FUSRAP

Formerly Utilized Sites Remedial Action Program

Stakeholder Report

May 2013

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Message to Stakeholders

The U.S. Department of Energy (DOE) has operated the Formerly Utilized Sites Remedial Action Program (FUSRAP) since 1974. During that time, we have accomplished many activities to identify and remediate to a safe condition sites that became contaminated with radioactive materials in support of the nation's early atomic energy programs.

DOE is responsible for 30 remediated FUSRAP sites (see the map on the next page). Our mission is to keep these sites protective of human health and the environment. To accomplish this, DOE has evaluated risk for the sites and defined long-term surveillance and maintenance (LTS&M) requirements to monitor site conditions, prevent unsafe activities where needed, and keep stakeholders informed. Most FUSRAP sites were remediated to a condition that allows unrestricted use. For all sites, DOE manages site information to preserve knowledge of site conditions and a record of site activities.

DOE is responsible for determining if a site is eligible for inclusion in FUSRAP and for keeping remediated sites safe by conducting LTS&M. DOE remediated FUSRAP sites until 1997, when that task was assigned to the U.S. Army Corps of Engineers (USACE).

DOE has accomplished the following work on FUSRAP since 1974:

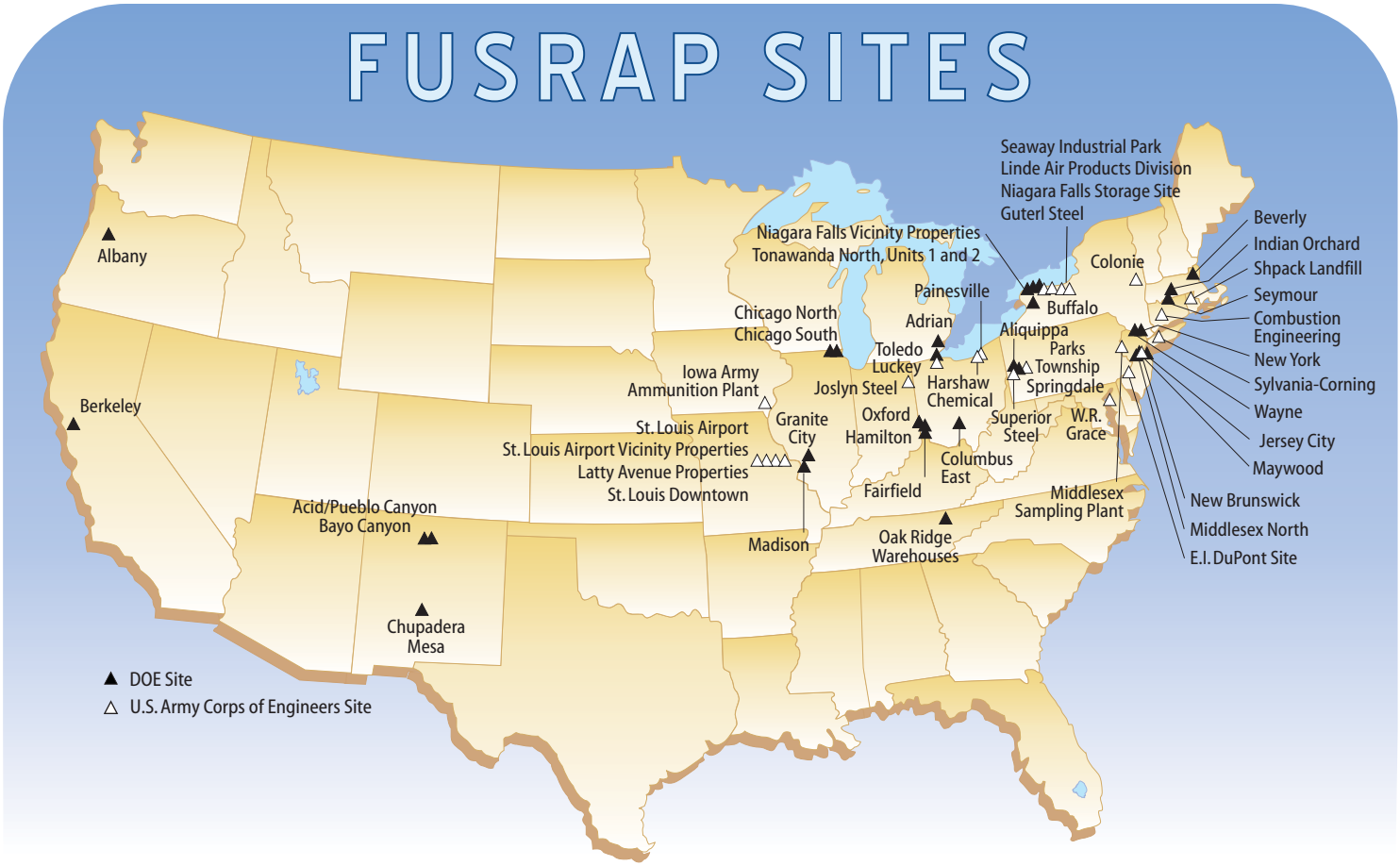
- Researched federal records across the country and identified more than 500 sites that may have residual radioactive contamination from early Manhattan Engineer District (MED) or U.S. Atomic Energy Commission (AEC) activities
- Evaluated radiological conditions and conducted surveys to identify sites that had residual radioactive contamination
- Conducted eligibility evaluations to determine if the federal government was liable for cleanup, ultimately designating 46 sites for remedial action
- Remediated 25 sites and transitioned them to LTS&M
- Transitioned five sites to LTS&M that were remediated by USACE
- Integrated those sites into DOE Office of Legacy Management (LM) programs
- Established procedures and protocols for operating FUSRAP
- Coordinated DOE and USACE FUSRAP activities for referral and transition of site responsibilities between the agencies

This report is part of our active outreach to stakeholders to ensure that the public and other stakeholders remain aware of FUSRAP sites and that essential FUSRAP knowledge is preserved.

Please visit our website at http://energy.gov/lm/sites/lm-sites/programmatic-framework/fusrap-program-information.

You may send questions about FUSRAP or the FUSRAP sites to FUSRAPinfo@lm.doe.gov. Also, let me know if there is more we can do to keep you informed of FUSRAP.

Christopher Clayton
DOE LM, FUSRAP Program Manager



What Is FUSRAP?

FUSRAP was established in 1974 to identify, investigate, and clean up or control exposure to residual contamination at sites that had supported MED or AEC activities.

When the nation began developing atomic weapons during World War II, no government-owned infrastructure existed to provide the specialized services needed to accomplish that task, so the federal government contracted for services from private enterprises with the needed expertise and facilities.

As government-owned facilities were developed, the contracted facilities were cleaned up to standards in effect at the time and released for unrestricted use.

In the early 1970s, residual radiological contamination was identified at some of the released sites. AEC initiated FUSRAP to review the radiological conditions at the early atomic energy program sites, determine if a given site was eligible for government cleanup, and remediate any remaining contamination to current standards at eligible sites.

Early Atomic Weapons Research and Production

In August 1942, USACE created the MED to develop the technology and production facilities for the first atomic weapons. Popularly known as the Manhattan Project, MED hired contractors throughout the United States to store, sample, assay, process, and machine the uranium and thorium ores and metal used in the first atomic bombs (see figure on page 4). FUSRAP sites conducted many of the operations and processes used in early atomic weapons production and nuclear research. These sites are typically smaller facilities, usually privately owned, that were released for private use when their government contracts had been fulfilled.

In August 1946, President Truman signed the Atomic Energy Act, which created the AEC, a federal agency that replaced MED and took over the responsibilities for atomic weapons and early atomic energy programs. AEC continued to contract with private industry to support the nation's nuclear weapons and energy programs until the late 1960s, by which time a government industrial base had been established. AEC was reorganized as the Energy Research and Development Administration in 1975, and in 1977 that agency was reorganized as DOE, which was established as a cabinet-level agency that consolidated the energy-related functions of a number of government agencies.

During the 1940s, uranium ore was obtained from the Belgian Congo or the western U.S. and Canada. Uranium oxide was extracted from the ore and reduced to uranium metal. The metal was sent to machining plants or to facilities that transformed the metal into a form that could be enriched to Uranium-235 (see sidebar on next page). Machined uranium metal was sent to

production reactors, primarily to Oak Ridge, Tennessee, or the Hanford Reservation in Washington State in the 1940s and the Savannah River Plant in South Carolina in the 1950s, to produce plutonium used to make nuclear weapons. Plutonium and enriched uranium provided by other federal operations were then sent to weapons production facilities.

Wastes from uranium-ore processing and other operations were sent to storage and disposal facilities.

Other FUSRAP sites involved in early weapons production were used for beryllium and thorium production or were research facilities.

FUSRAP

Although most FUSRAP sites were cleaned up to guidelines that were in effect at the time and released, by the 1970s some of those guidelines had been replaced by more stringent standards. AEC, then DOE, reexamined more than 500 sites to identify potential risks to public health, safety, and the environment where levels of radioactive contamination might exceed current standards. DOE identified 46 sites that required cleanup and began the cleanups in 1979. Seven additional sites have been added to FUSRAP for a total of 53 FUSRAP sites.

DOE remediated 25 sites before Congress transferred responsibility for FUSRAP site characterization and remediation to USACE in 1997. USACE has completed remedial action at 5 sites, and 23 active sites are currently undergoing remedial action. DOE remains responsible for determining whether a site is eligible for remediation under FUSRAP and for long-term care of remediated, or completed, FUSRAP sites. DOE assumes perpetual responsibility for completed FUSRAP sites.

DOE currently manages DOE FUSRAP to ensure that FUSRAP sites remain protective of human health and the environment after remediation is complete. DOE accomplishes this through its long-term surveillance and maintenance program—LTS&M, which is designed to control residual risk and maintain safe conditions at completed sites.

Radioactive Contamination at FUSRAP Sites

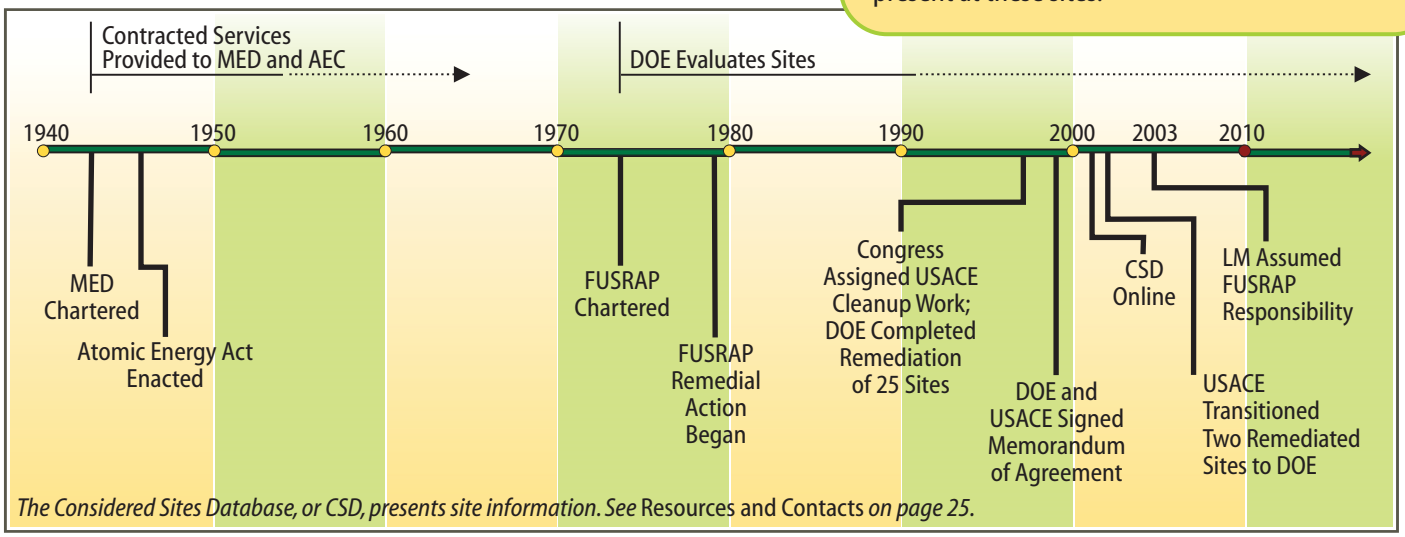
Residual radioactive contamination at FUSRAP sites usually consists of uranium and its decay products. Uranium is a naturally occurring element that is radioactive. Atoms of a radioactive element are unstable and spontaneously decay to lighter elements (decay products), while giving off gamma rays, alpha particles, or beta particles (electrons). The decay products are also radioactive and undergo decay, which leads to an entire series of ever-lighter elements in a decay chain, resulting finally in decay to a stable isotope of lead.

Uranium ore contains all the elements in the uranium decay chain. Ore handling, analysis, and research resulted in radioactive contamination from uranium and its decay products at some FUSRAP sites. The ore was processed to remove the uranium, leaving the decay products as a waste. In separate processes, the uranium was converted to metal or other forms, generating radioactive waste. Additional waste was generated when uranium metal was machined, creating uranium dust that was released to the environment.

The research and development of these processes also generated radioactive waste at some FUSRAP sites.

Some FUSRAP sites were involved in thorium handling and processing. Thorium also is radioactive and has its own decay chain. Other sites that were not involved in AEC or MED activities and were not otherwise eligible for remediation under FUSRAP were added to the program through congressional action. Radionuclides from other processes may be present at these sites.

FUSRAP Timeline



The Considered Sites Database, or CSD, presents site information. See Resources and Contacts *on page 25.*

Roles and Responsibilities

The responsibilities of DOE and USACE in implementing FUSRAP are independent, yet require coordination between the agencies to accomplish the FUSRAP goal of maintaining protectiveness. To this end, DOE and USACE signed a Memorandum of Understanding that defines roles and responsibilities and promotes coordination between the two agencies.

DOE Responsibility: Preserving Historical Knowledge

Preserving historical knowledge by maintaining legacy site records is a DOE core function of FUSRAP. Records that describe site operations, the extent of contamination, remedial action activities, final site conditions, site verification, and regulator concurrence are all critical to DOE's ability to confirm that sites were cleaned up to the appropriate standards and remain protective. DOE also relies on historical site records to determine whether a site is eligible for remedial action under FUSRAP. The site records are indexed and preserved for use by future custodians and stakeholders.

What Does Protectiveness Mean?

A remedial action remedy is considered protective when the potential risk to human health and the environment from exposure to residual radioactive contamination is eliminated or reduced to acceptable levels.

In assessing potential site risk, DOE pays particular attention to land use assumptions and exposure scenarios used for certifying that a site can be released for unrestricted use and unlimited exposure. Some sites were remediated to a condition that poses no unacceptable health risks to a hypothetical subsistence farmer or resident with a home garden. This level of protectiveness is not confirmed for all sites, and DOE has imposed additional requirements at some sites.

The protectiveness of a completed site sometimes relies on properly managing residual contamination to prevent any uses that could result in exposure to the contamination.

For sites where some residual contamination remains, protectiveness is ensured by maintaining isolation of the contamination, restricting use of the land and improvements, or enforcing any other provision of the remedy that will control exposure.

DOE also provides information to the public on the legacy sites that were evaluated to determine whether they were eligible for remediation under FUSRAP and for remediated FUSRAP sites. The Considered Sites Database, available on the LM website at http://energy.gov/lm/sites/lm-sites/considered-sites, presents the results of eligibility evaluations for the more than 500 candidate FUSRAP sites. It contains documentation that supports the eligibility decisions, as well as cleanup and site closure documentation for the remediated sites.

DOE Responsibility: Eligibility Determination and Referral

DOE evaluates a site to determine whether it is eligible for remediation under FUSRAP and then refers the eligible site to USACE. Referrals can occur when a new site is evaluated or when additional assessment or remediation is required for a previously completed site. DOE determines FUSRAP eligibility based on the following criteria:

- Work was conducted in support of MED or AEC activities (typically during the 1940s to early 1960s time frame).
- The activities resulted in residual radioactive contamination (primarily uranium or thorium and their daughter elements) that exceeds current cleanup criteria.
- The authority to conduct remedial action at the site is prescribed within the Atomic Energy Act, as amended.
- The site is not subject for remedial action under any other remedial action program, nor is residual radioactive contamination addressed under a U.S. Nuclear Regulatory Commission (NRC) or state license.
- In addition, Congress can add a site to FUSRAP through the Energy and Water Development Appropriations Act.

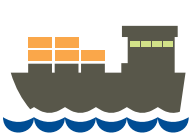
In the case of previously completed sites, DOE determines if new information or changed site conditions warrant the referral of a site to USACE for additional assessment or remediation. DOE uses the following criteria to determine if a site should be referred to USACE for further assessment:

- A third-party characterization or survey reveals residual MED/AEC-related contamination that was not previously identified; or

Two Types of FUSRAP Sites

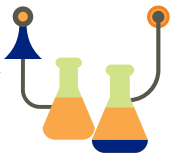
An "active" FUSRAP site is a site being remediated by USACE. A "completed" FUSRAP site is a site that has been remediated and transitioned to DOE for LTS&M.

FUSRAP Sites Involved in MED and AEC Processes



AFRICAN ORES
Belgian Congo

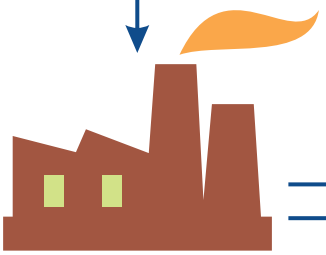
TEMPORARY STORAGE
Baker & Williams, New York, NY
Elza Gate, Oak Ridge, TN
Middlesex Sampling Plant, Middlesex, NJ
National Guard Armory, Chicago, IL
Staten Island Warehouse, Staten Island, NY



ASSAYING AND SAMPLING
Middlesex Sampling Plant, Middlesex, NJ
New Brunswick Laboratory, New Brunswick, NJ

WASTE STORAGE/ DISPOSAL
Ashland 1, Tonawanda, NY
Ashland 2, Tonawanda, NY
Latty Avenue Properties, Hazelwood, MO
Middlesex Municipal Landfill, Middlesex, NJ
Middlesex Sampling Plant, Middlesex, NJ
Niagara Falls Storage Site, Lewiston, NY
Niagara Falls Storage Site Vicinity Properties, Lewiston, NY
Parks Township Shallow Land Disposal Area, Apollo, PA
Seaway Industrial Park, Tonawanda, NY
Shpack Landfill, Attleboro, MA
St. Louis Airport Site, St. Louis, MO
St. Louis Airport Site Vicinity Properties, St. Louis, MO

MINING AND MILLING
Western U.S. and Canada



URANIUM ENRICHMENT

PROCESSING
Linde Air Products, Tonawanda, NY
Harshaw Chemical Company, Cleveland, OH
St. Louis Downtown Site, St. Louis, MO
Ventron, Beverly, MA

FABRICATING & MACHINING
Alba Craft Laboratory, Oxford, OH
Aliquippa Forge, Aliquippa, PA
Associate Aircraft, Fairfield, OH
Baker Bros., Toledo, OH
B&T Metals, Columbus, OH
Bliss & Laughlin Steel, Buffalo, NY
Chapman Valve, Indian Orchard, MA
C.H. Shnorr, Springdale, PA
Colonie, NY
Combustion Engineering, Windsor, CT
General Motors, Adrian, MI
Granite City Steel, Granite City, IL
Guterl Specialty Steel, Lockport, NY
HHM Safe Company, Hamilton, OH
Joslyn Manufacturing and Supply, Ft. Wayne, IN
Madison, IL
Seymour Specialty Wire, Seymour, CT
Superior Steel, Carnegie, PA

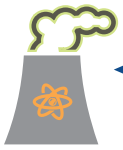
OTHER SITES

CONTAMINATED MATERIALS
Luckey, OH
Painesville, OH

RESEARCH
Albany Research Center, Albany, OR
E.I. DuPont, Deepwater, NJ
Kellex/Pierpont, Jersey City, NJ
Sylvania-Corning Hicksville, New York
University of California, Berkeley, CA
University of Chicago, Chicago, IL

THORIUM PROCESSING
Maywood Chemical Works, Maywood, NJ
W.R. Grace & Co., Curtis Bay, MD

WEAPONS DEVELOPMENT
Acid/Pueblo Canyon, Los Alamos, NM
Bayo Canyon, Los Alamos, NM
Chupadera Mesa, Bingham, NM
Iowa Army Ammunition Plant, Burlington, IA



PRODUCTION REACTORS

- A review of historical records indicates the potential for existing MED/AEC-related contamination that was not previously identified; or
- An individual with credible institutional knowledge provides information that additional MED/AEC-related contamination might exist that was not identified in previous assessments.

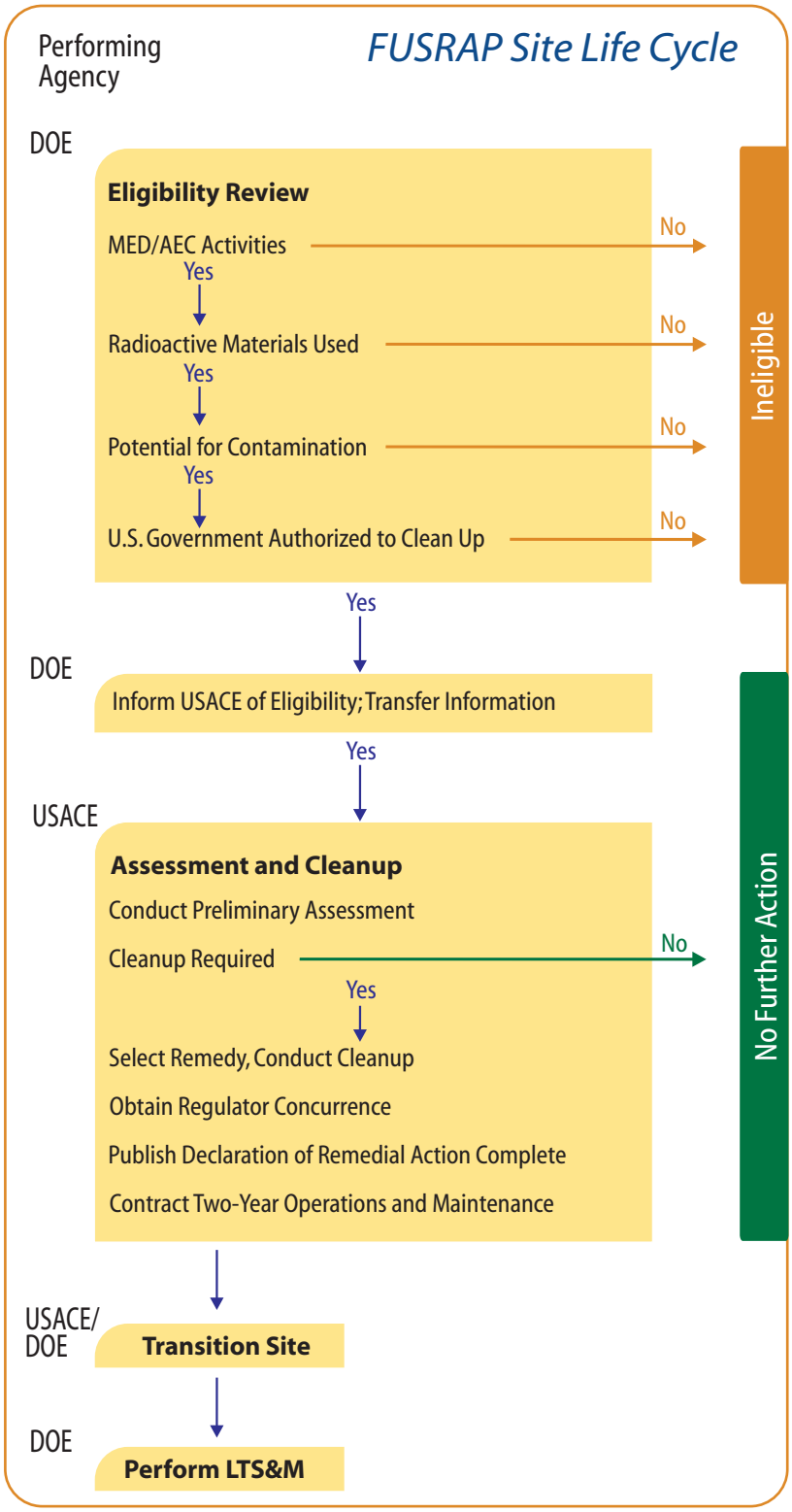
Once an eligibility evaluation begins, DOE informs USACE of the potential referral and keeps USACE staff informed of the progress of the evaluation. This allows USACE to begin to plan for the referral.

DOE conveys site documentation to USACE in conjunction with a site referral, which includes operations documentation establishing that work was performed at the site for MED or AEC. In addition, the documentation defines the processes and potential contamination and any available radiological survey information about potential radiological contamination remaining on the site.

USACE Responsibility: Assessment and Remediation

Congress directed USACE to conduct assessments and remedial action to clean up FUSRAP sites in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. When DOE determines that a site is eligible, USACE determines whether the site should be designated as an active FUSRAP site requiring further action under CERCLA. The assessment may result in a finding that no further action is required on the basis that no radiological contamination is present that exceeds cleanup criteria, or the federal government is not responsible for the contamination. If remedial action is required, USACE assesses site conditions, selects and implements a remedy, and works with the U.S. Department of Justice on cost-recovery actions.

Once it is determined that additional action is required, USACE assumes responsibility for the site until the cleanup is completed with the remedy in place. If residual contamination remains on the property after completion of remedial action, and radiological conditions are such that the property cannot be released for unrestricted use, USACE will develop land use restrictions, which DOE refers to as institutional controls (ICs), as part of the remedy. After the cleanup is completed and the remedy is in place, USACE conducts a 2-year-long operations and maintenance period to demonstrate that site hazards are controlled. Before a site can be transferred to DOE, the regulator must concur that the selected remedy is operating successfully, which indicates the site is protective of human health and the environment.



Transition from USACE to DOE

DOE and USACE have established a process to transition site responsibilities to DOE when remedial actions are completed. The process ensures that DOE will be informed of necessary actions to ensure that the remedy remains protective, essential site knowledge is transferred and preserved in DOE records, and stakeholders are informed that DOE will provide LTS&M and respond to inquiries about site conditions.

What Are Institutional Controls?

When contamination has been left at a site and unlimited use or unrestricted exposure of occupants is not safe, ICs may be used to prevent certain activities.

An IC is a mechanism that prevents exposure to contamination. Usually the control consists of a legal agreement, such as a deed restriction, that prohibits certain activities. For example, a deed restriction at the New Brunswick, New Jersey, Site prohibits excavating into an area where contaminated soil was left under a clean soil cap. ICs are legally enforceable by an agency with the authority to halt an activity that has the potential to violate the restriction. Some regulatory systems consider any restriction an IC, including physical access barriers, markers, and engineered structures that isolate contamination from the environment.

Cleanup regulations followed by DOE and USACE allow leaving contaminated material in place if (1) it poses no unacceptable risk if left undisturbed, and (2) certain other criteria are met, such as if the cost to remove the contamination far exceeds the benefit, or remediation would be unsafe or cause environmental harm.

DOE will manage ICs through (1) surveillance of the site to ensure that IC restrictions are not violated, and (2) contact with owners, tenants, regulators, or local governments to ensure that they remain aware of the ICs.

Pretransition activities may include an orientation visit and joint environmental monitoring, interviews with USACE project staff, and participation in public and stakeholder meetings.

In 2012, the 1986 FUSRAP protocols, which establish DOE program-level management procedures, were revised. The revised protocols are presented in the FUSRAP Program Plan, which establishes procedures for program management, LTS&M activities, and referral and transition processes.

DOE Responsibility: LTS&M

Some FUSRAP sites can be released for unrestricted use, based on final radiological conditions at the site, and LTS&M requirements will consist of managing records and responding to stakeholder inquiries. Other sites may require additional postclosure care. For those sites, DOE develops site-specific LTS&M plans that establish the additional activities needed to maintain protectiveness.

Site-specific LTS&M plan activities can include periodic inspections, environmental monitoring, maintenance, managing ICs, and conducting 5-year reviews. Although no current FUSRAP sites are expected to require ongoing remedial actions such as groundwater treatment, maintaining and operating any such required system would also be a part of the site LTS&M plan.

Beneficial Reuse

DOE owns the real property at the Maywood, New Jersey; Colonie, New York; Middlesex Sampling Plant, New Jersey; and Niagara Falls Storage Site, New York, Sites.

Upon transition of these sites from USACE, DOE will evaluate whether they can be transferred to a private owner or another government agency for beneficial reuse. Other FUSRAP sites are government or privately owned, and DOE does not control land use except through ICs.

Wayne, New Jersey, Site.
When USACE completed remediation of the Wayne, New Jersey Site, it was transferred to Wayne Township for recreational use.

The following sections provide brief descriptions and statuses of all of the FUSRAP sites. DOE sites are listed under the current DOE geographic naming terminology; the USACE sites maintain their historical names. Links to DOE and USACE webpages and documents are included in the site descriptions.

ORE and MATERIAL HANDLING

These sites were involved in receiving, storing, sampling, assaying, and shipping uranium ore and materials.

Middlesex Sampling Plant, New Jersey, Site

(USACE ACTIVE FUSRAP SITE)

From 1943 to 1967, this site was used to store high-grade uranium ore (known as pitchblende) from the Belgian Congo and, later, to process and ship uranium, thorium, and beryllium ores and store thorium residues. The facility was used as a U.S. Marine Corps reserve training center from 1967 to 1979, when DOE acquired the site. DOE cleaned up contaminated vicinity properties in the 1980s and stored excavated soil at the site. USACE completed the soil cleanup, disposing of 68,000 cubic yards of contaminated soil in 1998 and 1999 and currently is completing groundwater characterization studies.

When remediation is complete, DOE will assume responsibility for LTS&M and will consider selling or transferring the property for beneficial reuse.

Anticipated transition date—2021

Anticipated LTS&M requirements—groundwater monitoring, well replacement, annual IC monitoring, 5-year review, real and personal property management, annual maintenance, managing site records, and responding to stakeholder inquiries.

http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/nj/fusrap/middlese.pdf

New Brunswick, New Jersey, Site

(DOE COMPLETED FUSRAP SITE)

From 1948 to 1977, MED and AEC operated the New Brunswick site as a general nuclear chemistry laboratory. The site was partially remediated in two phases between 1978 and 1983, including removing all aboveground structures, contaminated concrete foundations, onsite drain lines, and contaminated soils on the front two-thirds of the property. In 1990, DOE designated the site for additional remediation of residual soil contamination under FUSRAP. DOE remediated localized areas of contamination identified in 1996 and certified that the site complied with applicable cleanup criteria and standards in September 2001. In 2009, at the request of the state regulator, DOE collected additional radiological data on drain lines entering a sanitary sewer in the public right-of-way. After DOE found no indication of above-background radioactivity, DOE sold the site to a private party in November 2009.

LTS&M requirements include managing a deed restriction IC to prevent excavation in an area where soils with elevated arsenic levels are covered by a layer of clean soil. DOE inspects the restricted area every other year and submits a certification of protectiveness to the state regulator and stakeholders. LTS&M requirements also include managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/new_brunswick/Sites.aspx

New York, New York, Site

(DOE COMPLETED FUSRAP SITE)

The Baker & Williams Warehouses site in Manhattan was used by MED in the early 1940s for the short-term storage of uranium concentrates that were later distributed to government facilities involved in nuclear reactor and atomic weapons programs.

In 1990, DOE designated the site for remediation under FUSRAP. DOE remediated contaminated areas in the warehouses and certified that the site complied with applicable cleanup criteria and standards in 1995.

The property was released for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/new_york/Sites.aspx

Oak Ridge, Tennessee, Warehouse Site

(DOE COMPLETED FUSRAP SITE)

The Elza Gate Warehouses site was used in the early 1940s by MED to store high-grade uranium ore and ore-processing residues. Later, AEC used the site to store equipment for Oak Ridge National Laboratory. In the 1970s, the site was vacated and decontaminated to then-current standards, transferred to the City of Oak Ridge, and later sold to a private metal fabrication company.

In 1988, the property was surveyed, and contamination was found that exceeded FUSRAP cleanup criteria. In 1991 and 1992, DOE remediated radioactive contamination on concrete pads and in soils and removed polychlorinated biphenyl and lead contamination. DOE released the site for unrestricted use in 1993.

ORE and MATERIAL HANDLING

These sites were involved in receiving, storing, sampling, assaying, and shipping uranium ore and materials.

Oak Ridge, Tennessee, Warehouse Site (continued)

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/oakridge/Sites.aspx

Staten Island Warehouse Site, Staten Island, New York

(POTENTIAL USACE ACTIVE FUSRAP SITE)

The site is located at the base of the Bayonne Bridge on Richmond Terrace Avenue in Staten Island. The site was used by Union Minie're du Haut-Katanga Company to store high-grade Belgian Congo uranium ore (owned by that company) from 1939 to 1942. In 1942, 2,007 drums of uranium ore were stored at the warehouse, then owned by Archer-Daniels Midland Company. Following purchase of this material by the U.S. Government, the uranium ore was shipped to various MED sites for storage and processing. In transferring and purchasing the ore, MED became responsible for the area of transfer under the Free Alongside Ship provision of Maritime Law.

The USACE New York District is preparing a preliminary site assessment to determine if the contamination in the potentially eligible portion of the Staten Island site is eligible for remediation under FUSRAP.

http://www.lm.doe.gov/Considered_Sites/Staten_Island_Warehouse_-_NY_22.aspx

New Brunswick, New Jersey, Site.
This portion of the privately owned New Brunswick site is subject to ICs restricting excavation because of elevated arsenic levels in the soil.

PROCESSING

Uranium ore and other materials were processed at these sites to convert them to usable forms.

Beverly, Massachusetts, Site

(DOE COMPLETED FUSRAP SITE)

From 1942 to 1948, the Metal Hydrides Corporation, which became the Ventron Corporation in 1965, conducted uranium processing operations that converted uranium oxide to uranium metal powder and uranium metal for MED and AEC. The Beverly site was later used by another private company to purify thorium compounds.

In 1986, DOE designated the site for remediation under FUSRAP. DOE remediated the site and certified that the site complied with applicable cleanup criteria in 2003. The privately owned property was released for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/beverly/Sites.aspx

E.I. DuPont Site, Deepwater, New Jersey

(USACE ACTIVE FUSRAP SITE)

DuPont conducted uranium-refining activities under contract to MED and AEC in support of the nation's early atomic energy program. Operations involving uranium at the Chambers Works site began in 1942. As part of its work on the MED program, DuPont worked on developing a process for converting uranium oxide to produce uranium hexafluoride and small quantities of uranium metal. Other research activities were also performed. All MED activities were transferred to AEC in 1946. DuPont continued its research for AEC until late 1947. In 1948 and 1949, AEC conducted radiological surveys and decontaminated building surfaces at the site, primarily at locations of former AEC activities. Using then-existing criteria, AEC released the buildings to DuPont in 1949.

Oak Ridge National Laboratory conducted radiological surveys in 1977. Survey results indicated that uranium was present above current action levels, and the Chambers Works was designated as a FUSRAP site.

Anticipated transition date—2020

Anticipated LTS&M requirements—IC monitoring, 5-year reviews, managing site records, and responding to stakeholder inquiries.

http://www.nap.usace.army.mil/Missions/FUSRAP/DuPontChambersWorks.aspx

Harshaw Chemical Site, Cleveland, Ohio

(USACE ACTIVE FUSRAP SITE)

The 55-acre site is located at 1000 Harvard Avenue, approximately 5 miles southwest of downtown Cleveland in Cuyahoga County. The Harshaw Chemical Company began production of chemical and radiological compounds for MED in late 1942. From 1944 to 1959, various forms of uranium were processed in Building G-1 (formerly known as Plant C) for isotopic separation and enrichment at Oak Ridge, Tennessee. The site was included in FUSRAP in spring 2001.

Anticipated transition date—2019

Anticipated LTS&M requirements—IC monitoring, 5-year reviews, managing site records, and responding to stakeholder inquiries.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/HarshawSite.aspx

Linde Air Products Site, Tonawanda, New York

(USACE Active FUSRAP Site)

The Linde Air Products site is located in the Town of Tonawanda, approximately 3 miles northwest of Buffalo. MED and AEC contracted with Linde Air Products to refine uranium between 1942 and 1946. Waste generated from the uranium processing was stored at the Ashland #1 site (Tonawanda North, Unit 1, Site). Radioactive contaminants include uranium, radium, and thorium.

In 1953, the Linde facilities were remediated to levels within radioactive guidelines in effect at that time. All of the structures used in processing have since been converted to other commercial and industrial uses. The Linde site was designated as a FUSRAP site in 1980, and DOE initiated the cleanup process in 1996. The nearby Tonawanda Landfill is being remediated as a Linde site vicinity property.

USACE remedial actions at the Linde site were completed in November 2012, and restoration backfill activities are expected to be completed in 2013.

Anticipated transition date—2018

Anticipated LTS&M requirements—groundwater monitoring, IC monitoring, well replacement, and 5-year reviews.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/LindeSite.aspx

PROCESSING

Uranium ore and other materials were processed at these sites to convert them to usable forms.

Luckey, Ohio, Site

(USACE ACTIVE FUSRAP SITE)

The Luckey site is a 40-acre inactive industrial site with derelict production buildings, located 24 miles southeast of Toledo. Between 1949 and 1958, the Luckey site was operated as a beryllium production facility by the Brush Beryllium Company (later Brush Wellman) under contract to AEC. In 1951, the site received approximately 1,000 tons of radioactively contaminated scrap steel to be used in proposed magnesium production at the site.

The USACE signed a Record of Decision for the Groundwater Operable Unit of the Luckey site in 2008. The remedy is monitored natural attenuation of groundwater. Groundwater wells are sampled annually for beryllium, lead, uranium, and gross alpha/gross beta. Sampling will continue until results show a progressive trend that indicates safe drinking water standards have been met. ICs concerning site groundwater will be implemented during the monitoring period to ensure that no new groundwater development or changes in groundwater use have occurred.

Anticipated transition date—2027

Anticipated LTS&M requirements—groundwater monitoring, well replacement, IC monitoring, 5-year reviews, managing site records, and responding to stakeholder inquiries.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/LuckeySite.aspx

Maywood Chemical Works, Maywood, New Jersey

(USACE ACTIVE FUSRAP SITE)

Congress added the Maywood site to FUSRAP in 1983. The Maywood site includes residential, municipal, and commercial properties in the boroughs of Maywood and Lodi, and the Township of Rochelle Park, in Bergen County. The primary contaminant at the site is thorium-232, which originated from extraction processes involving monazite sands by the former Maywood Chemical Works between 1916 and 1959. The site includes 88 private and government-owned properties and is listed on the National Priorities List (NPL).

DOE owns a 17-acre parcel at the site, which will be released for other uses when remedial action is complete.

Anticipated transition date—2024

Anticipated LTS&M requirements—groundwater and IC monitoring, 5-year reviews, real and personal property management, annual maintenance, managing site records, and responding to stakeholder inquiries.

http://www.fusrapmaywood.com/index.asp

Painesville, Ohio, Site

(USACE ACTIVE FUSRAP SITE)

The Painesville site, a 30-acre privately owned site 22 miles northeast of Cleveland, is a former magnesium production facility that was operated by the Diamond Magnesium Company under contract to the federal government.

From 1951 to 1953, Diamond Magnesium received approximately 1,650 tons of radioactively contaminated scrap steel from the Lake Ontario Storage Area (now the Niagara Falls Storage Site) to be used in the magnesium production process. USACE completed site remediation in 2011.

Anticipated transition date—2014

Anticipated LTS&M requirements—managing site records and responding to stakeholder inquiries.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/PainesvilleSite.aspx

St. Louis Downtown Site, St. Louis, Missouri

(USACE ACTIVE FUSRAP SITE)

The St. Louis Downtown site (SLDS) is located in an industrial area on the eastern border of St. Louis, approximately 300 feet west of the Mississippi River. The property is about 11 miles southeast of the St. Louis Airport Site and the Lambert-St. Louis International Airport. SLDS encompasses nearly 45 acres and is presently owned and operated by Mallinckrodt Inc., a unit of Covidien Pharmaceutical (formerly Mallinckrodt Chemical Works). The property includes many buildings and other facilities involved in chemical production.

From 1942 to 1957, under contract with MED and AEC, the site was used for processing various forms of uranium compounds, machining, and recovery of uranium metal. In 1946, a newly constructed plant began to manufacture uranium dioxide from pitchblende ore that was acquired from the African Metals

PROCESSING

Uranium ore and other materials were processed at these sites to convert them to usable forms.

St. Louis Downtown Site, St. Louis, Missouri (continued)

Company. Because this company retained ownership of the radium content of the ore, it was required that radium-226 and its daughter products be extracted along with the lead content. The radium and lead were precipitated, and the precipitate was sent to the Lake Ontario Ordnance Works in Lewiston, New York, and to the Feed Material Production Center in Harrison, Ohio, for storage. Remediation is ongoing, and some contaminated soil will be left in place beneath buildings and around utilities.

Anticipated transition date—2017

Anticipated LTS&M requirements—IC monitoring, 5-year reviews, managing site records, and responding to stakeholder inquiries.

http://www.mvs.usace.army.mil/Missions/CentersofExpertise/FormerlyUtilizedSitesRemedialActionProgram.aspx

Wayne, New Jersey, Site

(DOE COMPLETED FUSRAP SITE)

Congress added the Wayne site to FUSRAP in 1983. Rare Earths, Inc. and then W.R. Grace & Co. operated the 6.5-acre site for AEC as a rare earth and thorium processing facility from 1948 to 1971. Contaminated waste materials were buried onsite, and the facility license was terminated. DOE acquired the property for interim storage of contaminated soil and debris removed from nearby vicinity properties. The U.S. Environmental Protection Agency (EPA) listed the site on the NPL in 1984.

DOE began remediating the site and contaminated vicinity properties, and USACE completed remediation in 2003. The site was transferred to Wayne Township for recreational use in 2006. In 2010, USACE remediated residual radioactive contamination in public rights-of-way.

The site transferred to DOE in 2007, and EPA delisted the site from the NPL in 2012. DOE will remove the groundwater IC on the site in 2013. LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/wayne/Sites.aspx

Maywood, New Jersey, Site.
USACE is using rail cars to remove contaminated soil for offsite disposal.

PROCESSING

Uranium ore and other materials were processed at these sites to convert them to usable forms.

W.R. Grace & Co. Site, Curtis Bay, Maryland

(USACE ACTIVE FUSRAP SITE)

Monazite sand processing was conducted at the W.R. Grace Curtis Bay Facility in Baltimore from mid-May 1956 through the spring of 1957 under license to the AEC to extract thorium and rare earth elements. The processing was conducted in the southwest quadrant of Building 23, a 100-year old, 5-story building, in the active manufacturing portion of the facility. Building components and equipment in this quadrant contained residual radiological contamination remaining from the monazite sand processing.

Waste materials from the processing operations (termed gangue) were disposed of in the nonmanufacturing portion of the facility, in the area referred to as the Radioactive Waste Disposal Area.

Anticipated transition date—2017

Anticipated LTS&M requirements—groundwater monitoring, 5-year reviews, managing site records, and responding to stakeholder inquiries.

http://www.nab.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/10470/Article/9320/wr-grace-davison-at-curtis-bay.aspx

Painesville, Ohio, Site.

The Painesville FUSRAP site was used to produce magnesium for government programs from 1942 to 1953. In 1952, radiologically contaminated scrap steel was shipped from the former Lake Ontario Ordnance Works near Niagara Falls, NY, and used in the process. Arrows in the historic photo show scrap steel piles. The second photo shows the site in 2007 shortly before remediation began. The site is scheduled to transition to DOE for LTS&M in 2014.

FABRICATING and MACHINING

Uranium and thorium metal were formed into the shapes needed for various MED or AEC operations; the processes included rolling, extruding, and machining.

Adrian, Michigan, Site

(DOE COMPLETED FUSRAP SITE)

The Adrian site (General Motors) was operated by Bridgeport Brass Company in the 1950s. Uranium metal was extruded at the site for use in the fabrication of fuel elements for production reactors. General Motors Corporation remediated radioactive contamination at the site in the 1970s, and additional remediation was conducted under FUSRAP in 1995. Supplemental limits were applied to residual radioactive contamination left in below-grade utilities, and DOE released the site for use without radiological restrictions.

DOE will determine if waste management is required for the supplemental limits material. LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/Adrian/Sites.aspx

Aliquippa, Pennsylvania, Site

(DOE COMPLETED FUSRAP SITE)

At the Aliquippa site, the Vulcan Crucible Steel Company heated and rolled uranium metal into rods for AEC from 1948 to 1949, resulting in contaminated building surfaces, equipment, and soil. The site is currently used for light manufacturing.

The former owner decontaminated the site to then-applicable guidelines in 1950 while under contract with AEC. DOE conducted additional remediation under FUSRAP in 1988, 1993, and 1994. Supplemental limits were applied to uranium dust left in inaccessible areas. In 1996, DOE certified that applicable cleanup criteria had been achieved, and the site was released for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/Aliquippa/Sites.aspx

Buffalo, New York, Site

(DOE COMPLETED FUSRAP SITE)

In 1952, the Bliss and Laughlin Steel Company machined and straightened uranium rods under subcontract to National Lead of Ohio, a prime AEC contractor. The activities generated waste cuttings, which were shipped to the Lake Ontario Ordnance Works. A 1992 preliminary survey of the building interior and exterior identified radioactive material in the floor of the finishing area.

Remediation of the Buffalo site began in December 1998 and continued through March 1999. USACE remediated the contaminated areas to site-specific numerical standards. After obtaining concurrence from the State of New York that site radiological conditions complied with the cleanup criteria, USACE issued the site closure report and declaration of completion for remedial action on September 30, 1999. Site responsibility transitioned to DOE in 2003.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/buffalo/Sites.aspx

Colonie, New York, Site

(USACE ACTIVE FUSRAP SITE)

Congress added the Colonie site to FUSRAP in 1983. The National Lead Colonie site fabricated and processed uranium metal for AEC, resulting in radioactive contamination from thorium and natural, enriched, and depleted uranium of site buildings, portions of the grounds, and 56 commercial and residential vicinity properties. DOE acquired the site in 1984 and used it for temporary storage of waste remediated from 53 vicinity properties and the onsite buildings. In 1997, USACE assumed responsibility for the remaining cleanup activities at the site.

When remedial action is complete, DOE will become responsible for LTS&M. At that time, DOE will consider selling or transferring the property for beneficial reuse.

An IC restricting excavation more than 9 feet below ground surface will apply to 1 acre of the property. Otherwise, the property is expected to be available for unrestricted industrial, residential, or recreational use.

Anticipated transition date—2017

Anticipated LTS&M requirements—monitoring ICs (excavation restriction), managing site records, and responding to stakeholder inquiries.

http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/fusrap/colonie.pdf

FABRICATING and MACHINING

Uranium and thorium metal were formed into the shapes needed for various MED or AEC operations; the processes included rolling, extruding, and machining.

Columbus East, Ohio, Site

(DOE COMPLETED FUSRAP SITE)

At the former B&T Metals site, uranium metal was heated and extruded into rods for MED, contaminating building surfaces, drains, equipment, exterior soils, and manholes in nearby streets.

The owner removed contamination from site facilities and equipment after extrusion activities ceased in 1943. DOE conducted additional remediation of contaminated areas under FUSRAP in 1996. DOE certified that applicable cleanup criteria had been achieved, and the site was released for unrestricted use in 2001.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/columbus_east/Sites.aspx

Combustion Engineering Site, Windsor, Connecticut

(USACE ACTIVE FUSRAP SITE)

The Combustion Engineering site is a 600-acre area located along the Farmington River in Windsor, about 10 miles north of Hartford.

Highly enriched uranium is the primary radiological contaminant of concern at the site. In the 1940s and 1950s, the Combustion Engineering facility supplied non-nuclear components for reactor projects that were managed by AEC. In 1955, new contracts led to the use of highly enriched uranium. In the 1960s, the facility was authorized under license to NRC to fabricate low-enriched uranium for light-water-moderated power reactors and to conduct research and development activities on light-water reactor fuel. Although the commercial nuclear fuel fabrication ceased in 1993, Combustion Engineering is still licensed by NRC for commercial nuclear activities, and the facility is still operating today.

The USACE New England District continues to monitor the progress of Combustion Engineering's ongoing decommissioning at the site. Combustion Engineering is responsible for addressing any FUSRAP-related material as part of its site decommissioning efforts under a 2007 agreement between NRC and USACE. As Combustion Engineering completes its portions of the site decommissioning, USACE reviews the decommissioning documents to ensure that all FUSRAP-related matters have been addressed.

Anticipated transition date—2015

Anticipated LTS&M requirements—monitoring ICs, 5-year reviews, managing site records, and responding to stakeholder inquiries.

http://www.lm.doe.gov/Considered_Sites/Combustion_Engineering_Co_-_CT_03.aspx

Fairfield, Ohio, Site

(DOE COMPLETED FUSRAP SITE)

In 1956, uranium metal was machined and shaped at the former Associate Aircraft site for AEC, resulting in contaminated interior building surfaces, drains, equipment, and soils.

The former owner removed some contamination in late 1956. DOE conducted additional remediation at the property under FUSRAP in 1994 and 1995. Supplemental limits were applied to uranium in the soil beneath the floor slab of a later building addition. DOE certified that applicable cleanup criteria had been achieved, and the site was released for unrestricted use in 1996.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/fairfield/Sites.aspx

Granite City, Illinois, Site

(DOE COMPLETED FUSRAP SITE)

In the late 1950s and early 1960s, two federal government–owned betatron particle accelerators were used at the Granite City Steel site to X-ray uranium metal ingots. The procedure allowed AEC to check the quality of the metal and detect metallurgical flaws before fabrication and machining were performed.

In 1992, DOE designated the site for remediation under FUSRAP. Several discrete, localized areas of contamination in the interior of one of the X-ray buildings were remediated in 1993. DOE certified that the site complied with applicable cleanup criteria and standards in June 1994 and released the property for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/granite_city/Sites.aspx

FABRICATING and MACHINING

Uranium and thorium metal were formed into the shapes needed for various MED or AEC operations; the processes included rolling, extruding, and machining.

Guterl Specialty Steel Site, Lockport, New York

(USACE ACTIVE FUSRAP SITE)

USACE is investigating the nature and extent of radiological contamination at the former Guterl Specialty Steel (formerly Simonds Saw and Steel) site. The site is located about 20 miles northeast of Buffalo in an industrial area near Lockport. The site contains several decrepit structures surrounded by a security fence.

MED and AEC used this site for atomic energy and defense activities between 1948 and 1955. The facility was used for foundry work and rolling mill operations on over 25 million pounds of uranium metal and over 30,000 pounds of thorium metal. Simonds Saw and Steel was sold to Wallace and Murray, which was then sold to Guterl Specialty Steel Corporation. In March 1984, Allegheny International (now Allegheny Ludlum Corporation) purchased the entire site with the exception of those areas that had been used for AEC-related activities.

Anticipated transition date—2019

Anticipated LTS&M requirements—managing site records and responding to stakeholder inquiries.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/GuterlSteelSite.aspx

Hamilton, Ohio, Site

USACE ACTIVE FUSRAP SITE)

Intermittently from 1943 to 1951, the Herring-Hall-Marvin Safe Company fabricated slugs from rolled natural uranium metal stock for use by MED and AEC in production reactors.

In 1994, DOE designated the Hamilton site for remediation under FUSRAP. DOE remediated areas of contamination identified on surfaces and in floor drains in the interior of the building in 1994 and 1995. DOE certified that the site complied with applicable cleanup criteria and standards in 1996 and released the property for unrestricted use. LM staff noted that the area was redeveloping from light industrial to commercial use during the site inspections in 2006 and found that the building was being demolished in 2012.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/hamilton/Sites.aspx

Indian Orchard, Massachusetts, Site

(DOE COMPLETED FUSRAP SITE)

The Indian Orchard site is privately owned. Interior surfaces of a building at this site were contaminated in 1948 by machining of uranium metal for MED and AEC to support Brookhaven National

Hamilton, Ohio, Site.

DOE remediated areas of contamination identified on surfaces and in floor drains in the interior of the three-story building in 1994 and 1995. DOE certified that the site complied with applicable cleanup criteria and standards in 1996 and released the property for unrestricted use. The building was demolished in 2012.

FABRICATING and MACHINING

Uranium and thorium metal were formed into the shapes needed for various MED or AEC operations; the processes included rolling, extruding, and machining.

Indian Orchard, Massachusetts, Site (continued)

Laboratory defense-related projects.

DOE designated the site for remediation under FUSRAP in 1992, and remediation was completed in 1995. DOE certified that the site conformed to applicable cleanup criteria and standards and released the property for unrestricted use. The building was subsequently demolished, and the site has been redeveloped.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/indian_orchard/Sites.aspx

Joslyn Manufacturing and Supply Company Site, Ft. Wayne, Indiana

(USACE ACTIVE FUSRAP SITE)

From 1943 to 1952, the Joslyn Manufacturing and Supply Company worked under government contract to temper, hot roll, quench, straighten, cool, grind, cut, and thread natural uranium billets into metal rods. The 23-acre Joslyn site was included into FUSRAP in 2009 and assigned to the USACE Buffalo District for remediation.

Anticipated transition date—2019

Anticipated LTS&M requirements—managing site records, periodic site visits, and responding to stakeholder inquiries.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/JoslynManufacturingandSupplyCoSite.aspx

Madison, Illinois, Site

(DOE COMPLETED FUSRAP SITE)

During the late 1950s and early 1960s, the Dow Metal Products Division of Dow Chemical Company machined and shaped uranium metal and straightened uranium rods for AEC. Radiological surveys conducted in 1989 identified uranium dust on interior overhead surfaces that exceeded DOE guidelines. The site was designated for remedial action under FUSRAP in 1992. USACE completed remediation in 2000. Uranium dust was left in place on the roof because it posed no unacceptable risk.

Post-remedial-action survey results indicated that the radiological condition of the Madison site was in compliance with the standards established in the Record of Decision, and USACE released the site for unrestricted use. The site transferred to DOE in 2003, and LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/madison/Sites.aspx

Oxford, Ohio, Site

(DOE COMPLETED FUSRAP SITE)

The former Alba Craft Laboratory machined uranium metal for AEC at the site from 1952 to 1957. Machining operations contaminated the site and several nearby (vicinity) properties, all of which are privately owned.

AEC removed some contamination at the site in 1957. DOE conducted additional remediation of the site and the vicinity properties under FUSRAP in 1994 and 1995. DOE certified that the site conformed to applicable cleanup criteria in 1996 and released all properties for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/oxford/Sites.aspx

Seymour, Connecticut, Site

(DOE COMPLETED FUSRAP SITE)

Research and development of a natural uranium metal extrusion process was performed at the Seymour site for AEC from 1962 to 1964. Operations contaminated interior surfaces of one building and two soil areas.

DOE designated the site for remediation under FUSRAP in 1985 and conducted remediation in 1992 and 1993.

In 1994, DOE certified that the site complied with applicable cleanup criteria and released the property for unrestricted use.

DOE applied supplemental limits to inaccessible uranium contamination that was grouted in place in a drain system beneath the building. DOE will determine if waste management is required for the supplemental limits material.

LTS&M requirements currently consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/seymour/Sites.aspx

FABRICATING and MACHINING

Uranium and thorium metal were formed into the shapes needed for various MED or AEC operations; the processes included rolling, extruding, and machining.

Springdale, Pennsylvania, Site

(DOE COMPLETED FUSRAP SITE)

The Springdale site was a privately owned metal fabrication shop that provided uranium metal machining services to MED in the mid-1940s. Machining operations resulted in uranium contamination of interior concrete floor surfaces and soil under the concrete slab.

In 1992, DOE designated the site for remediation under FUSRAP and remediated the contamination in 1994. DOE certified that the site complied with applicable cleanup criteria in September 1996 and released the property for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/springdale/Sites.aspx

Superior Steel Site, Carnegie, Pennsylvania

(USACE ACTIVE FUSRAP SITE)

Uranium metal was processed in support of AEC's fuel-element development program at the former Superior Steel site, located southwest of Pittsburgh, from 1952 to 1957. The site was also licensed from 1957 to 1958 to receive thorium metal for processing and shaping.

The primary AEC operations performed at the Superior Steel site consisted of salt bathing, rolling, brushing, shaping, cutting, stamping, and coiling of uranium metal. Records indicate that natural and enriched uranium were processed at the site. Recycled uranium from reprocessed spent nuclear fuel may also have been processed onsite. USACE concluded that the site was used for AEC activities that supported the nation's early atomic energy program, and further investigation was recommended to determine the extent and nature of AEC-related contamination and the associated risks to human health and the environment. The site was added to FUSRAP in fiscal year 2008.

Anticipated transition date—2019

Anticipated LTS&M requirements—managing site records and responding to stakeholder inquiries.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/SuperiorSteelSite.aspx

Toledo, Ohio, Site

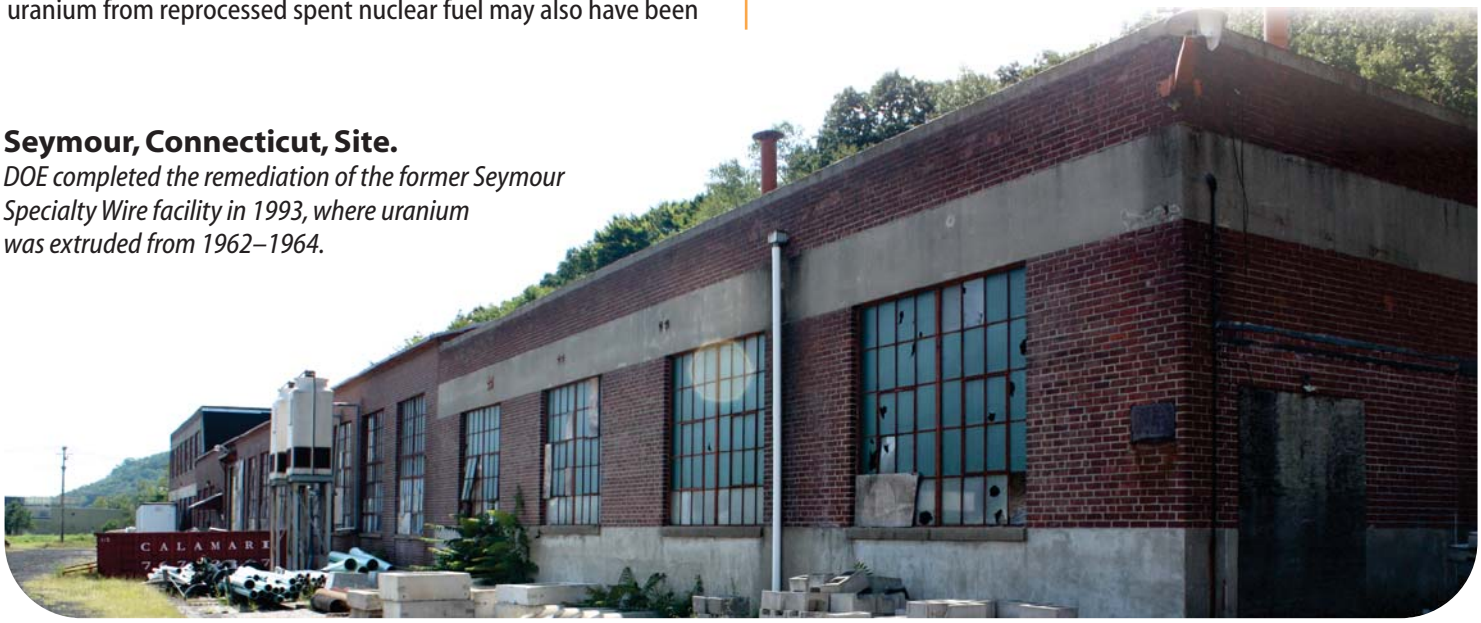
(DOE COMPLETED FUSRAP SITE)

During the early and mid-1940s, Baker Brothers, Inc. fabricated slugs from natural uranium metal for MED.

In 1992, DOE designated the Toledo site and its associated vicinity property for remediation under FUSRAP. DOE remediated localized areas of residual uranium contamination on interior building surfaces and exterior soil and concrete in 1995. DOE certified that the site and the vicinity property complied with applicable cleanup criteria and standards in 2001 and released the properties for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/toledo/Sites.aspx



Seymour, Connecticut, Site.
DOE completed the remediation of the former Seymour Specialty Wire facility in 1993, where uranium was extruded from 1962–1964.

WEAPONS DEVELOPMENT

These sites were involved with using enriched uranium or plutonium to build or test atomic weapons.

Acid/Pueblo Canyon, New Mexico, Site

(DOE COMPLETED FUSRAP SITE)

The Acid/Pueblo Canyon site, owned by Los Alamos County, is located in the Pajarito Plateau region near Los Alamos. Between 1943 and 1964, MED and AEC conducted nuclear weapons research that resulted in contaminated soil and rock in the canyon beneath the Los Alamos laboratory complex.

AEC remediated the contaminated areas in 1966 and 1967. DOE completed additional remediation of the site under FUSRAP in 1982. DOE certified that the site conformed to applicable cleanup criteria in August 1984 and released the affected areas for unrestricted use. Los Alamos National Laboratory will conduct monitoring and, if necessary, additional remediation in conjunction with cleanup activities for the entire Los Alamos site.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/Acid/Sites.aspx

Bayo Canyon, New Mexico, Site

(DOE COMPLETED FUSRAP SITE)

The Bayo Canyon site, owned by Los Alamos County, is located in the Pajarito Plateau region near Los Alamos. Los Alamos National Laboratory radiochemistry operations and explosives experiments conducted between 1943 and 1961 contaminated buildings, sewer lines, and soils at this site.

AEC remediated contaminated areas from 1960 to 1963. DOE implemented additional remedial action under FUSRAP in 1982. DOE imposed an excavation restriction by erecting six permanent monuments to demarcate a 1.5-acre contaminated soil area until the year 2142, when the remaining residual radioactive contamination will decay and allow the release of the affected area for unrestricted use. DOE certified that the site conformed to applicable cleanup criteria and released the affected areas for restricted use. Los Alamos National Laboratory will conduct monitoring and, if necessary, additional remediation in conjunction with cleanup activities for the entire Los Alamos site.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/bayo/Sites.aspx

Chupadera Mesa, New Mexico, Site

(DOE COMPLETED FUSRAP SITE)

The Chupadera Mesa site is privately owned land northeast of the White Sands Missile Range and the city of Bingham. The site consists of the fallout zone of the first nuclear weapons test, the Trinity test, conducted on July 16, 1945, under the Manhattan Project.

AEC and successor organizations monitored the site between 1945 and 1985. In 1986, DOE determined that residual radioactive materials met applicable standards. No remediation was conducted under FUSRAP, and DOE released the site for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/chupadera/Sites.aspx

Iowa Army Ammunition Plant, Burlington, Iowa, Site

(USACE ACTIVE FUSRAP SITE)

The Iowa Army Ammunition Plant (IAAP) is an active, government-owned, contractor-operated facility that occupies approximately 19,000 acres (about 30 square miles) in Des Moines County near Middletown in southeast Iowa. From 1947 to 1975, AEC conducted weapons assembly operations as a tenant on 1,630 acres of the 19,000-acre plant. The IAAP was included on the NPL in 1990. In September 1990, the U.S. Army and EPA Region 7 entered into a Federal Facilities Agreement to define the roles and responsibilities for the Army's CERCLA activities at the IAAP and the process for interagency coordination. In August 2006, a Federal Facilities Agreement to address the FUSRAP project at IAAP was executed between USACE, DOE, EPA, and the State of Iowa.

Under the authority of FUSRAP, the USACE St. Louis District is remediating contaminants at the IAAP site resulting from the atomic energy program. Approximately 2,000 cubic yards of contaminated material have been removed and disposed of.

Anticipated transition date—2019

Anticipated LTS&M requirements—ICs monitoring, 5-year reviews, managing site records, and responding to stakeholder inquiries.

http://www.mvs.usace.army.mil/Missions/CentersofExpertise/FormerlyUtilizedSitesRemedialActionProgram.aspx

STORAGE and DISPOSAL

MED and AEC activities generated large amounts of radioactive waste material, which was handled or stored at these sites.

Chicago North, Illinois, Site

(DOE COMPLETED FUSRAP SITE)

The Chicago North site is owned by the State of Illinois and used as a National Guard armory. Between 1942 and 1951, MED and AEC used the building to store and process uranium metal, and the building was the central procurement and shipping location for the MED Metallurgical Laboratory. In 1951, AEC terminated use of the building, and the property was returned to the State of Illinois.

Radiological characterizations of the site in 1977, 1978, and 1987 indicated that residual radioactive contamination exceeded DOE guidelines. In 1987 and 1988, DOE removed radiological contamination from interior building surfaces and exterior catch basins and soils. DOE certified that the site complied with applicable cleanup criteria and released the property for unrestricted use in 1989.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/chicago_north/Sites.aspx

Latty Avenue Properties Site (includes the Hazelwood Interim Storage Site), Hazelwood, Missouri

(USACE ACTIVE FUSRAP SITE)

Congress added the Latty Avenue site to FUSRAP in 1983. The Hazelwood Interim Storage Site and Latty Avenue Vicinity Properties are in northern St. Louis County within the city limits of Hazelwood. The site is located at 9170 Latty Avenue, 3.2 miles northeast of the control tower of the Lambert–St. Louis International Airport and approximately a half mile northeast of the St. Louis Airport Site. This site is listed on the NPL in conjunction with the St. Louis Airport Site and the St. Louis Airport Site Vicinity Properties (MOD 980633176).

Uranium-ore processing residues were hauled to this site from the St. Louis Airport Site; the residues resulted in contamination of site soil, groundwater, and building surfaces.

A chainlink fence surrounds the site, which is privately owned. Six vicinity properties are adjacent to Latty Avenue between Coldwater Creek and Hazelwood Avenue; some are within the corporate limits of the city of Berkeley. Land use near the properties is primarily industrial; other uses are transportation related, commercial, and residential. The residential areas nearest the property are approximately 0.3 mile to the east in Hazelwood.

Anticipated transition date—2017

Anticipated LTS&M requirements—groundwater monitoring, 5-year reviews, possible fast-response capability to manage radiologically contaminated soils under roads and around utilities, managing site records, and responding to stakeholder inquiries.

http://www.mvs.usace.army.mil/Missions/CentersofExpertise/FormerlyUtilizedSitesRemedialActionProgram.aspx

Latty Avenue Properties Site, Hazelwood, Missouri.
The location of the former Hazlewood Interim Storage Site is one of the St. Louis area sites being remediated by USACE.

STORAGE and DISPOSAL

MED and AEC activities generated large amounts of radioactive waste material, which was handled or stored at these sites.

Middlesex North, New Jersey, Site

(DOE COMPLETED FUSRAP SITE)

Ownership of the Middlesex North site is divided between the Middlesex Presbyterian Church and the Borough of Middlesex. In 1948, approximately 6,000 cubic yards of soil with radioactive contamination from the Middlesex Sampling Plant was disposed of at the former municipal landfill.

In 1961, AEC removed a portion of contaminated soil from the site and covered the area with 2 feet of clean soil. DOE designated the site for remediation under FUSRAP in 1980. In 1984 and 1986, DOE removed contaminated material from an area of approximately 3 acres at depths of 1 to 19 feet. DOE certified that the remediated portion of the site complied with applicable cleanup criteria and released the property for unrestricted use in April 1989.

In 2008, the New Jersey Department of Environmental Protection provided DOE with the results of a radiological survey performed by the Borough of Middlesex in 2001. DOE commissioned a survey of the entire property. Survey results identified above-background concentrations of radium-226 and uranium-238 inside the property boundary in areas that had not been previously remediated. DOE referred the site to USACE to determine if additional remediation is required.

LTS&M requirements currently consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/middlesex_north/Sites.aspx

Niagara Falls Storage Site, New York

(USACE ACTIVE FUSRAP SITE, includes three vicinity properties)

The Niagara Falls Storage Site is a 191-acre, DOE-owned site containing a 10-acre disposal cell that is located within the former 7,500-acre Lake Ontario Ordnance Works, about 19 miles northwest of Buffalo in Lewiston. In 1944, MED used the site for the storage and transshipment of uranium metal and radioactive residues and wastes from uranium-ore processing and research. Radioactive wastes and residues continued to be brought to the site for storage until 1952. In the 1980s, DOE placed the radioactive wastes in a temporary onsite disposal cell. Remediation continued through 1997, when USACE assumed responsibility for cleanup. When remediation is complete, the site will transfer to DOE.

Anticipated transition date—2020

Anticipated LTS&M requirements—unknown at this time, but could involve monitoring groundwater and air associated with the disposal site, grounds maintenance, security, managing site records, and responding to stakeholder inquiries.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/NiagaraFallsStorageSite.aspx

Niagara Falls Vicinity Properties, New York, Site

(DOE COMPLETED FUSRAP SITE)

Niagara Falls Vicinity Properties, located near Lewiston, consists of 26 properties that were formerly part of the Lake Ontario Ordnance Works and were sold to private owners. Another portion of the former ordnance works was transferred to AEC and became the Niagara Falls Storage Site.

Beginning in 1944, MED stored uranium-processing residues, uranium metal, and radiological waste at the former Lake Ontario Ordnance Works. Radiological surveys between 1970 and 1980 indicated that residual radioactive contamination exceeding FUSRAP guidelines remained on vicinity properties and in drainage ditches. Beginning in 1983, DOE remediated most of the vicinity properties to a condition that allows unrestricted use. USACE will complete remediation of the remaining properties.

Supplemental limits were applied to the downstream end of a drainage ditch, and the New York Department of Health maintains use restrictions on some of the vicinity properties. No other supplemental limits or ICs are in effect at the site, and DOE does not require onsite monitoring or surveillance.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/niagara/vicinity/Sites.aspx

Parks Township Shallow Land Disposal Area, Apollo, Pennsylvania

(USACE ACTIVE FUSRAP SITE)

Congress added the Parks Township site to FUSRAP in 2000. The Pittsburgh District of USACE has been assigned to clean up radioactive waste at the Parks Township Shallow Land Disposal Area (SLDA) site under FUSRAP. The privately owned site is located approximately 23 miles east-northeast of Pittsburgh. It is on the right bank of the Kiski River, a tributary of the Allegheny River, near the communities of Apollo and Vandergrift.

STORAGE and DISPOSAL

MED and AEC activities generated large amounts of radioactive waste material, which was handled or stored at these sites.

Parks Township Shallow Land Disposal Area, Apollo, Pennsylvania (continued)

Radioactive waste disposal operations were conducted between 1960 and 1970. As part of work done under AEC contracts, low-level radioactive materials were produced, primarily for fuel for nuclear-powered submarines and power plants. Low-level nuclear wastes from the nearby decommissioned Apollo operation site were disposed of in a series of 10 trenches that constitute a total area of approximately 1.2 acres at the SLDA, placed over an area of 44 acres. Buried radiological wastes consist of mostly uranium and some thorium associated with manufacturing byproducts and from discarded protective clothing. Nonradiological waste included pieces of equipment, building materials, and trash. Disposal operations were conducted by the Nuclear Materials and Equipment Corporation in the early 1960s.

Anticipated transition date—2025

Anticipated LTS&M requirements—unknown at this time.

http://www.lrp.usace.army.mil/Missions/Planning,Programs ProjectManagement/HotProjects/ShallowLandDisposalArea.aspx

Seaway Industrial Park (Tonawanda North, Unit 3) Site, Tonawanda, New York

(USACE ACTIVE FUSRAP SITE)

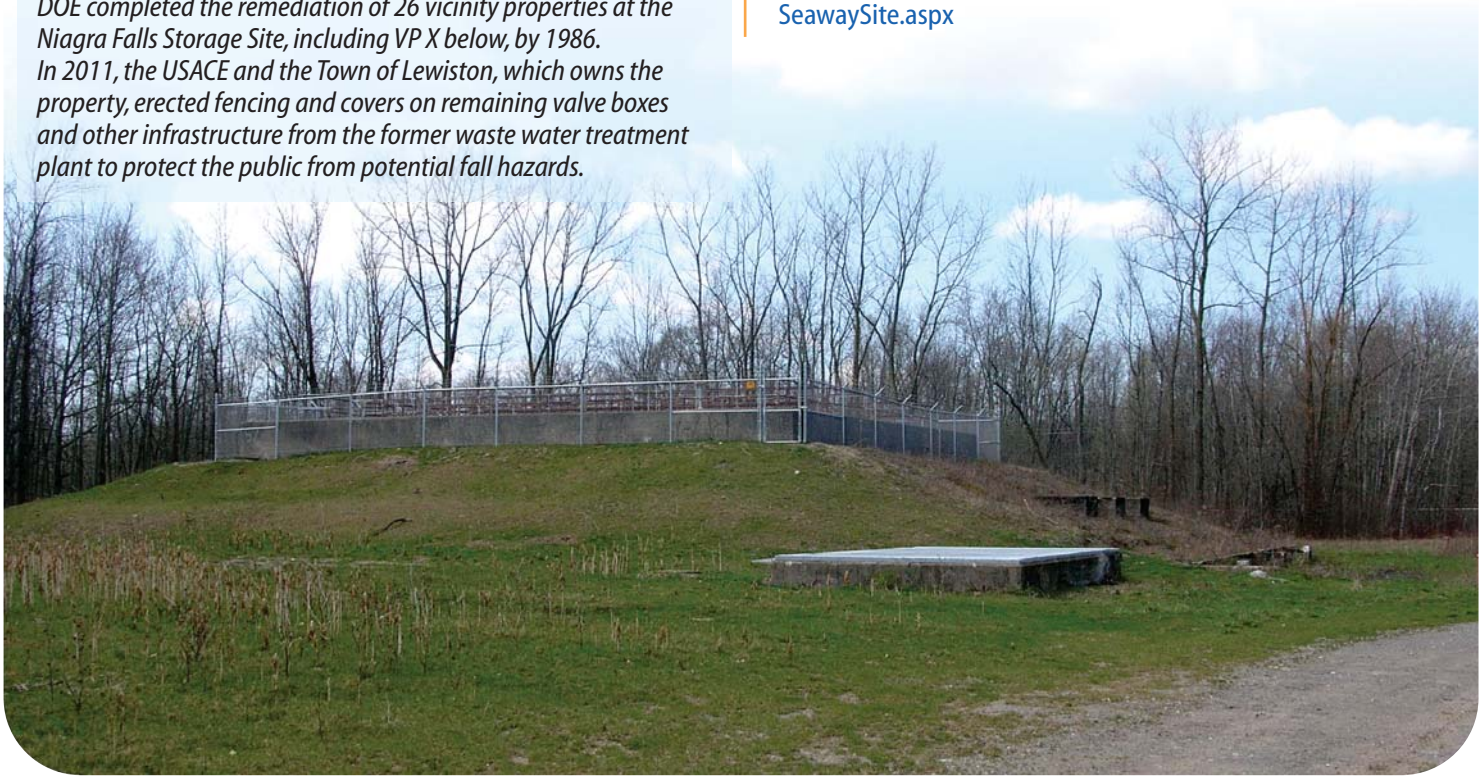
The Seaway Industrial Park site is located in the industrial area of Tonawanda, approximately 3 miles northwest of Buffalo. The site is a 93-acre commercial landfill that operated from 1930 to 1993, accepting municipal, commercial, construction, and industrial wastes. In the 1940s, the nearby former Linde Air Products Division of Union Carbide Corporation processed uranium ore under contract to MED. The processing residues were transported from the Linde site to the former Haist property, now known as the Tonawanda North Unit 1 site. During the mid-1970s, Ashland Oil constructed oil tanks on the Tonawanda North Unit 1 property. During construction, Ashland Oil removed materials containing radioactive residues and transported the materials to the Seaway landfill and the nearby Tonawanda North Unit 2 site for use as cover or grading material. During the USACE remediation of the Tonawanda North Unit 1 site, FUSRAP-related materials at elevated concentrations were found to extend onto the Seaway site.

Anticipated transition date—2025

Anticipated LTS&M requirements—IC monitoring, 5-year reviews, managing site records, and responding to stakeholder inquiries.

http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/SeawaySite.aspx

Niagara Falls Vicinity Properties, New York.
DOE completed the remediation of 26 vicinity properties at the Niagra Falls Storage Site, including VP X below, by 1986. In 2011, the USACE and the Town of Lewiston, which owns the property, erected fencing and covers on remaining valve boxes and other infrastructure from the former waste water treatment plant to protect the public from potential fall hazards.



STORAGE and DISPOSAL

MED and AEC activities generated large amounts of radioactive waste material, which was handled or stored at these sites.

Shpack Landfill Site, Norton, Massachusetts

(USACE ACTIVE FUSRAP SITE)

Congress added the Shpack Landfill site to FUSRAP in 2002. The 9.4-acre Shpack Landfill is located about 40 miles southwest of Boston in the towns of Norton and Attleboro. The landfill was operated from 1946 until the 1970s. Contents of this landfill include domestic and industrial waste (inorganic and organic chemicals) as well as radioactive waste. Radioactive contamination is believed to have come from Metals and Controls Incorporated, now Texas Instruments, which had used the landfill to dispose of trash and other materials from 1957 to 1965. The General Plate Division of Metals and Controls Incorporated began to fabricate enriched uranium foils at its Attleboro plant in 1952. In 1959, it merged with Texas Instruments, which continued the operations until 1981, using enriched and natural uranium for the fabrication of nuclear fuel for the U.S. Navy and commercial customers. The site was listed on the NPL in 1986, primarily to address other contaminants on site (MAD980503973).

Anticipated transition date—2014

Anticipated LTS&M requirements—groundwater monitoring, 5-year reviews, monitoring groundwater ICs, managing site records, and responding to stakeholder inquiries.

St. Louis Airport Site, St. Louis, Missouri

(USACE ACTIVE FUSRAP SITE)

In 1946, MED acquired the St. Louis Airport Site (SLAPS), a 21-acre site just north of the St. Louis Airport, for storage of residues and other material from the St. Louis Downtown Site operated by Mallinckrodt. In subsequent years, adjacent properties became contaminated as a result of erosion and spillage; those properties are included in the SLAPS Vicinity Properties. On October 4, 1989, SLAPS was added to the NPL (MOD980633176).

Anticipated transition date—2017

Anticipated LTS&M requirements—groundwater monitoring, 5-year reviews, possible fast-response capability to manage radiologically contaminated soils under roads and around utilities, managing site records, and responding to stakeholder inquiries.

http://www.mvs.usace.army.mil/Missions/CentersofExpertise/FormerlyUtilizedSitesRemedialActionProgram.aspx

St. Louis Airport Vicinity Properties Site, Hazelwood and Berkeley, Missouri

(USACE ACTIVE FUSRAP SITE)

The SLAPS Vicinity Properties are located in the cities of Hazelwood and Berkeley. These properties were contaminated by residues that were removed at SLAPS and were hauled to Latty Avenue for reprocessing. The 78 properties include Coldwater Creek and its vicinity properties to the west; adjacent ball fields to the north and east; Norfolk and Western Railroad properties adjacent to Coldwater Creek; Banshee Road to the south; ditches to the north and south; and St. Louis Airport Authority property to the south. Also included are the haul routes along Latty Avenue, McDonnell Boulevard, Pershall Road, Hazelwood Avenue, Eva Avenue, and Frost Avenue.

Low-level radioactive contamination at the SLAPS Vicinity Properties is linked to both the St. Louis Airport Site and the Latty Avenue Properties. In 1966, Continental Mining and Milling Company of Chicago purchased uranium-bearing residues from MED and removed them from SLAPS. The company placed the residues in storage at Latty Avenue under an AEC license. Over time, residues migrated from other sites or were deposited as the residues were moved, contaminating the soils and sediments of the vicinity properties. In 1996, the volume of impacted soils, which are owned by commercial enterprises, private residences, or local governments, was estimated at 195,000 cubic yards. Cleanup activities have been completed or substantially completed on nearly half of the properties that compose the SLAPS Vicinity Properties. Some residual radioactive contamination will be left in place beneath roads and around utilities. This site is listed on the NPL in conjunction with the St. Louis Airport Site and the Latty Avenue Properties Site (MOD980633176).

Anticipated transition date—2017

Anticipated LTS&M requirements—groundwater monitoring, 5-year reviews, possible fast-response capability to manage radiologically contaminated soils under roads and around utilities, managing site records, and responding to stakeholder inquiries.

http://www.mvs.usace.army.mil/Missions/CentersofExpertise/FormerlyUtilizedSitesRemedialActionProgram.aspx

STORAGE and DISPOSAL

MED and AEC activities generated large amounts of radioactive waste material, which was handled or stored at these sites.

Tonawanda North, New York, Site, Units 1 and 2

(DOE COMPLETED FUSRAP SITE)

From 1944 to 1946, uranium-ore processing residues were transported from the Linde uranium refinery site to a 10-acre area known then as the Haist property, now called Tonawanda North Unit 1. In 1960, Ashland Oil Company acquired the property for an oil refinery. Soil containing radioactive residues removed during construction was transported to Unit 2 (another Ashland Oil Company property) and Unit 3 (Seaway Landfill C) for disposal. Unit 2 includes portions of Rattlesnake Creek.

USACE remediated Units 1 and 2 of the Tonawanda North site. Contaminated soil was excavated and shipped offsite for disposal or reprocessed as alternate uranium ore feed material. Remediation of Units 1 and 2 was completed in 2005. The properties were remediated to a condition that is safe for urban residential use. The site transitioned to DOE in 2008.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/tonawanda/Sites.aspx

Staten Island, New York, Site. *The remnants of these docks on Staten Island are near the location of a former warehouse on Richmond Terrace Drive where uranium ore form the Belgian Congo was stored and later purchased by MED. DOE referred the site to USACE for evaluation and potential remediation in 2012.*

Tonawanda North, Unit 2. *Remediation at this property was completed by USACE in 2005 and the site transitioned to DOE for long-term care in 2008. The Seaway Industrial Park site includes the above grade disposal facility in the background.*

RESEARCH and DEVELOPMENT

These sites were involved in identifying and isolating radioactive elements, research into nuclear fission, determining the metallurgical properties of uranium metal, and researching methods to separate plutonium from irradiated uranium metal.

Albany, Oregon, Site

(DOE COMPLETED FUSRAP SITE)

The Albany site is owned and operated by the DOE Office of Fossil Energy. Metallurgical research was conducted at this site for AEC and the Energy Research and Development Administration from 1948 to 1978. Activities involving radioactive thorium and uranium resulted in contaminated buildings, equipment, and soils.

The U.S. Bureau of Mines remediated portions of the site between 1948 and 1978. DOE remediated buildings, equipment, and soils under FUSRAP in 1987, 1988, 1990, and 1991. In 1992, DOE certified that applicable cleanup criteria had been achieved, and the site was released for unrestricted use. Supplemental limits were applied to drains and other inaccessible areas.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/Albany/Sites.aspx

Berkeley, California, Site

(DOE COMPLETED FUSRAP SITE)

Gilman Hall is a 4-story building on the campus of the University of California, Berkeley. Floors, wood sills, walls, and baseboards in the building were contaminated by radioactive materials in the 1940s while research under contract to MED and AEC was being conducted on the production and chemical properties of plutonium.

DOE designated the site for remediation under FUSRAP in 1979. Lawrence Berkeley Laboratories completed remedial action of the site in 1983. Residual contamination was fixed in place beneath floors or left in inaccessible areas. In 1985, DOE certified that the condition of the site was radiologically acceptable for restricted use, such as research and instructional purposes.

Other than operating within the controls of the University of California's state general license, no institutional controls are in effect at the site.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/berkeley/Sites.aspx

Chicago South, Illinois, Site

(DOE COMPLETED FUSRAP SITE)

In 1941, the National Defense Research Committee contracted the University of Chicago to construct a uranium and graphite pile to achieve a sustained nuclear chain reaction for use in the development of the atomic bomb. That same year the work was transferred to the Metallurgical Laboratory, where it continued until 1946, when AEC was created. Work continued under the AEC contract through 1952, when the nuclear activities were transferred to the new Argonne National Laboratory site in DePage County. The Chicago South location was decontaminated using then state-of-the-art techniques.

In 1976, AEC directed Argonne National Laboratory to conduct radiological surveys, which identified only minimal contamination in the Kent, Jones, and Ryerson laboratories and Ekhart Hall. Remediation of those areas was completed in 1987. DOE has released the site for unrestricted use by the university.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/chicago_south/Sites.aspx

Jersey City, New Jersey, Site

(DOE COMPLETED FUSRAP SITE)

The Kellex Corporation was formed in 1943 to conduct engineering research in gaseous diffusion for uranium enrichment for MED and AEC. From 1943 to 1953, site activities focused on fuel reprocessing and component testing with uranium hexafluoride, developing a solvent extraction process for the recovery of uranium, gas decontamination studies, and decontaminating waste streams.

DOE conducted a radiological survey of the site in 1977 and remediated radioactive contamination at the site between 1979 and 1983. DOE certified that the site complied with applicable cleanup criteria in 1983 and, with State of New Jersey concurrence, released the property for unrestricted use.

LTS&M requirements consist of managing site records and responding to stakeholder inquiries.

http://www.lm.doe.gov/jersey_city/Sites.aspx

RESEARCH and DEVELOPMENT

These sites were involved in identifying and isolating radioactive elements, research into nuclear fission, determining the metallurgical properties of uranium metal, and researching methods to separate plutonium from irradiated uranium metal.

Sylvania-Corning Site, Hicksville, New York

(USACE ACTIVE FUSRAP SITE)

Congress added the Hicksville site to FUSRAP in 2006. The Sylvania Corning Plant/former Sylvania Electric Products Facility (also known as Sylcor) site occupies 9.49 acres in the westernmost portion of Hicksville on Long Island. From 1952 to 1965, the Sylvania Corning Plant operated under contracts with AEC for research, development, and production in support of the government's nuclear weapons program. From 1952 to 1967, a second operation concentrated on AEC-licensed work for the production of reactor fuel and other reactor core components. Operations at the site used natural, enriched, and depleted uranium; some involved thorium. Site contamination consists of these radioactive materials as well as nickel and volatile organic compounds.

GTE, a corporate predecessor to Verizon, entered into a voluntary cleanup agreement with the New York Department of Environmental Conservation to remediate the soils at the site to allow unrestricted future use.

Anticipated transition date—2018

Anticipated LTS&M requirements—managing site records and responding to stakeholder inquiries.

http://www.nan.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/11241/Article/8231/fact-sheet-sylvania-corning.aspx

Sylvania-Corning Site. *This site in Hicksville, New York, was added to FUSRAP by Congress in 2006. Radiological soil contamination is being remediated by Verizon, the current owner of the property, under an agreement with the state of New York.*

RESOURCES & CONTACTS

DOE Legacy Management FUSRAP website:
http://energy.gov/lm/sites/lm-sites/programmatic-framework/fusrap-program-information

E-mail address: FUSRAPinfo@lm.doe.gov

Phone: (720) 377-9672

REFERENCES & LINKS

The following documents and additional information on FUSRAP can be found at:

FUSRAP Program Plan
http://energy.gov/node/608436

FUSRAP Program Fact Sheet
http://energy.gov/lm/downloads/lm-fusrap-program-fact-sheet

LTS&M Requirements
http://energy.gov/lm/downloads/long-term-surveillance-and-maintenance-requirements-remediated-fusrap

Considered Sites Database
http://energy.gov/lm/sites/lm-sites/considered-sites