

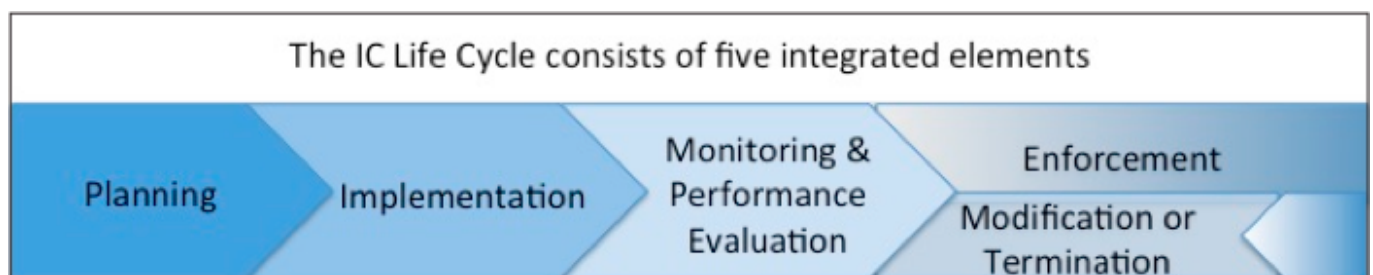


## Planning ICs

When remediation does not result in the immediate, unrestricted use of a property, an IC can be used to prevent unintended human or environmental exposure to the remaining contaminants. When properties undergo a risk-based corrective action, conditions that are present at the time of assessment are addressed and thus pose no risk. As a result, an IC is not necessary, though contamination may remain and use may be somewhat restricted. An IC might be considered when a new condition is introduced in the vicinity that did not previously exist. Alternatives to an IC may be more acceptable to a property owner. Using an IC is not required and is not the only alternative when remedial progress is slow. This section focuses on the decision-making aspects of IC selection and implementation that can positively or negatively affect the long-term durability of that IC. Detailed information on IC selection is not included here, except as it relates to the successful long-term management of the IC.

## The IC Life Cycle

Key activities in the IC life cycle are summarized in Figure 3 (ASTM 2014). Descriptions can be seen by clicking on each section in the figure.



**Figure 3. IC life cycle.**

1. **Planning** – activities leading up to implementation of an IC, such as identification of IC objectives and evaluation of possible ICs that can achieve these objectives; identification of parties’ roles and responsibilities for long-term IC activities; costs and funding sources; and other criteria or issues that may affect an IC’s long-term effectiveness.
2. **Implementation** – activities to put the IC in place, including drafting, negotiation, execution, and recording. The clear identification of, and commitments to roles, responsibilities and resource needs for IC implementation is a critical step in developing an effective and durable IC.
3. **Monitoring and Performance Evaluation** – actions and procedures to monitor and evaluate activities and land uses to help assure that IC integrity, compliance with IC requirements, and site risk mitigation.
4. **Enforcement** – actions taken in response to a breach or other violation of IC terms. Actions can range from informal communications seeking voluntary compliance to more formal, legal action.
5. **Modification/Termination** – legal or administrative steps taken to alter or remove an IC due to a change in site characteristics, or because cleanup objectives or other IC conditions have been met. Modification may also be necessary when monitoring indicates that the IC is not achieving its objectives, or as a result of an enforcement action. For long-term stewardship to be effective, an IC can include mechanisms that enable modification or termination. This process should involve a thorough evaluation that allows for maximum beneficial use of the property without increasing public health or environmental risk.

## Planning for the IC Life Cycle

Planning that protects human health and the environment, using all aspects of an IC life cycle, is essential for long-term success. Effective planning can also prevent problems after the IC is implemented. Some agencies and responsible third parties, however, do not have the necessary funding or resources to plan and implement robust registry (tracking),

monitoring, maintenance, performance evaluation, and enforcement programs—thus risking IC failures. Further, while many states perform some type of IC monitoring, 21% of the states surveyed have no IC monitoring program and noted the need for improvements in this area (see Appendix B, Question 16). States must consider the resources that they have available to register, track, monitor, and enforce ICs in order to achieve long-term success.

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Prior to implementation, the planning process assesses site characteristics and case details in order to determine the most durable and effective IC to meet site objectives. Without this assessment, ICs may be selected as part of the remedy early in the remediation process, without full consideration of factors such as feasibility, stakeholder concerns, future land use assumptions, and long-term stewardship and monitoring requirements. Consequently, if a later, detailed evaluation reveals that ICs may not be appropriate for the site, options are limited if the site remedy is already underway. Several sets of criteria for evaluating and selecting an IC(s) are offered in the various programs that use ICs. Comprehensive IC planning can incorporate criteria such as those specified by the National Contingency Plan (USEPA National Contingency Plan 40 CFR art 300 (2)(iii)), those suggested by ASTM (2014), as well as other, appropriate, state- or program-specific criteria.

ICs place certain burdens on property owners, OPs, and local and state governments. Resource needs and financial costs can be substantial for the OPs, government agencies, and other organizations responsible for implementation, maintenance, and enforcement. Considering the full life-cycle costs of the ICs is critical to accurately evaluating the use of ICs versus active remedial responses, and ensuring that stakeholders understand the scope of the financial commitments associated with ICs to which they are agreeing. Robust cost estimates that include long-term stewardship can be developed early, during the evaluation of whether ICs are appropriate for a site.

## Developing a Long-Term Stewardship Plan

A long-term stewardship (LTS) plan, also referred to as an Institutional Control Implementation and Assurance Plan (ICIAP) (USEPA 2012), can guide a complete consideration of resources available for an IC. LTS plans supplement decision documents and function much like an operation and maintenance plan. LTS plans identify how and by whom the IC will be implemented, monitored, evaluated, enforced, and modified or terminated over the long term. These plans are typically completed concurrent with the engineering design of the active remediation components.

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Of the states and territories surveyed, 52% require some sort of long-term management or stewardship plan for a site with an IC; however, guidance on the contents of these plans may not be readily available. Some management or stewardship plans pertain to sites with long term ICs that have been implemented through a federal program such as CERCLA and Defense Environmental Restoration Program or may be specific to certain media such as soils (excavation) or groundwater (use restrictions). For example, at large complex sites with multiple decision documents (RODs), that each contain ICs, the LTS plan can compile all IC requirements from multiple RODs into one IC management plan.

Companies with sites in several states that require ICs may prefer one LTS plan that can capture ICs and IC requirements across multiple states. These plans may be referred to as an engineering control maintenance plan (ECMP), land use control remedial action work plan or remedial design (LUC RAWP), land use control implementation plan (LUCIP), environmental hazard management plan (EHMP), institutional control implementation and assurance plan (ICIAP) (USEPA 2012), or simply an institutional control management plan (ICMP). Many states and territories unfortunately do not have guidance on the contents of long-term management or stewardship plans for ICs. In these cases, the downloadable LTS planning tool will help to collect all necessary information for long-term management of ICs.