



Case Studies

California

The State of California, Department of Toxic Substances Control (DTSC) conducts or oversees the remediation of brownfields sites, voluntary cleanup sites, federal or state Superfund sites and corrective action at, or closure of, hazardous waste facilities under authorities contained within the California Health & Safety Code (H&SC). DTSC manages a Federally Authorized Hazardous Waste Management Program under the statutory authority contained in H&SC Chapter 6.5, along with associated regulations found in the California Code of Regulations. DTSC's Superfund or "Cleanup" program operates under the authorities contained in H&SC Chapter 6.8. Although California does not have a comprehensive set of regulations comparable to the NCP, the processes used by DTSC to address sites in its Cleanup Program are generally consistent with the NCP and draw from it through direct statutory references, policy documents, and guidance.

Some of the authorities granted to DTSC under H&SC Chapter 6.8 are also granted to the State Water Resources Control Board and nine Regional Water Quality Control Boards. The water boards also have enforcement and cleanup authority based on the provisions contained in other Chapters of the H&SC and in the California Water Code.

▼ [Basis for the Use of ICs in California](#)

The goal in California is to use permanent remedies that result in the return of contaminated properties to conditions suitable for unrestricted use. However, both DTSC and the water boards recognize that in some instances it may not be technically or economically feasible or practical to remove all of the contamination present at a site.

In June 1990, DTSC issued a formal Policy/Procedure, which established procedures for the use of Land Use Covenants (LUCs) as a method to protect the public from exposures to hazardous wastes or substances. Acknowledging the need for a clear and consistent standard for cleanups where hazardous wastes or constituents, or hazardous substances are left in place at levels not suitable for unrestricted use of the land, DTSC adopted LUC regulations in April of 2003 (see California Code of Regulations, Title 22, section 67391.1).

The regulations establish requirements associated with the approval of remedy selection documents and DTSC's Site Certification process for sites where hazardous wastes or constituents, or hazardous substances will remain at the property at levels which are not suitable for unrestricted use of the land. The regulations preclude DTSC from approving or concurring in a response action decision document which includes limitations on land use or other ICs, unless the limitations or controls are clearly set forth and defined in the response action decision document, including the requirement that a LUC be recorded. In addition, DTSC is precluded from certifying that a response action has been satisfactorily completed, with the exception of any necessary long term operation and maintenance activities, until a LUC has been signed and recorded in the county where the property is located.

The water boards have parallel, although not identical, provisions for using LUCs that are contained in Section 13307.1 of the Water Code. Under Section 13307.1, UST sites are exempt from the LUC requirement. However, the water boards and certain authorized local agencies are granted authority to regulate Underground Storage Tanks used for the storage of hazardous substances and wastes under H&SC Ch. 6.7. In August of 2012, the State Board adopted a "Low-Threat Underground Storage Tank Case Closure Policy." This policy includes provisions for the

use of ICs under some circumstances.

Statute, regulations and policy affecting both DTSC and the water boards, clearly establish LUCs as the primary IC used in California for sites that do not meet unrestricted use criteria. LUCs are recorded pursuant to California Civil Code Section 1471.

In accordance with CCR, Title 22, section 67391.1, if DTSC determines that it is not feasible to record or establish a land use covenant, other types of ICs may be used. Examples of other types of ICs include, but are not limited to, zoning restrictions, building or excavation permits, easements, drilling permits and covenants. If conditions warrant it, DTSC may also use other ICs in conjunction with LUCs as an element of redundancy (redundancy, as used here, reflects the involvement of an additional entity typically on a voluntary basis who has specific authority over the IC mechanism used – enforcement authority would then generally rest with that other entity). While Section 13307.1 of the California Water Code does not explicitly address the use of other IC mechanisms, many of the alternative IC mechanisms identified above are also available to the water boards. The drawback to most of these alternative IC mechanisms is that the enforcement authority rests with entities other than DTSC or the water board.

▼[Implementation of LUCs](#)

When land use covenants are a part of the remedy, DTSC uses a layered, protective system of implementation based upon the degree of threat to human health and the environment posed by site conditions. DTSC uses several administrative tools to achieve its layering strategy. These tools are:

- Land Use Covenants – The land use covenant and associated implementation and enforcement provisions may include, but are not limited to the following:
 - Annual Reporting/Certification/Inspection (by Owner)
 - Periodic Inspections by DTSC (conducted at a frequency based on site specific considerations ranging from annual to a minimum frequency of once every five years)
 - Property Transfer Provisions
 - Cost Recovery Provisions
- Operation and Maintenance Agreements/Plans.
- Physical Markers
- Notification Requirements – DTSC notifies local planning agencies at the time of execution of an LUC. This practice provides redundancy, although to a varying degree based upon the local jurisdiction's capabilities and willingness to act.
- Deed Restriction Registry – All recorded land use covenants are maintained in a Deed Restriction/LUC Registry which is found on DTSC's public website. The information may also be found in DTSC's EnviroStor database which is accessible to the public via the internet. The water boards GeoTracker database serves as its Deed Restriction/LUC registry.
- Five-Year Review – A review of the remedy every five years includes an evaluation of the protectiveness of the LUC and a site inspection)
- Land Use Monitoring – DTSC maintains a contract with a private vendor to monitor land use activities for sites where land use covenants have been recorded. The types of land use activity monitoring conducted is based on site specific considerations and may include, but is not limited to, the One Call system, and sensitive use and building department permits. The ability to identify potential LUC violations before they actually occur, in most cases, allows DTSC to take preventative actions.
- Information sharing – DTSC is continuing to update its EnviroStor database, and is engaged in efforts to improve data accessibility and sharing (between local, state and federal government agencies). Note that EnviroStor is DTSC's primary tracking tool, although DTSC's LUC monitoring contract also provides an element of tracking. The water boards GeoTracker database provides a similar tracking element).

Monitoring of sites where the water boards hold the LUC is generally not specified in the LUC itself. It appears that monitoring requirements, if any, are addressed on a site specific basis and are identified in other documents such as a soil management plan or No Further Action Letter.

[▼Monitoring Program](#)

Within the California EPA, the DTSC and the Water Boards (nine Regional Water Quality Control Boards) conduct or oversee remediation of contaminated sites under authorities contained within the California Health & Safety Code (H&SC) and the California Water Code (see Chapter 9). Both agencies are generally required to use ICs in the form of Land Use Covenants (LUCs) if sites are not cleaned up to “unrestricted use” criteria. However, if DTSC or the Water Boards determine that it is not feasible to record or establish a land use covenant, other types of ICs may be used. These ICs include, but are not limited to, zoning restrictions, building or excavation permits, easements, drilling permits, soil management plans/agreements and covenants. If conditions warrant it, other ICs may be used in conjunction with LUCs as an element of redundancy.

The following discussion of IC monitoring in California pertains to DTSC, which uses a variety of monitoring methods in a layered approach. The specific monitoring elements for an individual site, and the frequency of monitoring activities, are to some extent subject to site-specific decision-making.

[Read More](#)

Monitoring Information from Local Governments

In accordance with requirements contained in the H&SC, local planning and building departments are notified when LUCs are recorded against a property within their jurisdiction. The H&SC also requires the local planning and building departments to: 1) file all recorded land use restrictions in their property files, and 2) require that a person requesting a land use that differs from those land use restrictions filed on the property apply to DTSC for a variance or the removal of those land use restrictions. The planning and building departments are not required to notify DTSC directly of requests for land use changes that contradict the land use restrictions found in a LUC.

Monitoring Information from Obligated Parties

One of the primary methods used by DTSC to monitor LUCs is self-reported information from obligated parties. This monitoring method applies to all LUC sites that DTSC oversees, with limited exceptions. In accordance with provisions contained in recorded LUCs, property owners (as obligated parties) are required to conduct an annual LUC inspection and submit annual reports to DTSC. The annual report must identify LUC violations that occurred at the time of the inspection or during the year and the corrective steps that were, or will be, taken. Specific corrective actions, notification requirements (to the party causing the violation and to DTSC), and timelines for those corrective actions are prescribed in the LUC.

At some sites, the only ongoing obligations are those contained in a LUC. Generally, this is the case when land use and activities are restricted, but the remedy does not include ECs. At these sites, the property owner, as the obligated party, must also conduct a five-year review assessing the continued health and environmental protectiveness of the remedy. When an Operation and Maintenance Agreement/Order is in place, the five-year review requirement would fall to the responsible party or project proponent as identified in that Agreement/Order.

Periodic Reviews and Inspections by State Agency

In addition to the required inspections by obligated parties, DTSC conducts periodic reviews and inspections of all LUC sites. Inspections are conducted at a minimum of every five years

with some limited exceptions. Many of the LUC sites managed by DTSC, however, are inspected more frequently with a significant percentage being inspected on an annual basis. The inspection frequency is usually a site-specific decision involving agency project managers and their management. Any violations noted during the inspection are documented and corrective actions are initiated as appropriate.

Land Disturbance and Activity Monitoring Information from Outside Sources Linked to One-Call Systems

DTSC maintains a contract with a private company to monitor land use activities at many, but not all, of the LUC sites that it oversees. This monitoring includes the one-call system and other land use activities, such as sensitive use permits, building permits, and California Environmental Quality Act activity. The specific activities and information sources that are monitored are determined on a site-specific basis by the agency project managers and their management in conjunction with the DTSC land use monitoring Contract Manager. DTSC receives alerts when a potential violation is identified. After DTSC reviews the alert, appropriate follow-up actions are initiated.

▼Enforcement

Enforcement of LUCs is based on enforcement provisions contained in the LUC, California Civil Code Section 1471, and the general regulatory authority of DTSC (H&SC) or the water board (Water Code). The primary goal of enforcement is to maintain the health protectiveness of the site remedy. When a violation is identified the property owner (and in some cases the Covenantor) is notified in writing and a schedule for correcting the violation is established. If the violation is not corrected in accordance with the schedule established in the written notification, then formal enforcement action under the applicable provisions of State law and/or regulations would be initiated.

DTSC LUCs include the following enforcement language:

“Failure of the Owner or Occupant to comply with this Covenant shall be grounds for the Department to require modification or removal of any Improvements constructed or placed upon any portion of the Property in violation of this Covenant. Violation of this Covenant, such as failure to submit (including submission of any false statement) record or report to the Department, shall be grounds for the Department to pursue administrative, civil, or criminal actions, as provided by law.”

Water Board LUCs generally include the following enforcement language:

“Failure of an Owner or Occupant to comply with any of the Restrictions set forth in Paragraph 3.1 shall be grounds for the Board, by the authority of this Covenant, to require that the Owner or Occupant modify or remove, or cause to be modified or removed, any Improvements constructed in violation of that Paragraph. Violation of this Covenant shall also be grounds for the Board to file civil actions against the Owner or Occupant as provided by law.”

▼Number of LUCs Held by DTSC and the Water Boards

Currently, DTSC holds approximately 911 LUCs, which address approximately 603 sites. The water boards hold approximately 791 LUCs, which address approximately 655 sites. Some LUCs appear in both registries; however, it is not clear from cursory review how extensive this duplication is. The registries are located online:

http://www.envirostor.dtsc.ca.gov/public/deed_restrictions.asp

http://geotracker.waterboards.ca.gov/deed_restrictions.asp

Washington

Washington State's environmental rule, the Model Toxics Control Act (MTCA), requires that permanent solutions or remedies be used to the maximum extent practicable. ICs and containment-type remedies are allowed when a disproportionate cost analysis justifies a nonpermanent remedy. Practical examples include small amounts of contamination remaining beneath a structure of value, or large amounts of contamination with low toxicity/risk and high disposal costs that can be effectively contained onsite.

ICs are also required when industrial cleanup levels are used at a Site. The use of industrial cleanup levels requires industrial land use, which is then enforced through ICs.

▼[IC Monitoring](#)

In Washington State, the Department of Ecology is the Holder of the original signed and recorded version of ICs. The Department of Ecology is typically the Grantee of environmental covenants, with the exception of USEPA-led CERCLA sites, in which case USEPA may be the Grantee or co-Grantee with the Department of Ecology.

Sites with ICs are tracked through an internal department database. This database contains an electronic copy of the IC (typically an environmental covenant), and all of the associated descriptive data. The public can view the UECA-required registry of these sites through a [web-report](#) produced on the department website.

Ecology monitors sites with ICs through periodic reviews conducted every five years. This is a review (similar to EPA's five-year review) that evaluates whether a nonpermanent remedy remains protective of human health and the environment. The review includes a site visit to verify that ICs are being observed, and a review of documents and monitoring data. These reviews are conducted for independent cleanup sites (Washington's Voluntary Cleanup Program), and for formal sites under order or decree. They are conducted every five years as long as the ICs remain in place at a site.

Periodic reviews are conducted almost exclusively by Department of Ecology staff, though MTCA allows reviews to be conducted by third parties. The department currently has three full-time staff dedicated to conducting periodic reviews. One staff member is the coordinator and is responsible for the central and eastern regions; the southwest and northwest region each have a dedicated reviewer.

Periodic reviews can result in a pass or a fail. If a site passes a periodic review, the review is made available for public review and comment, and another review is scheduled in five years. A site fails a periodic review if it is determined that the remedy is not protective of human health and the environment. In this event, there are several options:

1. Correct the problem within a short time frame (typically within 30 days) and incorporate the correction into the review. Typical 'failed' sites are due to administrative problems with the IC. These can often be corrected within this time period.
2. If the problem cannot be corrected in short order, then site may be 're-opened'.
 - For sites in the Voluntary Cleanup Program, this means the no-further-action determination will be rescinded. The site will have to correct the problem and re-enter our Voluntary Cleanup Program to receive a no-further-action determination.
 - For formal sites under order or decree, the responsible party will re-enter

negotiations with the department to correct the problem. It may be necessary to negotiate a new decree or order if the problem is significant.

Washington currently has approximately 400 sites that have implemented ICs as part of their remedy and are subject to periodic reviews. Washington does not currently seek to recover costs for time spent by department staff conducting periodic reviews.

[▼IC Failure Examples in Washington State](#)

In Washington, the opportunity to detect IC failures occurs during the Periodic Review (PR) process. A PR is required by the MTCA and is conducted by the Washington State Department of Ecology every five years for sites that have ICs, or that are required to have ICs. A PR has a wide scope and is intended to answer the general question of whether or not a remedy remains protective of human health and the environment. A site may fail a PR in Washington for reasons that are not IC related. In fact, the most common PR failures are not related to ICs.

Typical non-IC failure reasons include:

- Groundwater contaminant concentrations rebound and exceed cleanup levels at conditional points of compliance.
- A significant change in cleanup rules or cleanup standards. Generally, remedial actions are 'grandfathered-in' with standards in-place at the time they were conducted; unless a change in rule or standard is identified due to significant hazard, exposure or risk.
- A cleanup is incomplete. Remedial actions stalled after ICs were implemented.
- Failure to address the soil to vapor pathway occurs. This pathway was rarely considered prior to 2005. NFAs (no further action) were issued prior to this date without evaluating vapor intrusion.
- Incorrect decisions were made by the site manager when the original NFA was issued, including:
 - incorrect cleanup levels used to determine compliance
 - accepting incomplete site characterization

The following are brief summaries of sites that have failed PRs for IC related reasons (we have many other PR failures for reasons that are not related to ICs). Sites with pesticide contamination are common IC candidates in our area as this type of contamination tends to be widespread, making offsite disposal cost-prohibitive.

[Read More](#)

Landmark Care Center

Reason for failure: ICs were not implemented.

This site is located in an area historically occupied by orchards. Sampling indicated the presence of lead and arsenic in soils at concentrations exceeding MTCA cleanup standards. During property development, the owner regraded the site and capped contaminated soils with a combination of clean topsoil, landscaping, asphalt and building foundations. To be eligible for an NFA determination, ICs were required in the form of an environmental covenant. An environmental covenant was never recorded for the site, and therefore the remedy fails to be protective of human health and the environment.

Sid Marquis Property

Reason for failure: ICs were not implemented.

This site is located on former orchard property originally owned by the U.S. Army Corps of Engineers (USACE). No remedial actions were conducted at the site, and it was determined that

it would be eligible for a NFA determination if ICs were implemented in the form of an environmental covenant to restrict land use. Ecology issued a NFA determination for this site that was contingent on the implementation of an IC in the form of an environmental covenant. Following the issuance of the NFA determination, but prior to recording an environmental covenant, the USACE transferred the property to a private individual for residential use. The private landowner refused to implement an environmental covenant, and the NFA determination was rescinded.

Ballard Auto Wrecking

Reason for failure: Land use restriction was not observed.

This site is located in an industrial/commercial area of Seattle, WA. Historical uses of the property included a retail petroleum distribution facility and an auto wrecking facility. The former retail petroleum facility contained underground storage tanks (USTs) which released petroleum hydrocarbons to soils and groundwater at the site. MTCA industrial cleanup levels were used to evaluate whether the site was eligible for a NFA determination. The use of industrial cleanup levels requires ICs in the form of an environmental covenant to ensure that industrial land use is maintained. During the first PR it was observed that the site use was not consistent with the environmental covenant and the NFA determination was rescinded.

Reason for failure: Land use restriction is inadequate.

This site is occupied by a commercial building and is located in Seattle, WA. Two gasoline USTs and one heating oil UST were removed from the site in the 1990s. Releases from these USTs impacted soils at the site. Access to petroleum hydrocarbon impacted soils was limited by proximity to site structures and city utilities. It was determined that the site would be eligible for a NFA determination if ICs were implemented in the form of an environmental covenant to document contaminated soils remaining beneath the building. An environmental covenant was recorded and an NFA was issued for the site in 1999. During the first PR for the site, it was noticed that the environmental covenant did not address contaminated soils that extended beneath the City of Seattle sidewalk and street. As a result, it was determined that the remedy for the site was not protective of human health and the environment. A mechanism was not in place to notify utility workers of contamination that might be encountered during construction activities.

I-5 Foodmart

Reason for failure: Vapor intrusion was not evaluated and knowledge of the IC was not communicated

The I-5 Foodmart site is occupied by a retail petroleum sales facility in Centralia, WA. Leaking USTs resulted in soil and groundwater contamination at the site. Remedial activities resulted in residual petroleum hydrocarbons in soil beneath the site building. It was determined that the site would be eligible for a NFA determination if ICs were implemented in the form of an environmental covenant. The site was issued a NFA in 1999. During PR activities in 2008, two problems were identified: potential for vapor intrusion into the site structure had not been evaluated, and the current property owner was not aware of the environmental covenant and residual contamination at the site.

Both issues were quickly resolved, and the NFA determination was not rescinded. The vapor pathway was evaluated and it was determined that petroleum hydrocarbon vapors were not affecting air quality within the facility. It was also determined that the current property owner had purchased the property and business directly from the previous owner without the involvement of a bank and associated title search. As a result, the current property owner did not perform due diligence and was not made aware of the environmental covenant through normal processes. This loophole was identified as a problem with state procedures, and the latest environmental covenant language includes additional notification requirements.

These two issues occur repeatedly during PRs across Washington State. Vapor intrusion has not yet resulted in exposure at a site, but often it has not been evaluated. Additionally, at several sites a new owner has not been made aware of ICs. This situation is typically the result of a property transaction.

Hawaii

The Hawaii Department of Health (DOH), Hazard Evaluation and Emergency Response (HEER) Office hired a contractor to create and test a monitoring plan which will ensure compliance at sites with land use controls (LUC). The HEER Office database lists hundreds of sites with LUCs associated with investigations or cleanup actions. Rather than begin with a comprehensive review of all sites, the HEER Office selected 20 candidate sites with LUCs to be used as “test” sites.

The Land Use Control evaluation consisted of three steps: (1) conducting file reviews at DOH; (2) reviewing internet-based aerial photographs and county planning and permit information; and (3) conducting site visits. The Hawaii Land Use Inspection Form ([Hawaii 2016](#)) can be used to document the evaluation steps described below:

[▼Step 1: File Review](#)

The first step of the process consists of a review of test site records at the HEER Office. All relevant information pertinent to a site visit to ascertain the LUC status was compiled. Generally most of the information was gathered through a review of the HEER database and specific decision documents such as No Further Action (NFA) letters, Letters of Completion (LOC), or environmental hazard management plans (EHMP). As a part of the file review, the contractor also identified any inconsistencies within the HEER records that could be resolved through ongoing file reviews or site visits.

[▼Step 2: Aerial and Permit Review](#)

The second step consisted of an internet-based background review for each site, including aerial reviews and public record searches to check for changes in ownership, land use, zoning, and for construction, demolition, or trenching permits. This step was intended to identify any visual or documented activity that may indicate a breach in compliance with the LUCs in place for each site. For example, if an EHMP required maintaining an asphalt or building cover, a review of the current Google-based aerial photographs could confirm or deny site conditions. Similarly, if an NFA letter required notification to DOH regarding any construction activities, then information regarding excavation permits was relevant.

[▼Step 3: Site Visit](#)

The final step consisted of visiting each site in person. The site visits were not intended to be formal sites status review through interactions with the land owner. Rather, the site visits were intended to confirm the findings of the first two steps, and to gather any additional information possible from simply observing the site from outside of the property. Each site visit was tailored to the background review information and associated LUCs.

The basic process consisted of: documentation of time spent on site, identification (when possible) of areas under the jurisdiction of the LUC, an investigation of cap integrity when applicable, a confirmation of zoning compliance when applicable, documentation of site conditions inconsistent with the background review, review of any areas of interest (construction zone, etc.) highlighted during the background review process, and photographic documentation of apparent compliance practices and of potential indicators of noncompliance.

Summary of LUC Test Site Reviews

The LUC status for 30 percent of the sites (6 out of 20) was determined simply through the file, permit, and aerial review. For those sites visited, 20 percent (3 out of 14) provided critical information, 36 percent (5 out of 14) provided some value, and 43 percent (6 out of 14) added no additional value over the file, permit, and aerial reviews. Note that site visits were not conducted at six test sites.

Specific findings, lessons learned, and observations are presented below.

▼[Step 1. DOH File Reviews](#)

- File reviews for each site can be completed in 30–60 minutes.
- The physical extent (if applicable) of the LUC should be identified in the NFA letter or other documentation.
- Review time can be maximized with focus on reporting requirements, EHMP content, and most recent correspondence.

▼[Step 2. Permit and Aerial Reviews](#)

- Step 2, Permit and Aerial Reviews: each site can be completed in 15–30 minutes.
- Relevance of construction permits within large TMKs can be difficult to determine.
- Permit review is particularly helpful if a soil management plan or DOH notification is required regarding soil disturbance.
- Database is an efficient tool for confirming site ownership.
- In several cases the LUC specifically required land owners to contact the Department of Planning and Permitting regarding a control or site condition but this was not apparent in the on-line information.
- The aerial review is useful for large-scale confirmation of site conditions such as building status or site usage, but not for evaluating the condition of a specific surface.

▼[Step 3. Site Visits](#)

- Approximately 8–12 sites can be visited per day.
- A clear map of areas impacted by LUCs helps the effectiveness of the visit.
- LUC language is sometimes vague and difficult to interpret during the site visit. Common LUCs include “asphalt must remain intact” or “soil should not be disturbed”; however, it is difficult to evaluate compliance with these. For example, at what point is deteriorated asphalt no longer “intact,” or does a minor utility repair constitute soil disturbance? It is often not clear in the site documentation what should be done in the event that a LUC is not adhered to.
- Notifying the land owner or tenant during the site visit is an effective way to confirm knowledge of LUC with on-site staff.
- Relationship between owners, lessees, and tenants can be complex with Lease-Hold properties in regards to who should receive proper notification regarding LUCs.

Michigan

▼[Redevelopment Site](#)

Reason for failure: IC was not observed.

In 1995, the State of Michigan and a group of developers voluntarily entered into “Type C

Agreement and Administrative Order by Consent for Covenant Not to Sue Residential Property Occupants and Covered Commercial Tenants" (Agreement). Located along the Detroit River in the City of Detroit, the development includes residential apartment buildings, play areas, exercise trails, and a private marina. The property was contaminated due to historical manufacturing businesses.

As part of the remedial action completed by the developers, a restrictive covenant was filed on the property, which included restrictions to prohibit the installation of drinking water wells, and disruption of the vegetative, stone and gravel ground cover designed to prevent excessive human contact with soil, historical fill or similar materials. Specifically, part of the property was designated as an "Inaccessible Area" surrounded by a perimeter fence to restrict access. The restrictive covenant required that any activities are conducted in accordance with the terms of the Agreement's O&M Plan. The O&M Plan required that the vegetative cover in the Inaccessible Area be mowed periodically and limited accessibility to construction and maintenance activities.

In 1997, the developers provided a notice to the state of transfer ownership of the portion of the property designated as the Inaccessible Area. The state acknowledged the transfer and required the developers to modify the O&M Plan to reflect the long-term inspection and maintenance requirements of newly constructed buildings, pavement, and landscaping to operate as effective exposure controls, since the restrictive covenant referred to the O&M Plan. The developers proposed a modification to the O&M Plan and exchanged review correspondence with the state for a number of years after the property transfer.

The state and developers did not reach an agreement with approvable O&M Plan modification language to reflect the current conditions of the Inaccessible Area, which, as stated above, is cited in the restrictive covenant as the land use and resource use implementation requirements. However, the buildings, landscaping and pavement currently constructed on the Inaccessible Area were found adequate to prevent exposure to contaminated soils on the property.

▼[Day Care Center](#)

Reason for failure: Restrictive covenant was not implemented.

Beginning in the late 1800's and early 1900's, an industrial park located in the City of Buchanan in southwest Michigan was occupied primarily for industrial and manufacturing purposes. The manufacturing operations included a foundry, die casting, forging operations, machining, grinding and cutting and welding of dies and steel parts, heat treating, oil quenching, light metal fabrication, part washing/degreasing, dip and spray painting and minor plating. Supporting these operations were equipment tooling and manufacturing, commercial repair of fork lifts, a paint house, "flour" (fine silica sand and sawdust) house, boiler plants, propane gas mixing, acetylene production, a metallurgical laboratory, radiography and waste oil and liquids incineration facilities.

In 1983, the manufacturing company ceased operations at the industrial park and transferred the property to the City of Buchanan. Since 1983, various parcels of property located in the industrial park have been transferred by sale or lease to various industrial users. Environmental assessments identified hazardous substances consisting of petroleum, petroleum by-products, fractions and constituents, foundry sand, PCBs, hazardous waste and asbestos located in the soil. The state and responsible party, as owner and operator at the time of disposal of hazardous substances, entered into an Administrative Order by Consent for Response Activity (Order) to determine the nature and extent of contamination and to undertake necessary actions to abate any threat to public health, safety and welfare, or the environment.

In 2005, the state learned that the City of Buchanan sold a portion of the industrial park property which then was redeveloped for a day care facility. Limited analytical data indicated

that the outdoor play area at the day care facility was contaminated with arsenic above direct contact criteria. On January 14, 2005, the state issued a Notice of Noncompliance with the Order, requesting that the responsible party submit and commence implementation of a plan to address the day care activities and mitigate unacceptable exposures there. On January 28, 2005, the responsible party notified the City of Buchanan, the former property owner, threatening litigation for breach of contract with agreements made in 2001 between the responsible party and Buchanan, in which Buchanan had agreed to place land use restrictions on the property precluding day care activities. The responsible party also sent letters to the current property owner and the day care operator requesting cessation of day care activities. The day care center operator immediately ceased use of the outdoor play area, and Buchanan hired a consultant to collect additional soil samples on the property, which confirmed highly elevated arsenic concentrations.

New Jersey

The Site Remediation and Solid Waste Management Program in the New Jersey Department of Environmental Protection (DEP) is responsible for conducting or overseeing the remediation of discharges of hazardous substances to soil, groundwater, surface water, or sediments at Brownfield sites, federal or State Superfund or RCRA corrective action sites, closure of industrial facilities, and regulated or unregulated fuel tanks. The statutory basis is contained in the Spill Compensation and Control Act ([NJ 2011](#)), Brownfield and Contaminated Sites Act ([NJ 2012](#)), Industrial Site Recovery Act ([New Jersey 2014](#)), and the Site Remediation Reform Act ([NJ 2016](#)). Most, but not all, site remediation is conducted by LSRPs in accordance with these statutes and corresponding regulations and guidance.

When the unrestricted use standards are not met, an IC is required either in the form of a deed notice for soil or a Classification Exception/Well Restriction Area designation for groundwater. Engineering controls are required for soil contamination exceeding the nonresidential remediation standard; presumptive remedies are specified and required for certain sensitive receptor site uses. If no deed exists for soil contamination extending beyond a site boundary, a Notice in Lieu of Deed Notice is provided to the utility (as for a roadway, for example).

The bureau issues permits for remedial actions that require the use of ECs or ICs to ensure the protection of human health and the environment.

[▼Monitoring Information from Local Governments](#)

The Site Remediation Program (SRP) does not rely on local government as the principal source of site monitoring information, such as notification of land use or rezoning changes. The responsible party is required to notify the department of these changes. The SRP has an extensive public outreach program, in which local government and health agencies and individual property owners proximate to a site are notified when soil or groundwater use restrictions are established during site remediation.

[▼Monitoring Information from Obligated Parties](#)

The primary monitoring method relies on biennial certifications submitted by the obligated party. In most cases, groundwater monitoring, site inspections, or both are required every two years. Inspections can be more or less frequent depending on the presence of sensitive receptors and the concentration and mobility of contaminants. Minor site disruptions and disturbances that are returned to their original condition are reported to a state environmental reporting hot line (DEP Hot Line) and reported in the biennial certification. Major site alterations or changes in site use/zoning require prior notification. In certain cases, where presumptive remedies are required by statute (construction of schools, child care), formal prior approval may be required.

[▼Periodic Reviews and Inspections by State Agency](#)

The SRP is required by statute to inspect engineering controls at sites at least every five years. If the site has other active areas of concern, additional site inspections are likely to occur during these remedial investigation (RI) or remedial action (RA) activities. If there are violations or discrepancies among the recorded restrictions and observed site conditions, corrective actions may be required through enforcement of the permit and use restrictions. If a site no longer requires ECs or ICs, the responsible entity may request the termination or modification of the permit.

[▼IC Permit Programs](#)

The Site Remediation and Reform Act of 2009, which created the Licensed Site Remediation Professional program, also specified the establishment of remedial action permits as the mechanism for sites implementing engineering and institutional controls for sites that left soil or groundwater contamination in excess of either the residential soil remediation standard or applicable groundwater quality standards. The first permits were issued beginning in early 2010. This practice replaced or otherwise augmented the previous system of attaching these ongoing requirements to the issuance of a conditional No Further Action letter by the Department. Now, a permit would have to be in place before a LSRP could issue a restricted Remedial Action Outcome. Older sites having a Deed Notice or Classification Exception Area would have to convert to a permit or otherwise meet the walk away standards.

The attendant Administrative Requirements for the Remediation of Contaminated Sites regulations also added specific requirements for groundwater monitoring: biennial monitoring, complete delineation of plume and clean sentinel well; and the source must be addressed/controlled.

Using permits as the vehicle for ECs and ICs followed the fact that the New Jersey Environmental Management System (NJEMS) was a platform already used to generate permits in other program areas within the Department. It was felt that people were generally more familiar with permits, and this could improve compliance with the ongoing site remediation requirements. By issuing annual permit invoices, this would increase the contact with the responsible entities rather than relying on the submission of biennial certifications; nonpayment might indicate a problem, such as a sale of the property. Overall, some improvement in compliance through permits has been noticed. NJEMS also facilitates the management of submission schedules, locating electronic copies of documents, generating and maintaining correspondence and emails, managing site information and data, and generating reports of interest which might otherwise be impossible given the number of institutional and engineering controls formally in place (approximately 3,800 overall at present, and climbing).

The permitting and NJEMS system development is ongoing. In the near term, the planned electronic permit application submissions and generation process should result in expedited permit turnaround times and decreased transaction costs.

[▼Monitoring Information from Outside Sources Linked to One Call Systems](#)

A relatively small number of sites currently use the One Call/Dig Safe reporting system to ensure protectiveness of the remedial action. Calls into the DEP Hot Line, or other notification methods (letter, email) are routed to the permit unit for evaluation and appropriate response.

New York

The Division of Environmental Remediation within the Department of Environmental Conservation is responsible for conducting or overseeing the remediation of discharges of hazardous

substances to soil, groundwater, surface water or sediments at Brownfield sites, federal or State Superfund or RCRA corrective action sites, closure of industrial facilities, and regulated or unregulated fuel tanks within the State of New York. The authority stems from the Environmental Conservation Law ([NYDEC 2015](#)) and Navigation Law and the requirements are embodied in regulation in the New York Codes, Rules and Regulations Part 375 ([NYDEC 2015](#)).

New York State Department of Environmental Conservation (NYSDEC) uses Environmental Easements (EE) as the IC when needed to ensure that a remedy is protective of Public Health and the Environment. The EE contains the applicable site restrictions (site use, cover system, groundwater etc.) as well as compliance with the approved Site Management Plan (SMP). The SMP includes the restrictions as well as requirements for periodic reporting and certification. SMPs are developed using a template and instructions for its use to all NYSDEC project managers, remedial parties, and their remedial party consultant.

▼[Monitoring Information from Obligated Parties](#)

NYSDEC relies primarily on self-reported information from the obligated party to monitor ICs. The specific monitoring method and requirements are prescribed in the [SMP](#) that is created in conjunction with each environmental easement.

The SMP requires several periodic assessments and evaluations. In addition to monitoring of the IC and periodic reporting, the SMP also requires a climate change vulnerability assessment and a green remediation evaluation. Regular site inspection reports must be submitted on a monthly basis, and a comprehensive periodic review report must be submitted annually. The periodic review report includes:

- identification, assessment and certification of all ECs/ICs required by the remedy for the site
- results of the required annual site inspections and severe condition inspections
- summary of any discharge monitoring data and information generated during the reporting period
- data summary tables and graphical representations of contaminants, including a presentation of past data as part of an evaluation of contaminant concentration trends
- results of all analyses collected during the reporting period
- site evaluation, including the following:
 - compliance of the remedy with the requirements of the site-specific Decision Document
 - description of the operation and the effectiveness of all treatment units, including identification of any needed repairs or modifications
 - any new conclusions or observations regarding site contamination based on inspections or data generated by the monitoring and sampling plan
 - recommendations regarding any necessary changes to the remedy or Monitoring and Sampling Plan
 - Trends in contaminant levels in the affected media
 - description of the overall performance and effectiveness of the remedy

The periodic review report also requires certification of the IC. A qualified environmental professional or professional engineer must make an assessment and certify the following:

- The IC or EC employed at this site is unchanged from the date the control was put in place, or last approved by the Department.
- Nothing has occurred that would impair the ability of the control to protect the public health and environment.
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control.
- Access to the site will continue to be provided to the Department to evaluate the

- remedy, including access to evaluate the continued maintenance of this control.
- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document.
 - Use of the site is compliant with the environmental easement.
 - The EC systems are performing as designed and are effective.

If any component of the remedy has failed, or if the periodic certification cannot be provided because of the failure of an IC or EC, a Corrective Measures Work Plan must be submitted to the NYSDEC for approval. This plan explains the failure and provides the details and schedule for performing work necessary to correct the failure.

Tennessee

Reason for Failure: The city of Oak Ridge was not aware of groundwater use prohibition when it purchased a DOE property for a municipal golf course.

In Oak Ridge Tennessee, DOE sold the city of Oak Ridge property to be used for economic development. Unknown to the City, DOE had placed groundwater restrictions on the deed. The City hired a contractor to establish a golf course on the property. As part of the construction the contractor installed groundwater wells for course irrigation system. DOE became aware of the installation and enforced the groundwater restrictions. Subsequently the golf course facility was required to obtain their water from a nearby lake. The groundwater was not contaminated by DOE influence; however, the fear was due to the water demands of the golf course. The draw could affect the plume under a nearby DOE facility. It was unclear where the miscommunication occurred.

Utah

Reason for failure: Contractor unaware of the IC prior to excavation

In 2005, the Utah DEQ issued an NFA letter for a former gas station site that had some petroleum contaminated soil and groundwater left in the subsurface following remedial actions. The NFA letter was issued in conjunction with an IC that was recorded on the property deed. The IC included maps and data tables that described where the subsurface petroleum contaminated soil and groundwater were located on the property. The IC also had Land Use Restrictions that specified actions to be taken if property redevelopment activities encountered petroleum contaminated soil and groundwater. Such actions included notification of the DEQ and oversight of the soil excavation work by an environmental consultant. In addition, it was specified that any petroleum contaminated soils that were excavated had to be disposed of at an appropriate facility.

Several months after the IC was recorded and the NFA letter issued, redevelopment work began on the property. The DEQ received a report from the Salt Lake Valley Health Department that soil with a very strong gasoline odor was being transported from the former gas station site to another property about a mile away. The property owner called the police.

The DEQ contacted the construction contractor who said that they had received a copy of the NFA letter, but not a copy of the IC, therefore, they did not know about the subsurface soil contamination. The construction contractor then notified the developer, who hired an environmental consultant to oversee the removal and proper disposal of the gasoline contaminated soil.

As a result of the lack of communication about the IC at this site, the DEQ contracted with Blue Stakes of Utah (the "dig alert" company) and started entering all ICs into the Blue Stakes system. By law, anyone who excavates must notify Blue Stakes at least two full business

days before digging. Blue Stakes then emails a notification to the DEQ (and subsurface utility companies) that excavation is planned. The DEQ then emails a flyer notifying the excavator of existence and location/depth of the subsurface contamination.

The purpose of an IC is to notify future property buyers and developers about the presence of subsurface contamination. The purpose of Blue Stakes is to notify the excavator about the presence of the subsurface contamination. Through these notifications, all involved parties are advised of the subsurface contamination so that it can be planned for and properly handled.

Omaha, NE: RCRA Closure

Reason for failure: None; property owner avoided failure through proactive research.

An owner of a property parcel with inherited LUCs was proactive in determining if a proposed construction project would have the potential to disrupt the protectiveness. The site, located in Omaha, Nebraska, was investigated and corrective measures were implemented as part of a RCRA consent order between the USEPA and the responsible party. The site is a former manufacturing facility and closure included restrictive covenant enacted through UECA, which included restriction on groundwater use across the entire site and limitations to soil excavation on specific areas due to a historical and defined release of volatile organic compounds.

The property has been subsequently subdivided with the current property owners of each parcel responsible for monitoring and reporting on LUCs as part of the transaction. An owner of one of the subdivided parcels was considering constructing an addition to the currently existing building. During the initial construction planning process, the property owner proactively reached out to the environmental consulting firm that originally drafted the restrictive covenant and original site ownership in order to determine if there were any LUC concerns with respect to the proposed construction.

Source: Ramboll Environ US Corporation project, USEPA Region VII lead regulatory agency.

Navy IC Program Overview

The Department of the Navy (DON) has an extensive program to implement and manage ICs at remediation sites. Major elements of this program, including an online tool, LUC Tracker, are discussed in this section. LUC Tracker is being used at many DON remediation sites for implementing, managing, and reporting.

[▼Navy Approach to ICs](#)

Most DON sites requiring site remediation are expected to manage and maintain ICs as part of the LUCs and remediation strategy. These LUCs must be defined as, or as part of, the selected remedial action in the ROD or decision document. Implementation, management, and monitoring of these LUCs are ultimately the responsibility of the Navy as long as the site remains funded under the Navy's Environmental Restoration, or BRAC program. LUCs include ECs and ICs. ECs can include remedies to contain or reduce contamination and physical barriers that limit access to property. ECs may include fences, signs, guards, landfill caps, provision of potable water, slurry walls, sheet pile, and monitoring wells. The Navy also maintains information on LUCs in its Business Management System.

ICs include a variety of administrative and legal devices to maintain the viability and effectiveness of the selected remedy and any ECs. ICs ensure that the ECs stay in place, or where there are no ECs, to ensure a restriction on land use. ICs include affirmative and negative easements, affirmative and restrictive covenants, equitable servitudes, notices (for example, in deeds or newspapers), zoning, permits (such as construction, excavation, or well drilling), agreements with regulators, and reporting on LUC maintenance.

At active DON installations, typical ICs may include restrictions on well drilling, soil excavation, and construction at remediation sites. During the Remedial Action Operation (RA-0) and Long Term Management phases, these ICs may be implemented through base master plans, and requirements to obtain permits from the appropriate base authority. ICs such as easements or covenants, commonly applied at the privately owned properties, are not available for active installations due to requirements from the General Services Administration that establishes regulations for managing U.S. property. However, these ICs could be applicable for BRAC and non-BRAC sites following property transfer. Transfer agreements for these properties should include details about implementing, monitoring, and reporting of land use controls at these sites.

When property is to be transferred to a nonfederal entity, the remedial project manager (RPM), real estate manager and legal counsel must ensure that the LUCs are practiced and legally enforceable under state law. DON has the authority to impose restrictions on the transferee's use of the property, and these restrictions are to remain viable and honored by all subsequent owners. The Navy consults and works with the state and local government agencies to establish and enforce these restrictions.

For DON installations, procedures for periodic inspections of LUCs are established in the LUC Remedial Design or Remedial Action Work Plan. Also, five-year reviews under CERCLA are required to include an assessment of the effectiveness of the LUCs. The design and implementation plan for LUCs are included in the Remedial Design or Remedial Action Work Plan, just as any other remedy components. Therefore, no additional document should be necessary for the design or implementation of LUCs for the maintenance and long term management phases. However, for sites where the existing LUCs does not include LUC-specific information, documentation may be necessary for implementing LUCs.

The long term management phase may occur after the Response Complete milestone has been achieved at a site. This phase is required at sites where hazardous substances, pollutants, or contaminants remain after response complete, and are above levels that would allow unlimited use and unrestricted exposure (UU/UE). This situation often arises when DON decides to implement remedies that are primarily containment-type remedies, or when DON remediates a site to a level that requires restricted land use (site remediated to levels only required for commercial or industrial use). Actions during this phase may involve long-term monitoring, implementation and/or management of LUCs, maintenance of a containment cap, and preparation of five-year review reports.

DON uses an online tool LUC Tracker to demonstrate to the regulatory community the successful management of the LUC Program. The LUC Tracker is a management tool that operates as part of the [Naval Installation Restoration Information Solution](#) (NIRIS) ([NAVFAC 2013](#)) to allow RPMs and regional personnel to effectively manage their LUCs.

▼[LUC Tracker](#)

LUC Tracker is an online management tool that operates as part of the [Naval Installation Restoration Information Solution](#) (NIRIS) to allow RPMs and FEC navy personnel to effectively manage their LUCs. RPMs are to use LUC Tracker for all sites where the selected remedy includes land use controls as required by NAVFAC letter [Implementation of Land Use Controls \(LUC\) Tracker](#), 27 July 2011. LUC information, reports, and maps can be uploaded to the LUC Tracker, thereby allowing anyone in NAVFAC the ERN or BRAC program to run various queries to obtain specific LUC data for a site. LUC Tracker can also be used to automatically send reports to various stakeholders and can be used as an automated reminder system for upcoming inspections or reporting requirements. The LUC Tracker provides easy LUC data access for RPMs, efficient tracking of LUC integrity and compliance, and standard LUC data formats for interoperability among FECs and their contractors.

The LUC Tracker is made up of the following four business processes:

1. Data Entry – for creating new LUCs and reviewing or updating existing LUCs
2. Inspection Maintenance – for all inspection-related activities
 1. notifying stakeholders when inspections are due
 2. accessing inspection templates and maps
 3. entering inspection results and creating reports
 4. tracking deficiencies noted and corrective action taken
 5. notifying appropriate parties of noncompliance
 6. certifying compliance
3. Documentation – for uploading LUC-specific documents such as LUC Implementation Plans
4. Data Retrieval – for searching and exporting all installation specific LUC-related information, such as contaminants, restrictions, controls and inspection results

Read More

Who Manages the Data?

While the RPMs are responsible for managing LUC information in the LUC Tracker, they can obtain direct support from their NIRIS Regional Data Manager (RDM) or designated NIRIS Regional lead or workgroup member.

All individuals using the LUC Tracker must have access to NIRIS and have specific privileges for the specialized tasks in the application. Users must contact their RDM (through the NIRIS provisioning request form) to obtain access to the LUC Tracker. As with most NIRIS modules, privileges are granted for a specific installation.

The following privileges and actions are available for the LUC Tracker:

1. Enter-Edit – enter and edit LUC information: sites, drivers, restrictions, and controls
2. View – view and inspect controls
3. Upload – upload supporting files to a LUC entry, such as a survey map or LUC or Remedial Action (RA) work plan (WP) excerpt
4. Manage – manage LUC contacts for an installation, such as the Monitor or Enforcer

The following text provides general definitions and examples of LUC input data. Additional information is available in the LUC Tracker User Guide (see link under [Additional Information](#)).

Controlled Areas

The LUC Tracker application manages data based on installation specific controlled areas (CAs) that contain the drivers, restrictions, and controls that make up a complete description. A CA can be loosely defined as an impacted area with defined boundaries on which Environmental Restoration (ER) work has been performed. This area can encompass one or many ER sites and be encapsulated within solid waste management unit (SWMU), operable unit (OU), area of concern (AOC), Exposure Unit, Deed Parcel, or other boundary definition.

Drivers

Drivers are the main factors requiring LUCs and the need to enter a LUC Tracker record. These items can consist of both chemical and physical hazards and may be assigned as top-level categories or individual drivers. Some examples of driver entries are: benzene, chlorinated compounds, or metals.

Restrictions and Controls

Restrictions are the actions that have been implemented in response to the drivers to prevent exposure or protect a remedy. Controls are the mechanisms for implementing the restrictions

and also trigger the automatic inspection notification feature of the LUC Tracker. An example entry could be a groundwater restriction controlled by annual certification, deed restriction, and local permit.

Points of Contact

Users with “Manage” privileges can assign points of contact to a CA. Only users with NIRIS access can be assigned as a Point of Contact. The following Points of Contact are available:

- Budget – person responsible for ensuring funds are available for monitoring
- Certifier – person who signs the annual LUC compliance certification and/or LUC monitoring report
- Emergency – person to be notified when LUCs are breached/ violated or other emergencies
- Enforcer – state or federal regulator
- Monitor (RPM) – person responsible for ensuring that LUCs are monitored and complied with
- Public – person responsible for ensuring public is informed of LUCs, especially for property that no longer belongs to the government
- Report Preparation – person responsible for preparing the LUC inspection report (typically, a contractor)
- Report Recipient – person who receives the LUC inspection report (typically, the RPM)
In most instances, the RPM or ER Manager fills multiple

Inspecting Land Use Controls

Adding controls to a LUC definition creates entries in the calendar and scheduling feature of the LUC Tracker. Controls are entered with a Start Date, Duration, and Inspection Frequency that trigger the automatic notification functionality.

The notifications gather all controls that require an inspection within a specific installation and generate a monthly email to the assigned Monitor for items that are to be inspected in the coming month. Upon logging into the system, the Monitor then assigns the Inspection Task to a NIRIS user with access to the specific installation as an Inspector.

The Inspector is then required to complete an online form to close out the inspection task and may also attach a pdf document containing specific inspection information. Violations can be documented in the inspection form to track corrective actions to completion.

Procedures for periodic inspections of LUCs are established in a remedial design or remedial action work plan. Also, five-year reviews under CERCLA are required to include an assessment of the effectiveness of the LUCs.

Searching for Data

All data in LUC Tracker is available from the Query link and is accessed through a series of dropdown fields used to easily find information. Some examples of LUC Tracker queries using the Query link are:

1. all CAs with SVOA contamination and a soil disturbance restriction
2. metals contamination at an installation
3. noncompliant inspection reports in the Atlantic region
4. unsafe buildings at an installation

Where else is this data used?

Besides the Query function, the LUC Tracker data are currently shared with the NIRIS Web GIS and DOD’s Knowledge Base Corporate Reporting System (KBCRS). The Web GIS maps allow a user to click on a CA area to view the CA name, affected ER sites, drivers, restrictions, controls,

attached documents, and latest inspections. This functionality is only available to maps that have a LUC layer in NIRIS.

The KBCRS is maintained by the DOD. This resource is the authoritative system of record for environmental program data and uses the LUC Tracker as the single source of Naval Facilities Engineering Command's (NAVFAC) LUC data.

New Features

Now that the LUC Tracker is being used across NAVFAC, valuable feedback, in the form of suggestions, and feature requests, was captured and incorporated into the latest version (January 2012).

Some of the most important new features are listed below:

- general data input screen and navigation improvements
- ability to assign restrictions and controls to multiple sites in the same controlled area
- ability to remove data by authorized users
- notification emails to contain detailed information and a link to the inspection task list
- ability to maintain separate RPMs within the same installation (useful for split BRAC/ERN or Joint Basing locations)
- cleanup of valid value restriction and control choices
- support for alternative durations such as Five-Year Review, Biennial, or Until Regulatory Release
- support of multiple Points of Contacts per role (Monitor, Enforcer, and others)
- improved inspection questionnaire to support NAVFAC-wide or regional requirements

[▼Periodic Reviews and Inspections by Responsible Oversight Agency](#)

A five-year review is required at a Navy remediation site if the remedial action results in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unrestricted use. A five-year review is also required if the response action to reach unrestricted use criteria will not be completed within five years.

Annual, periodic or regular inspections and reviews of site status are documented and used to supporting the reporting of compliance, modification and change in LUCs.

[Read More](#)

Site Closeout Milestone

Site closeout (SC) signifies that DON has completed active management and monitoring at a site, the remedy is protective of human health and the environment, and no additional DON funds are expected to be spent at the site. The [DON Guidance to Document Milestones throughout the Site Closeout Process \(NAVFAC 2006\)](#) identifies reports needed to document SC, and for many sites these reports also include status of LUCs. For sites completing the Remedial Action Operation Phase, and not requiring LTMgt phase and future LUCs, a Remedial Action Completion Report (RACR) documents SC and completion of LUCs. For sites with an LTMgt phase, SC is achieved at completion of the LTMgt phase. To document this completion, a Remedial Action Completion Report (RACR) Amendment may need to be prepared in accordance with the [DON guidance](#).

An operable unit (OU) or site under LTMgt will not achieve SC as long as contaminants remain above levels that would allow UU/UE. Achieving these levels, particularly for sites with

containment remedies, may require a long period of time, with the OU/site remaining in the LTMgt phase for the entire period. As an example, for landfill cap sites, groundwater monitoring requirements for the LTMgt phase may be 30 years or longer, with LUCs to be maintained in perpetuity if contaminants remain in place above action levels. Typically, five-year reviews are needed for this entire duration.

A RACR Amendment documents the completion and termination of all LTMgt actions, and thus the SC milestone is achieved when a RACR Amendment report is complete. The report should include a brief discussion of previous reports such as a RACR that documented completion of the remedial actions that preceded the LTMgt phase, and the five-year review reports prepared during the LTMgt phase.

Also, a RACR Amendment signifies completion of all actions under the ROD/DD. DON shall obtain concurrence from regulators for this report, and inform the public about this document. A copy of the report along with supporting documents should be available in the RPM's site files.