe these lessons learned as (1) improved stakeholder relations, (2) enhanced LTS&M requirements for the sites, and (3) greater involvement in the transition process.

INTRODUCTION

Since the inception of the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974, the Atomic Energy Commission (AEC) and, subsequently, the US Department of Energy (DOE) Office of Legacy Management (LM) has long-term management responsibility for sites remediated under numerous regulatory regimes, including FUSRAP. FUSRAP addresses legacy Manhattan Engineer District and AEC activities and the remediation of residual radioactive contamination

resulting from those activities. In 1997, Congress assigned responsibility for designating, characterizing, and remediating eligible sites to the US Army Corps of Engineers (USACE) whereas DOE retained the responsibility for determining if sites are eligible for the program, as well as the long-term surveillance and maintenance of completed FUSRAP sites.

Information about more than 600 sites evaluated for eligibility under FUSRAP was collected and captured in the Considered Sites Library, an internal DOE records collection. The related Considered Sites Database has information on ineligible, completed, and active (i.e., currently undergoing remediation) FUSRAP sites and is available to the public [1]. The number of sites formally included in the program has expanded over time from 30 in 1987 to 53 today and include both completed sites and active sites currently undergoing remediation.

To date, 29 completed FUSRAP sites are in LM's inventory of sites for long-term surveillance and maintenance (LTS&M), and 10 FUSRAP sites from USACE are forecasted to be transferred over the next 10 years; however, the timing of the transfers is highly dependent upon federal funding of ongoing remedial actions. Historically, the FUSRAP sites remediated by DOE or USACE have been transferred to LM requiring minimal stewardship since the end state of a site is "unrestricted" industrial use or it has been remediated to the "cleanup standards" at that time. The remediation of the earliest sites was in the 1970s, and since then the industrial boom has diminished and former FUSRAP sites are being utilized for other purposes. In contrast, some sites currently being remediated by USACE are large, complex sites with many vicinity properties, and some will require ongoing monitoring. These sites will require not only land-use controls and ongoing monitoring but may also require remedial response. As such, LM continues to collaborate with USACE towards stewardship planning in both the near-term and long-term. Considering the changing land uses of the completed sites and the complexity of the FUSRAP sites currently being remediated by USACE, the long-term stewardship requirements at FUSRAP have intensified.

We highlight several key US DOE LM lessons learned from the transition and the transfer of USACE-remediated FUSRAP sites and from our experience with long-term stewardship.

CHANGING LAND USE AND LESSONS LEARNED

Land-Use Change Over Time

As shown in Figure 1, LM is currently responsible for the long-term stewardship of 90 remediated sites throughout the US and Puerto Rico [2]. These sites are mostly government-owned properties managed in accordance with requirements set forth by UMTRCA, RCRA, CERCLA, and the individual state.

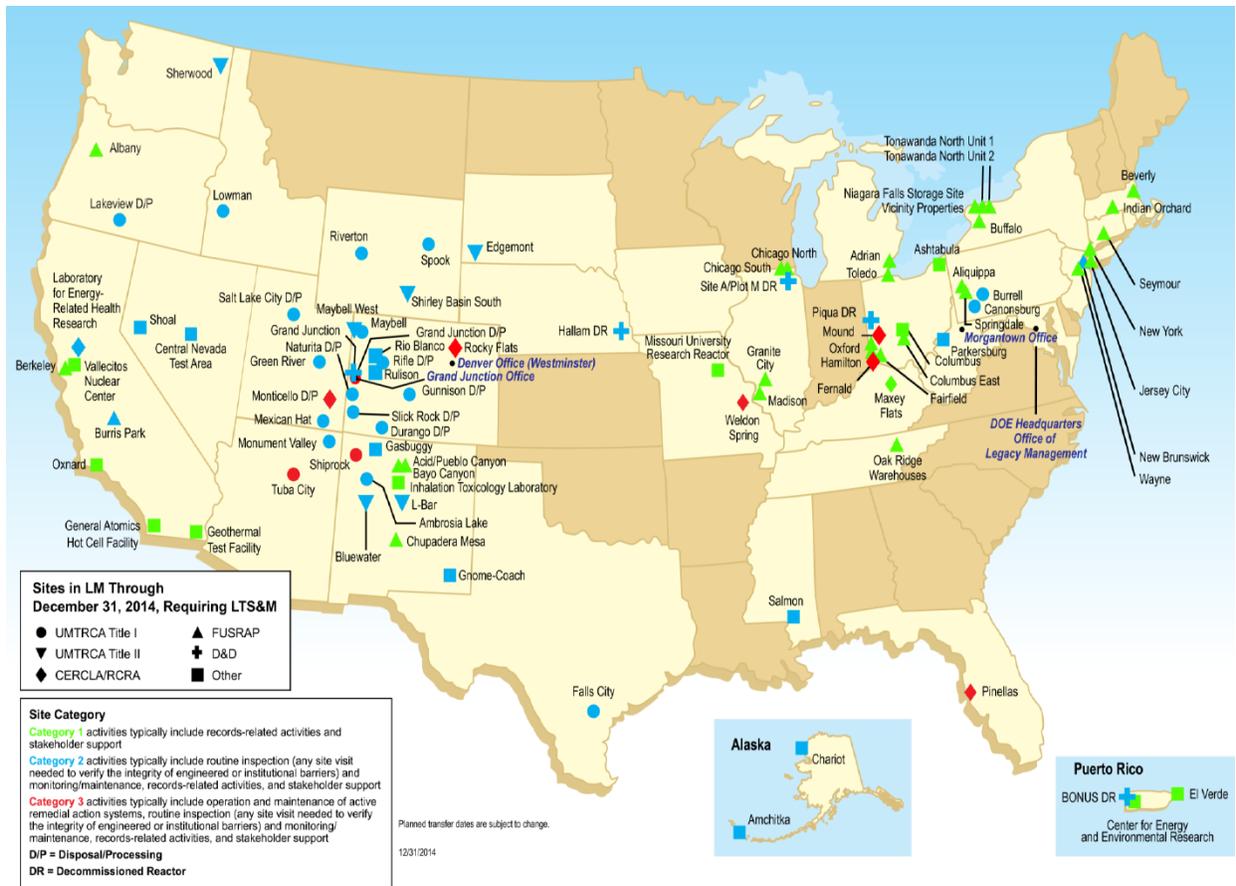


Figure 1: LM has long-term stewardship responsibility for 90 remediated sites throughout the US and Puerto Rico

However, 29 of the 90 sites under LM stewardship are FUSRAP sites, and these sites are privately owned. The private owners often desire to maximize their property potential, which has resulted in changes or may result in changes to their properties' land use. With this in mind, the desired end state of any FUSRAP site following remediation is that of unrestricted use. In other words, the property owner options are not limited regarding future use of their land. In some cases remediation was able to achieve unrestricted use, while in others inaccessible contamination remained onsite.

An evaluation of the 29 completed sites found 8 sites that have changed in type of land use since the site cleanup. Five of those sites or 63% of changed sites have occurred within the last 5 years. They follow trends of population growth in their municipalities as shown by US Census Data during a similar time frame 2010–2014. Population growth in the cities with sites with documented land-use change ranges from 0% at Seymour, Connecticut, to 6% in Columbus, Ohio [3]. Sites with similar population growth may have other factors driving land-use change, while sites with negative population growth have added pressure for economic development leading to potential land-use change in the future. In some cases, the FUSRAP site itself will not experience any change due to it being in a current state such as a landfill, but

the surrounding neighborhood may experience change that may require unanticipated long-term surveillance and maintenance on the site.

As these properties and neighborhood become prime areas for redevelopment, interested landowners and neighbors become concerned about the safety of the sites. Let us examine three specific LM-managed FUSRAP sites as examples of this phenomenon: the Hamilton, Ohio; Columbus East, Ohio; and Beverly, Massachusetts, sites.

The Hamilton, Ohio, Site (Figures 2 and 3) was DOE-certified to comply with applicable cleanup criteria and standards in effect in 1996, and the remediated building and property were released for “unrestricted use.” As such, no supplemental limits or institutional controls are in effect at this privately owned site, nor does DOE require onsite monitoring or surveillance. Today, the LTS&M requirements for the Hamilton, Ohio, site are to perform records management of the cleanup documents and respond to stakeholder inquiries. Currently, the site is a vacant property since the owner elected to demolish the 300,000 square foot building in 2013.



Figure 2: Aerial view of the Hamilton, Ohio, site prior to demolition of the building

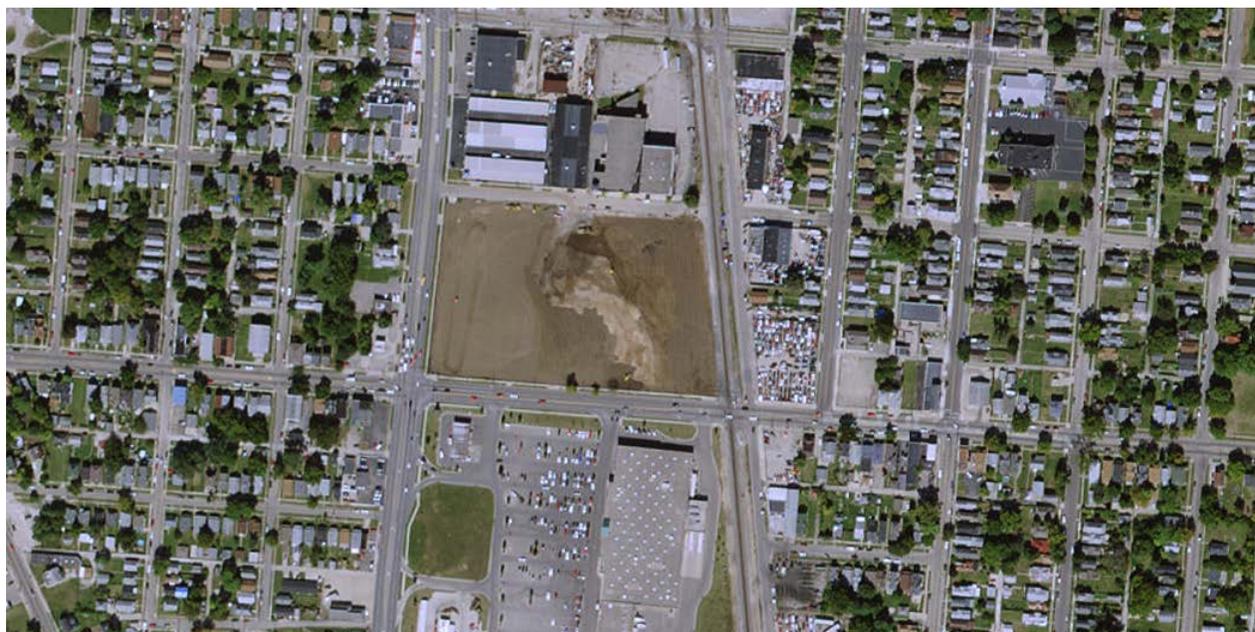


Figure 3: Aerial view of the current Hamilton, Ohio, site condition, as a vacant lot

The Columbus East, Ohio, site was DOE-certified to comply with applicable cleanup criteria and standards, and the property was released in 2001 for unrestricted use. No supplemental limits or institutional controls are in effect at this privately owned site, nor does DOE require onsite monitoring or surveillance. Today, the LTS&M requirements for the Columbus East, Ohio, site are to perform records management of the cleanup documents and respond to stakeholder inquiries.



Figure 4. Columbus East, Ohio, site building in disrepair as of 2006

Currently, Columbus East site buildings are unused and in disrepair, as illustrated in Figure 4. However, as LM reviewed real-estate development plans surrounding this completed site at 425 W. Town Street, it was discovered that the underground utilities were ready to accommodate more development. Specifically, the development plans are to fill in the current 50-space parking lot just north of Lucas Lofts Phase One, with the long-term plan for 435 West Town Street for more commercial restaurant and event space.

The Beverly, Massachusetts, site (Figure 5) was DOE-certified to comply with applicable cleanup criteria and standards in effect in 2003, and the privately owned property was released for unrestricted use. As such, no supplemental limits or institutional controls are in effect at this privately owned site, nor does DOE require onsite monitoring or surveillance. Today, the LTS&M requirements for the Beverly, Massachusetts, site are to do records management of the cleanup documents and respond to stakeholder inquiries.

Foundation structures remain on the Beverly property, which is otherwise vacant and overgrown with vegetation. Fencing has not been maintained, and access is unimpeded. During a site visit in 2010, local residents said the site was used for fishing and that homeless people sometimes occupied the site. Nearby residents also indicated that the site will be designated for redevelopment.



Figure 5. Aerial view of the Beverly, Massachusetts, Site (formerly known as the Ventron Site)

LM reviewed development plans surrounding this completed site. It was discovered in the 2001 Draft Master Plan for the city of Beverly, Massachusetts, that development plans were formulated for the Beverly site (refer to Figure 6).

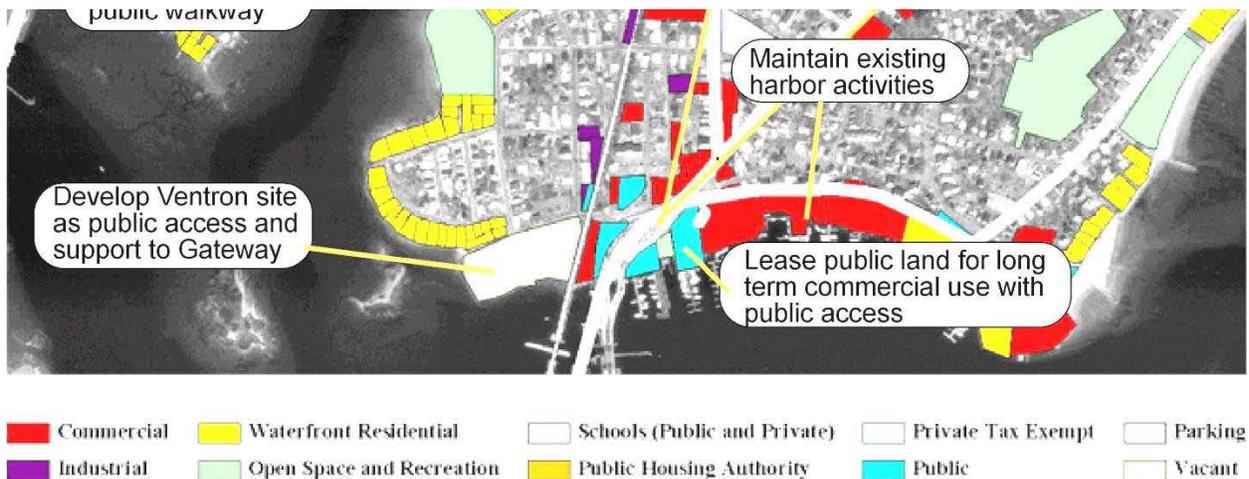


Figure 6: Development plans already envisioned at the Beverly, Massachusetts, site

As these three completed site examples convey, the change in future site use affects DOE's LTS&M responsibility for the current sites under LM stewardship as well as the planning for the additional 25 FUSRAP sites scheduled to transition. In light of this lesson, US DOE LM is currently evaluating this real-time impact and has identified key actions to address to ensure that LTS&M in the near-term and long-term aligns with current and intended future uses.

Lesson 1: Improved Stakeholder Relations

The first lesson ties to growing stakeholders' involvement. As concerns with the FUSRAP cleanups that impact their neighborhoods and communities grow for the general public and interested stakeholders, LM is being asked for information not only about the designated FUSRAP sites but also about sites that underwent the eligibility determination and were deemed ineligible. The information consists of site locations, the activities conducted at the sites, cleanup activities, and final site conditions. We provide a few examples of public inquiries in the past 5 years.

In 2010, six stakeholders, including two New York senators (one inquiry), their staff (follow up), and the New York Department of Environmental Conservation, submitted inquiries to LM concerning the Niagara Falls Storage Site (NFSS) Vicinity Properties (VPs). These inquiries arose from a review report on site conditions of several VPs that are adjacent to drainage ditches running through the site. The review was a follow up to an inquiry from a stakeholder in 2009. Two of the stakeholders submitted multiple inquiries concerning potential Cs and Sr-90 contamination that might be on site as legacy waste from the Knolls Atomic Power Laboratory that was temporarily stored at NFSS in the 1950s. These inquiries led to a review of historical information and another report.

In 2013, three stakeholder inquiries were submitted: One on why Latty Avenue (Hazelwood, MO) is in FUSRAP and the West Lake Landfill (Bridgeton, MO) is not; another one interested in cleanup criteria for FUSRAP sites; and a third inquiry from a tenant in the New York area, on a New York site requesting information showing that the building was clean and safe.

In 2014, there were five stakeholder inquiries:

- one inquiry from an environmental remediation contractor asking for an estimate of cleanup costs for the FUSRAP program;
- one inquiry on the status of the Staten Island, NY, referral to USACE reported in our stakeholder report;
- one requesting additional physical address information about a considered site in Walnut Creek, CA, for an EEOICPA claim;
- one request for the status of the biannual inspection at the New Brunswick, NJ, site;
- one media inquiry looking into specific radioactive waste at the NFSS.

In 2015 through October, three stakeholder inquiries were submitted to LM. One was a media inquiry; one stakeholder requested a document about the Beverly, MA, site; and two stakeholders who live in a duplex adjacent to the Oxford, OH, site asked for information concerning the safety of their home and if they face any risk from exposure to radioactivity coming from the site or in their home.

In addition to these stakeholder requests, others have submitted Freedom of Information Act requests and other informal requests for historic data or documents. Sites are also subject to media coverage as several sites have been the focus of news articles in recent years. Some inquiries from local residents and state

regulators frequently require extensive record searches to respond accurately and comprehensively. In response to an increasing number of inquiries, LM has worked in a collaborative manner with USACE, regulators, and other interested parties to respond. Furthermore, with the age of the internet and real-time search capability now here, LM is also working towards expanding its public website to include additional information on FUSRAP sites.

Another activity US DOE LM has found extremely useful is to actively engage with stakeholders at LM's FUSRAP sites, at USACE active sites, and at other sites (i.e., sites not covered under another regulatory program) where US DOE or its predecessor agencies previously operated. For example, at the Niagara Falls Storage Site Vicinity Properties site, LM was able to partner with USACE and use USACE's stakeholder mechanisms to jointly address stakeholder concerns. LM site managers also regularly read news articles and public notices that refer to FUSRAP sites. By monitoring stakeholder concerns at the FUSRAP sites through various channels, LM can be prepared for future stakeholder inquiries and be responsive to the needs of the communities.

Lesson 2: Enhanced LTS&M Requirements for the Sites

US DOE LM has embraced the concept of reevaluating the FUSRAP program structure in order to more efficiently evaluate the potential existence of remediated sites that require additional protections, including institutional controls. Additionally, LM is evaluating using a cadre of new stewardship techniques to more readily identify changing conditions at our sites including periodic desk and onsite reviews. LM is actively assessing not only the completed sites but all known sites, to determine if any might require enhanced LTS&M. Sites may potentially move from primarily desk reviews to onsite visits and more frequent monitoring of development activity. This assessment will continue to inform improvements to the management of the FUSRAP Program and how the work for long-term surveillance and maintenance of these sites FUSRAP sites is performed. Ultimately, this work will enhance LM's ability to protect human health and the environment.

Lesson 3: Greater Involvement in the Transition Process

An important lesson learned from sites transitioning to LM from other regulatory entities is that LM needs a FUSRAP site transition process that allows for sufficient time to evaluate remedial actions and final site conditions and any associated risk to ensure that measures needed align with the anticipated land use for the site. This transition process allows early involvement with USACE to further ensure that LM is fully prepared perform stewardship at the site and that the remedy, including institutional controls, can be maintained for as long as needed.

The lesson lies in the realization that a proactive collaboration throughout the transition process aids in a thorough understanding of the site condition upon transfer and the preparation for required land-use controls during stewardship. As illustrated in Figure 7, LM recognizes there are three key transition phases within

FUSRAP. These phases align with the general transition provisions described in the memorandum of understanding and letters of agreement between USACE and DOE.

Phase I occurs following the signing of the Record of Decision when USACE is in the process of performing the required remedial action for a given active site and ends upon site closeout. LM collaborated with USACE during this phase to gain site-specific knowledge to develop documents defining the stewardship scope for long-term surveillance and maintenance. During Phase II, USACE has completed remediation and initiates its 2-year operation and maintenance period, while LM executes the transition planning towards a seamless transfer of the site. Phase III begins upon site transfer. The USACE role has concluded, and LM assumes LTS&M responsibility for the site. If during the stewardship phase any new response actions are required, then LM will refer these to USACE.

Phased Transition of Active to Completed Site

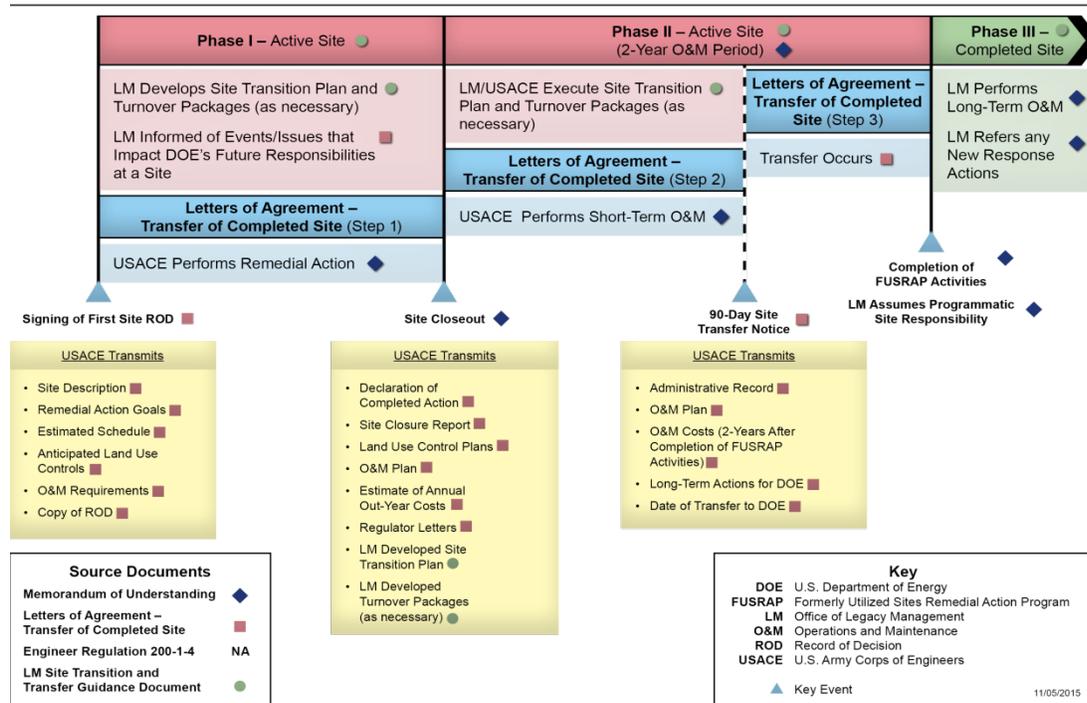


Figure 7: Illustration of how phases of transition correspond to the three-step process described in letters of agreement between USACE and DOE

In addition, as a part of the structured transition process, LM is making a programmatic shift to risk-based decision making for LTS&M. Specifically, the nature and breadth of the sites transitioning from the USACE are more complex and the stewardship required more involved than that of sites transferred in the past; thus, the risks to maintaining long-term protectiveness are greater.

CONCLUSION

Similar to DOE and USACE, various federal, state, and local government agencies have been cleaning up contaminated sites for decades. Consequently, as regulations and site conditions change, both the sites and the programs that manage them need to be reevaluated to ensure protectiveness of human health and the environment well into the future. LM has recognized that change in land use is inevitable when it comes to many of the FUSRAP sites as time moves forward. We described lessons learned in improved stakeholder relations, enhanced LTS&M requirements for the sites, and greater involvement in the transition process. These are our efforts to ensure that our stewardship activities protect human health and the environment long into the future and can be used as a model for similar programs. Ultimately, strengthening stewardship planning in the near-term and long-term to ensure protectiveness requires increased collaboration with stakeholders during land-use control plan developments while keeping abreast of real-time community development initiatives.

REFERENCES

1. US Department of Energy, Office of Legacy Management, "Considered Sites Summary," http://www.lm.doe.gov/Considered_Sites/Summary/, accessed 10/26/2015
2. U.S. Department of Energy, Office of Legacy Management, *Site Management Guide*, Update 17 (2015).
3. US Census Bureau: State and County QuickFacts. <http://quickfacts.census.gov/qfd/states/00000.html>. Revised: Wednesday, September 30, 2015.

Formerly Utilized Sites Remedial Action Program (FUSRAP) Sites Lessons Learned – 16200

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What Is FUSRAP?

Formerly Utilized Sites Remedial Action Program

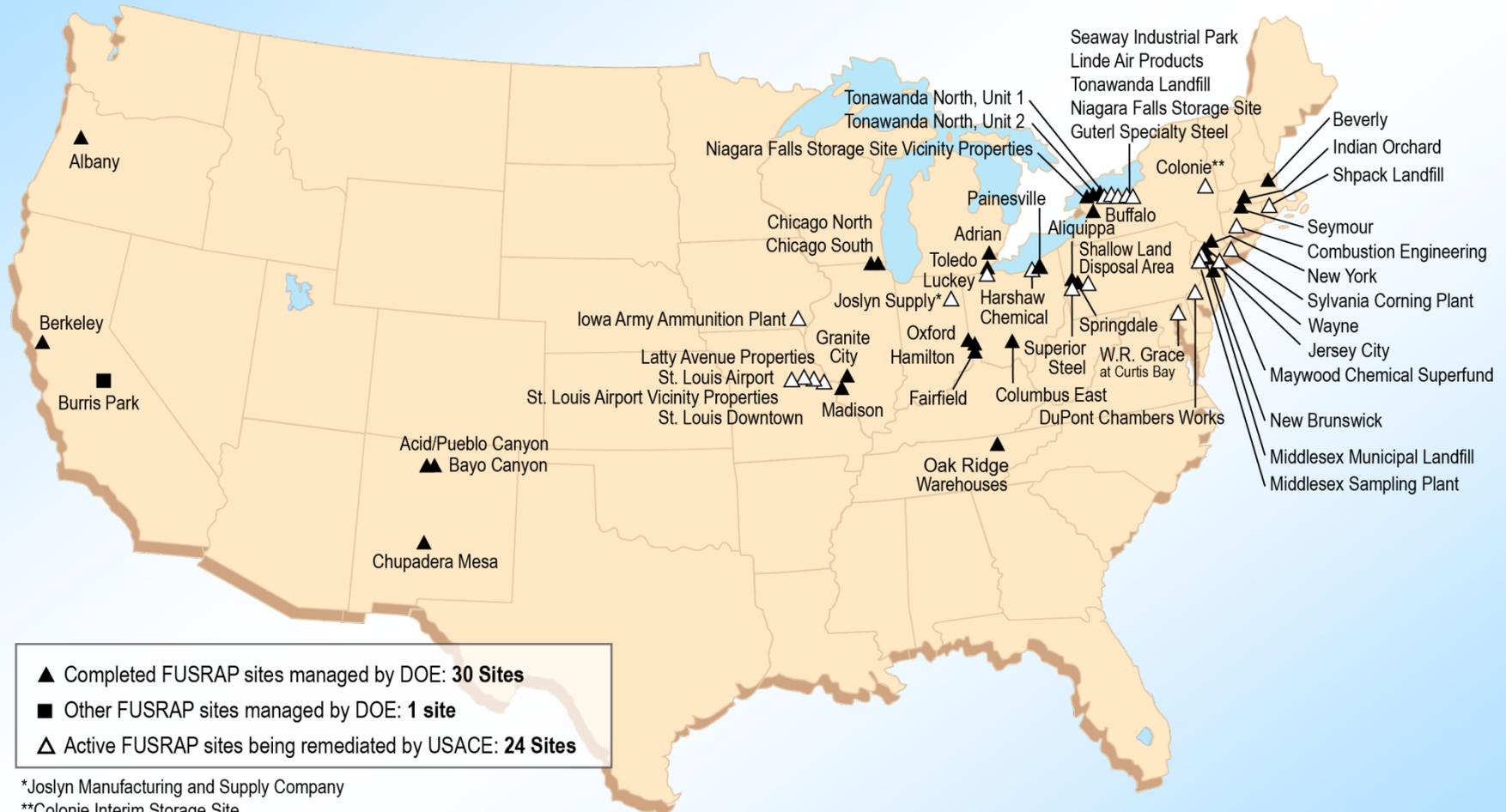
- More than 600 U.S. sites participated in early Manhattan Project phases
- FUSRAP established in 1974 to evaluate sites for remediation
 - Selected 53 sites for remedial action
 - 29 sites completed
- Almost 10 years since last completed site transferred to LM
- Extensive review and systematic improvements to FUSRAP



LM FUSRAP Sites as of January 31, 2016



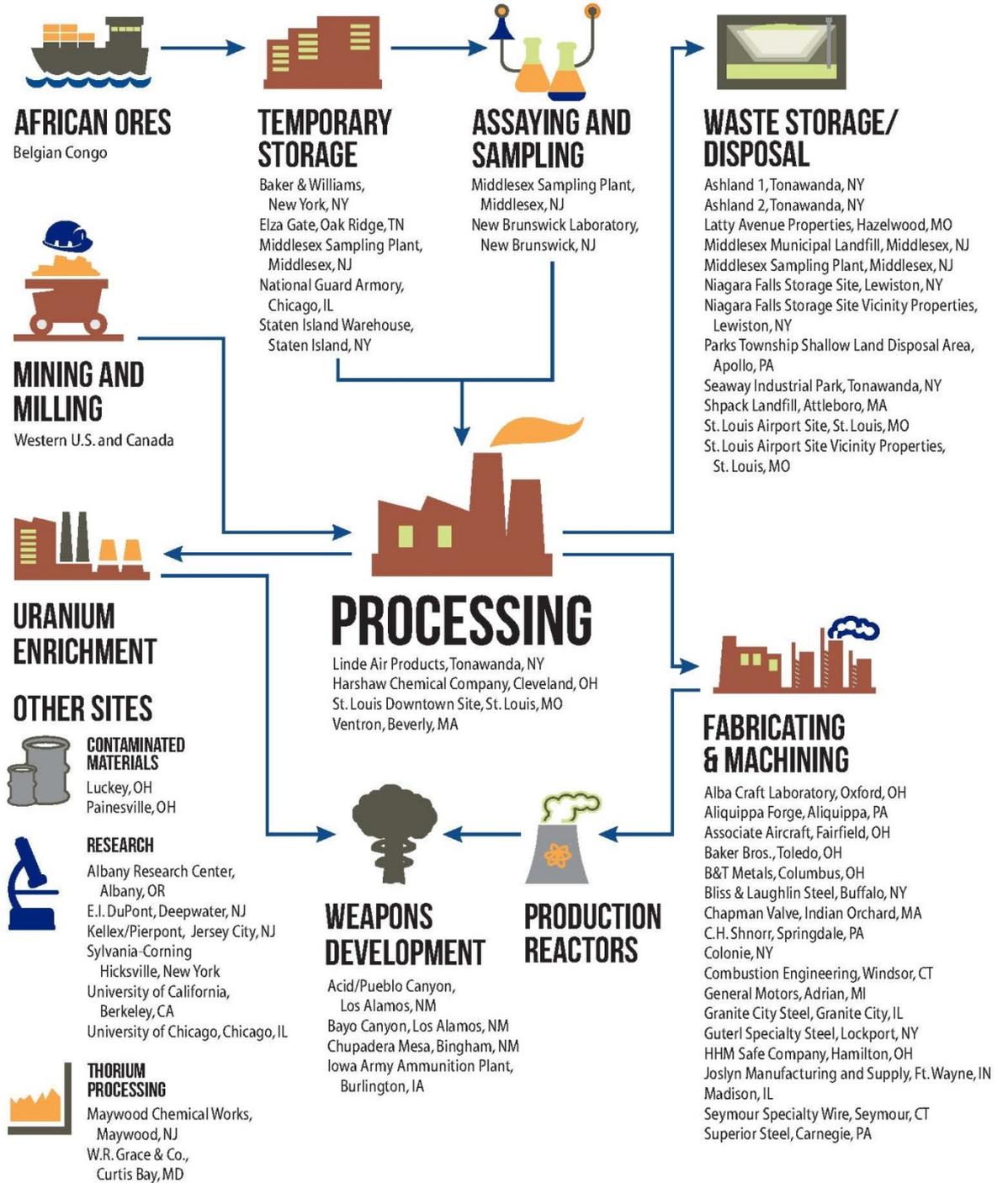
USACE and LM FUSRAP Sites



as of January 31, 2016



What Are FUSRAP Sites?



Various FUSRAP Sites

- Historical photos



Acid/Pueblo Canyon,
New Mexico, Site

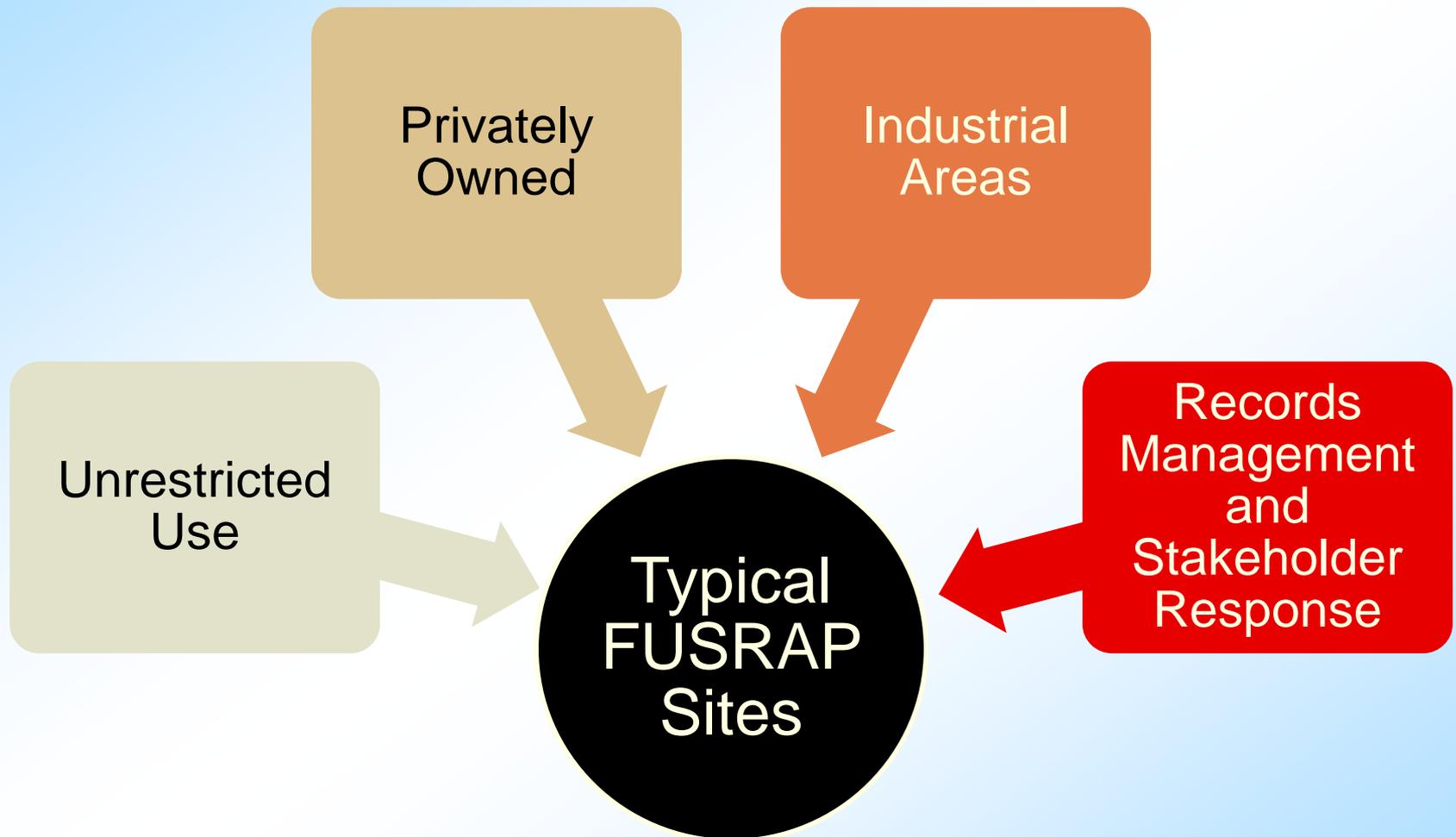


Granite City, Illinois, Site

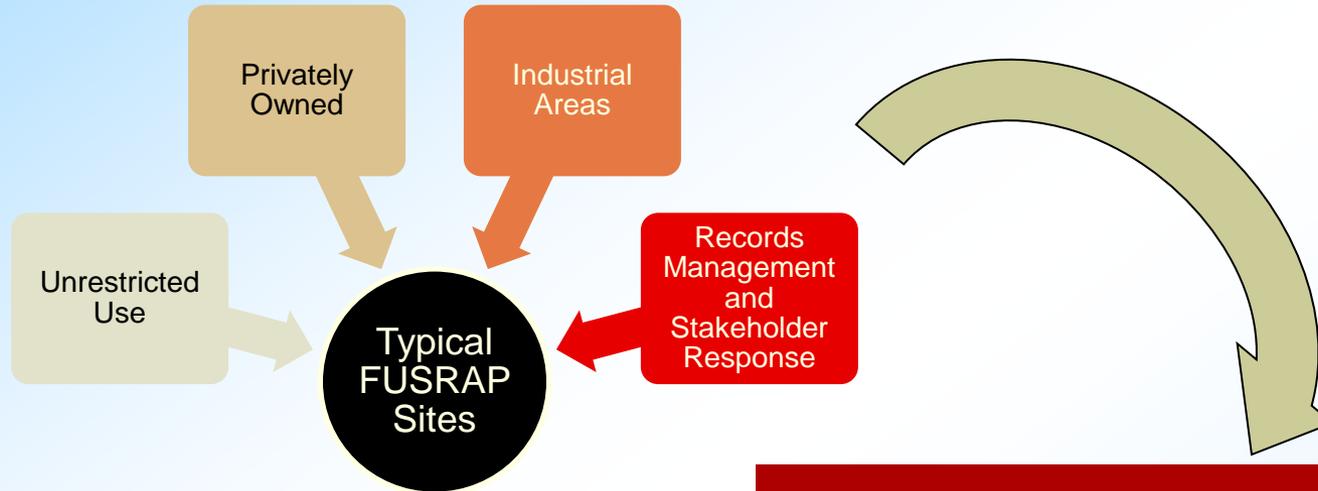


Albany, Oregon, Site

FUSRAP Completed Sites Evaluation



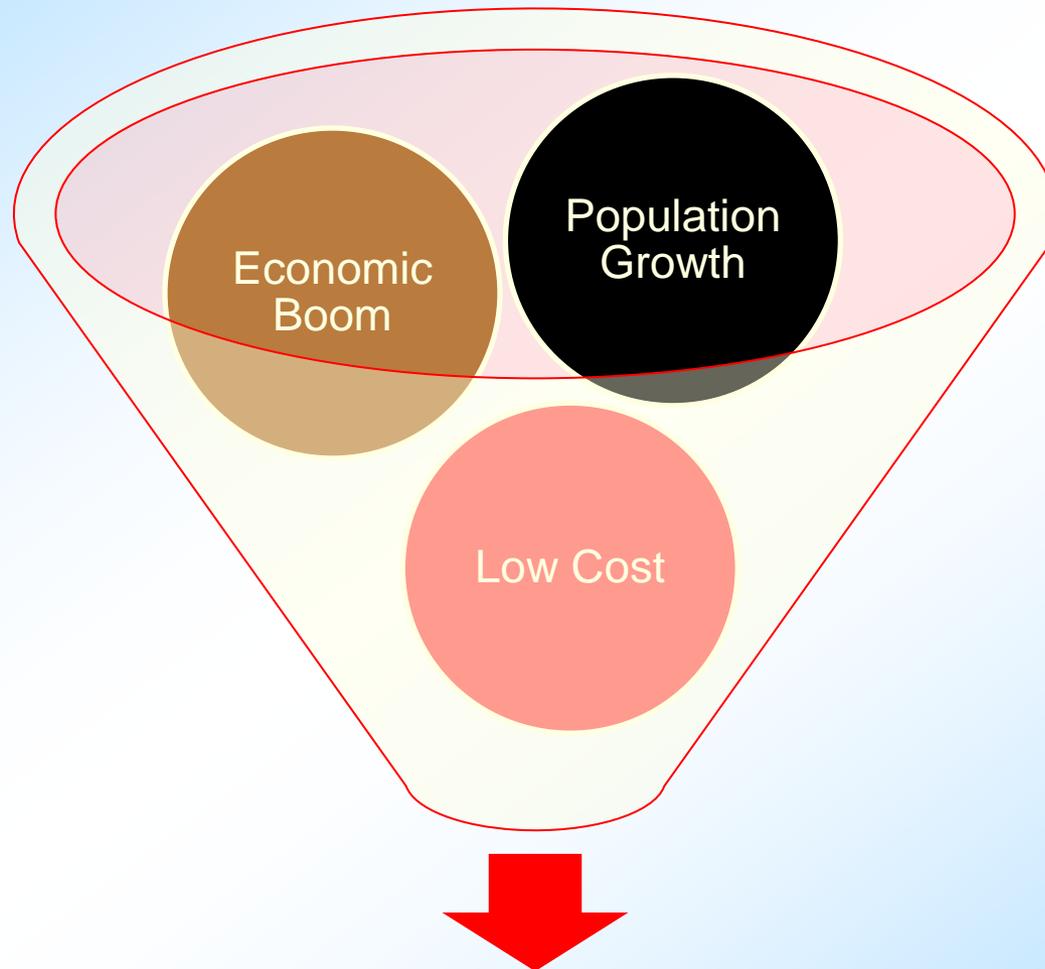
FUSRAP Completed Sites Evaluation (continued)



**Eight sites with
development in
the last 5 years**



Drivers for Change



Land-Use Change



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

Hamilton, Ohio, Site



2010



2015



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

Hamilton, Ohio, Site



October 2015



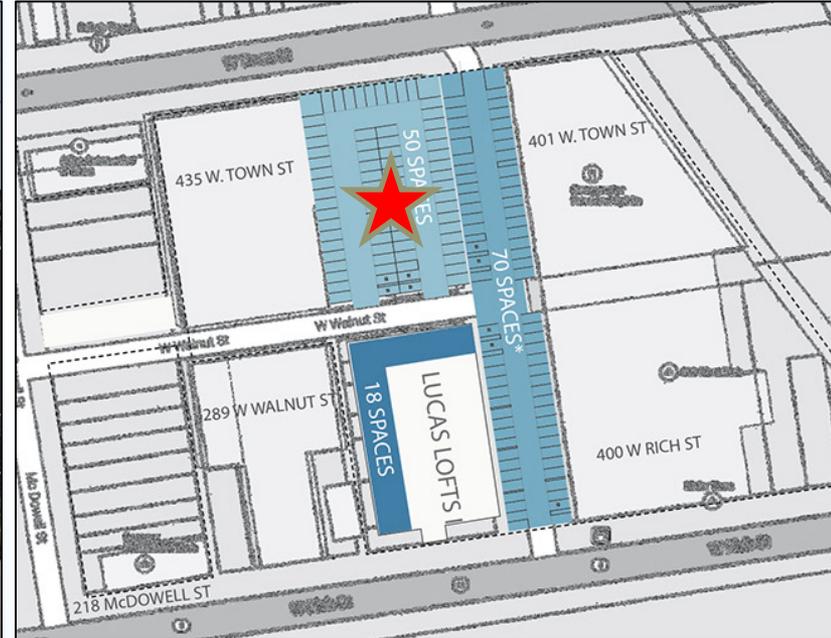
U.S. DEPARTMENT OF
ENERGY

Legacy
Management

Columbus East, Ohio, Site



2006



FUTURE



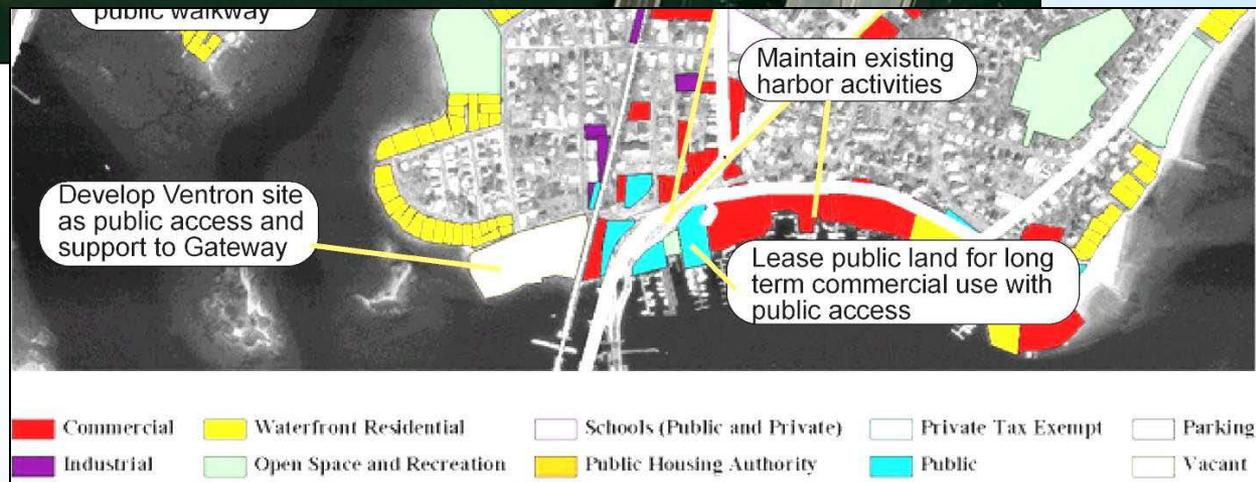
Columbus East, Ohio, Site



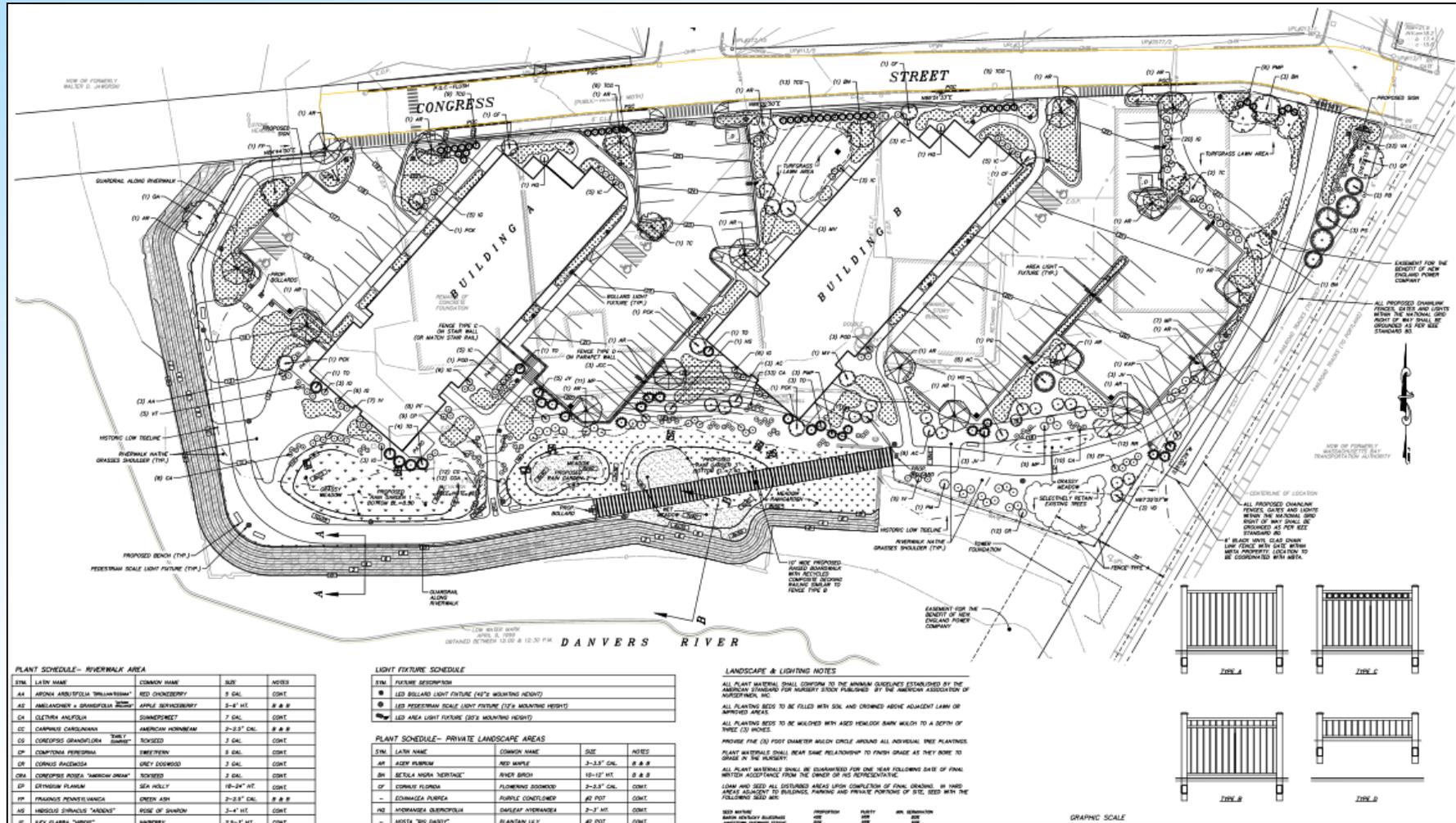
Beverly, Massachusetts, Site



2015



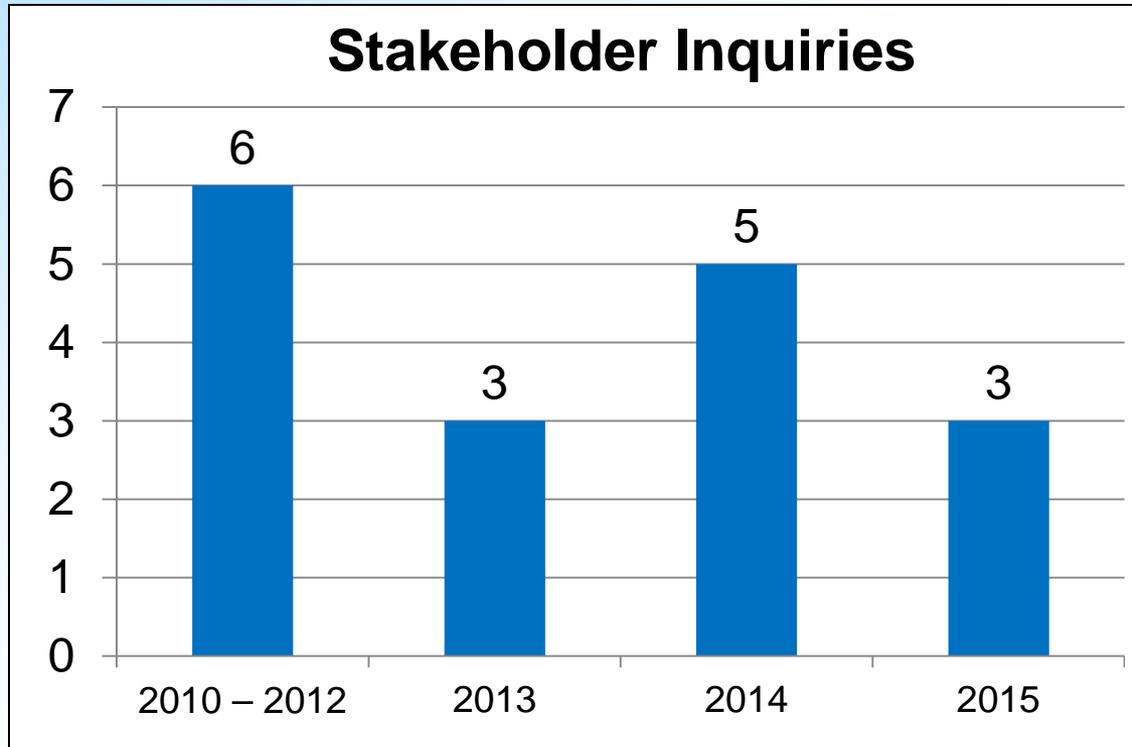
Beverly, Massachusetts, Site



Permitted Plans for lofts at the Beverly, MA site.

Lesson 1 – Improved Stakeholder Relations

- Increased development = increased stakeholder inquiries



- Vicinity property site condition
- Resident safety
- Media inquiry
- Final site conditions
- Remediation data
- Textbook image request
- Congressional requests

Lesson 1 – Improved Stakeholder Relations (continued)

- Improved data accessibility
 - FUSRAP document information system (FDIS)
 - All sites now in LM's Geospatial Environmental Management System (GEMs)
- Proactive monitoring of site activity
 - Improved news alerts
 - Periodic information searches
- Improved documentation
 - Historical document search
- Improved communication
 - Updated fact sheets and websites



Lesson 2 – Enhanced Long-Term Surveillance and Maintenance (LTS&M) Requirements for Completed Sites

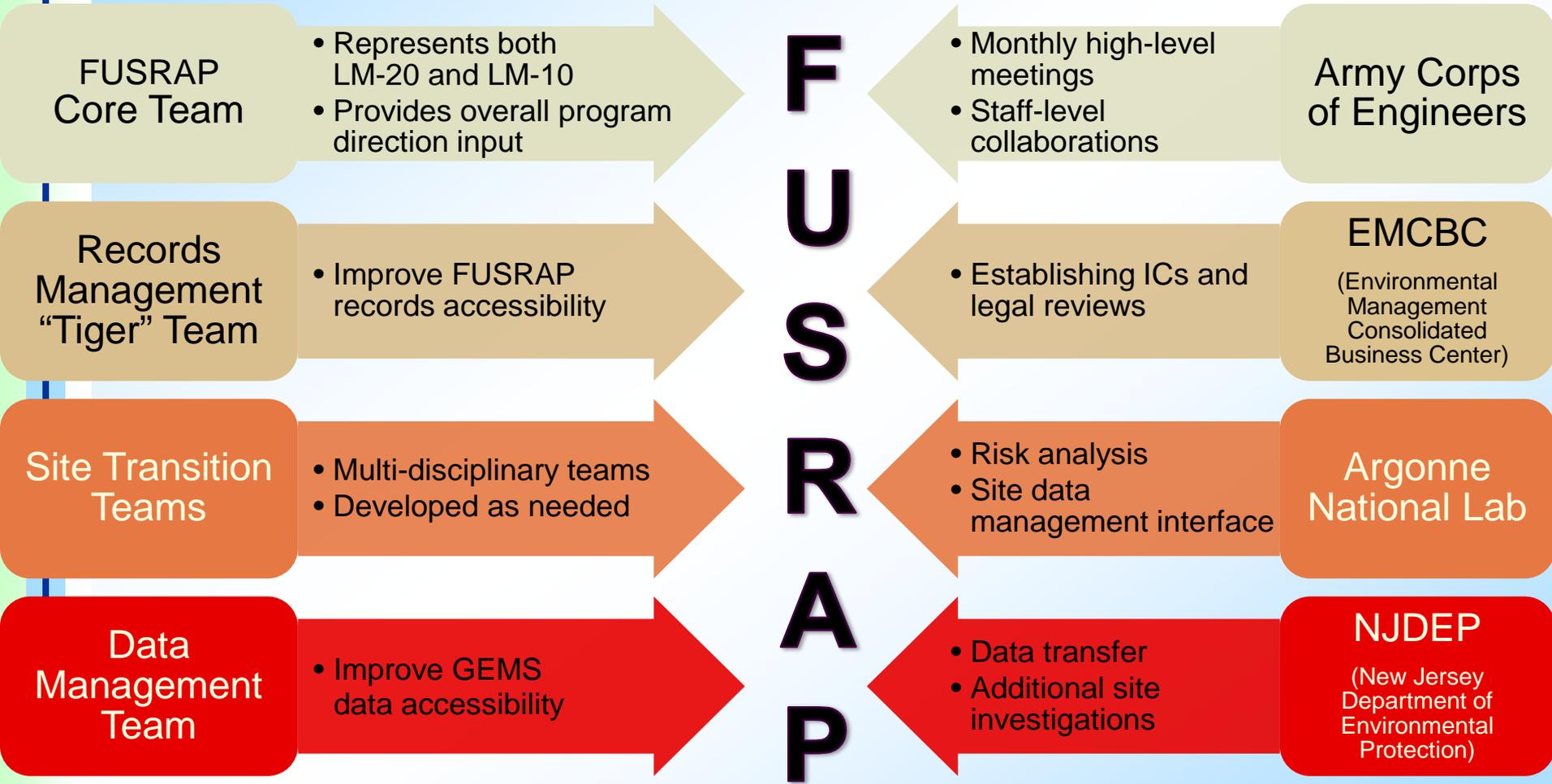
- Reevaluating FUSRAP program structure
 - More efficient evaluation of potential remediated sites requiring additional protections, including institutional controls (ICs)
- Evaluating new stewardship techniques
 - Annual desk inspections
 - Online searches
 - Development-plan reviews
 - Ownership
 - Google Earth
 - Risk-based LTS&M program
- Periodic site visits



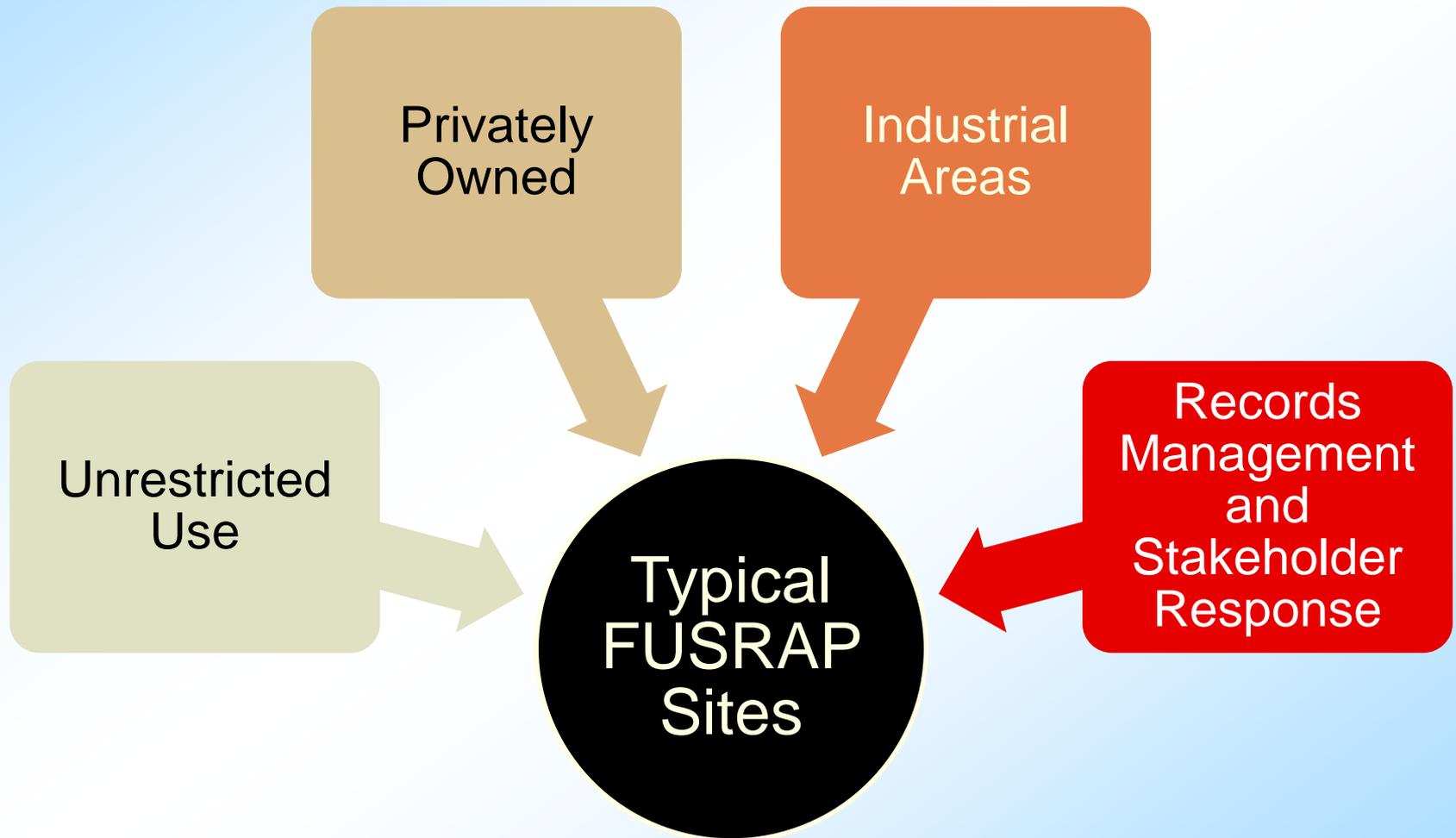
Collaborating Activities

Internal

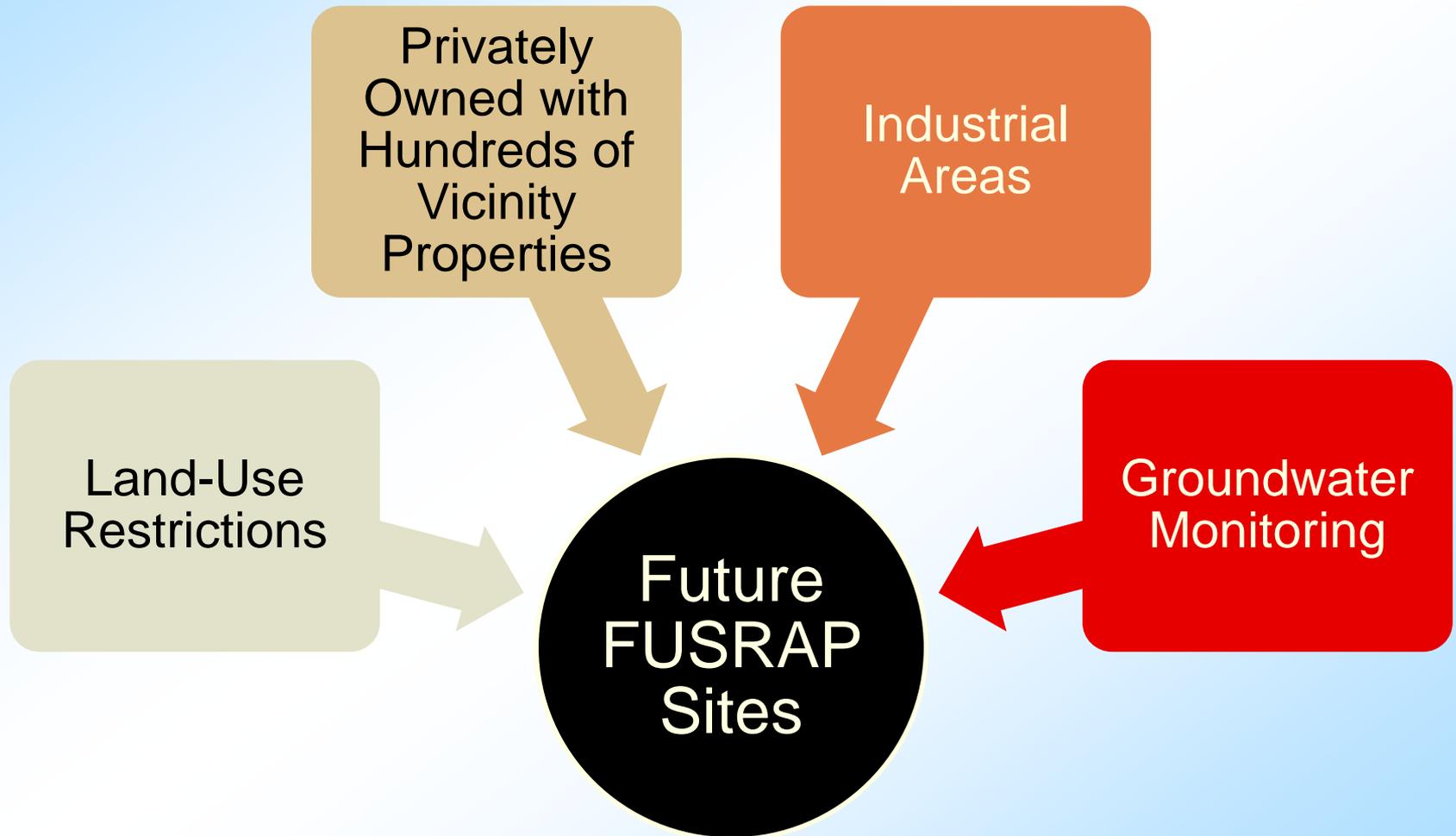
External



Lesson 3 – Greater Involvement in Transition Process



Lesson 3 – Greater Involvement in Transition Process (continued)



Lesson 3 – Greater Involvement in Transition Process (continued)

- Develop management- and staff-level relationships with U.S. Army Corps of Engineers
 - Monthly management meetings
 - Working groups to improve best management practices
 - Periodic staff meetings
- Programmatic shift
 - Allow sufficient time to evaluate remedial actions and final site conditions
 - Including associated risks

Conclusions

- Sites changing faster than in the past
 - Expect this to continue
- Preparation key to addressing increased stakeholder inquiries
- Proper documentation and program structure critical for LTS&M
- Continued partnership with our collaborating agencies and regulators will be critical for success.



Questions?

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