

MINDING THE END

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Today, most people engaged in hazardous waste cleanup in the U.S., from all perspectives, recognize that it is essential to “begin with the end in mind”—that is, to make decisions about characterization and remediation based upon the desired or likely end state of the affected properties. Unfortunately, when we collectively began the task of cleaning up contaminated soil and groundwater in America roughly three decades ago, none of us knew what the *end* would look like.

Despite our best efforts and intentions as a nation, residual contamination will remain in place, at levels that do not allow for unrestricted use and unlimited exposure, at perhaps tens of thousands of sites throughout the nation. Many of these sites include plumes of groundwater contamination where it is infeasible to restore the resource to drinking water standards throughout the aquifer. Others are landfills or disposal sites where remedial actions would simply move contaminated media from one location to another. We may argue about when, but most sites will reach the point where active remediation is no longer effective. The *end*, at these sites, is not pristine soil and groundwater, but a state at which significant risk reduction has been achieved and the public and the environment are protected, but where residual contamination poses a continuing potential risk of exposure that demands “long-term management” (LTM).

LTM typically includes land use controls, monitoring, maintenance, public communications, and periodic reviews of protectiveness (e.g., Five Year Reviews under CERCLA²). At “Superfund” (National Priorities List) sites where EPA pays for active remediation, LTM—as well as the long-term operation of remedies—is the responsibility of the states, but in other situations liability remains with private or public responsible parties. However, at many sites—particularly brownfields with limited contamination—LTM may be conducted by “volunteers” (i.e., parties who did not contribute to the contamination) such as developers.

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² The Comprehensive Environmental Response, Compensation, and Liability Act, informally known as the Superfund law, originally enacted in 1980.

Responsible parties' obligations to carry out LTM for an extended period of time present both challenges and opportunities.³ On the one hand, the leaders of both government and non-government institutions generally do not wish to be encumbered indefinitely with management responsibilities at sites where they are, as a practical matter, "done," particularly where they have transferred property ownership to another entity. Furthermore, there are few institutions in the world with longevity comparable to the requirements for managing sites with intractable residual contamination.

On the other hand, currently at the vast majority of sites where LTM is the only continuing requirement, ongoing activity (monitoring, information sharing, periodic reviews of protectiveness, etc.) is relatively predictable (particularly when compared to process of remedy selection and initial remedy operation). Only if the periodic review finds that the existing remedy is not protective (i.e., exposure exceeds regulatory risk-based levels) or the responsible party finds that a new remedy is more cost-effective or otherwise appropriate given the responsible party's internal policies (e.g., sustainability policies) is there a potential for new investment.

Past efforts to transfer management earlier in the cleanup process have foundered over the uncertain price tag, but many corporate responsible parties and federal agencies (at transfer sites such as base closures as well where plumes migrate onto properties owned by others) may well, in the authors' view, be willing to pay for third parties to assume long-term management responsibility for their passive (LTM-only) sites *if* the current liability paradigm were changed—that is, if the third parties were genuinely able to assume liability and the responsible parties were finally able to remove the sites from their "books."

Today, for all aspects of site remediation, the primary paradigm is to have the responsible party pay all costs by applying joint and several liability, unless the harm is divisible. (If the harm is not divisible, each party may be held liable for the entire cost of the cleanup, regardless of the amount of hazardous substances it released, and in some cases for acts of a predecessor corporation.) Thus, a party which may not have contributed all of or even a significant amount of chemicals to the site may be (and typically is) held liable for the chemicals for as long as these chemicals remain at the site.

At complex sites, we believe that it would protect the public more reliably, strengthen long-term management, and provide needed certainty to the responsible parties to form a long-term management-only organization (LTMOO) to which responsible parties could transfer, in exchange for a one-time payment, all of their future liability at the particular site, once the site has completed feasible active remediation. By this we mean that the reduction in concentrations is very small, the cost per additional reduction in concentration or mass of contaminants is very large, and continued active remediation would not attain drinking water standards within a reasonable period of time (i.e., it is not practical). The payment would be calculated based on the present value of

³ Since LTM is typically implemented by a legally binding instrument (e.g., a settlement or order), the party subject to such requirements is responsible to perform this LTM work and will be referred to as a "responsible party," rather than the more traditional term—potentially responsible party.

passive LTM of the site. There could be one national LTMOO, or at least initially, there could be several LTMOOs with regional responsibilities. Each LTMOO, however, eventually would manage thousands of sites.

In the abstract, permanent liability transfer is counter to current legislation and guidance, which applies a strict liability rule such that responsible parties are fully liable for risks associated with the contamination and are completely responsible for the cleanup remedy. Indeed, many stakeholders argue that the “polluter pays” principle demands that responsible parties remain liable for as long as the contamination remains at the site, and some stakeholders may have a preference to have the long-term management of these sites under the care of the government. However, once the LTM stage is reached, the vast majority of remediation costs have been expended—the initial investigation was completed, the remedy has been selected, additional investigation for design and operating purposes has been performed, the remedy has been operating for many years, and all pathways (including vapor intrusion) have been investigated and mitigated as necessary. Additionally, as part of the transfer, the responsible party will pay the LTMOO the reasonable future LTM costs. Thus, the polluter still pays—a lot (at some sites perhaps even more than 100% of the present value of the LTM costs).⁴

The concept of limiting liability, although not in the context proposed here, has been considered in various contexts. For example, when it was originally enacted CERCLA provided for establishment of the Post-closure Liability Trust Fund to assume liability for post-closure operation of CERCLA remedies (Section, Pub. L. 96-510, title II, Sec. 232). However, this provision was never implemented and was eventually repealed in 1986. A very limited number of states have utilized proportional liability (thereby requiring government payments for orphan shares). Most underground storage tank programs provide a fund to pay for such cleanups. One example of a liability transfer program is a program established by the Minnesota Pollution Control Agency (MPCA) in 1994. The MPCA Closed Landfill program allows owners of sanitary landfills to pay a fee to the program in exchange for transfer of all future liability and management costs.⁵

Other proposed schemes for managing private hazardous waste sites over the long term include the use of insurance and fixed-price performance-based contracting. Some of these schemes were ultimately intended to create one or a handful of regional entities responsible for a large number of sites to provide a greater incentive to perform research and adopt a more sustainable approach to site management. While some of these approaches are being tried, efforts to manage large numbers of sites under one long-term umbrella have always run up against the inescapable permanence of liability.

⁴ Obviously, society’s understanding of the toxicity of chemical may change over time. Such changes may extend the length of time that LTM is needed, but it not likely to increase significantly the present value cost to monitor the passive remediation of a site. For example, lowering the long-term concentration goal for a substance from ten parts per billion to one part per billion may increase the size of the plume and the length of time monitoring is required.

⁵ See <http://www.pca.state.mn.us/index.php/waste/waste-and-cleanup/cleanup-programs-and-topics/cleanup-programs/landfills-and-dumps/closed-landfill-program.html?menuid=&redirect=1>

We understand the fear that unexpected costs (particularly costs that could bankrupt a third party that takes responsibility for cleanup at multiple sites) is a disincentive to this concept. If the original responsible parties were no longer liable, there would be no party available to ensure that necessary work continues. That's why we don't think third party remedial management would generally prove useful. Sites must be fully characterized and cleanup decisions must be made, if long-term uncertainty can be held down to a manageable level.

We believe that long-term-management-only complex sites are likely to share a variety of characteristics that make management of such sites by one or more qualified third parties relatively cost-effective and reliable. If designed correctly, the LTMOO has a number of desirable features:

- 1) Focused only on long-term management, its costs and schedules would be consistent and more predictable.
- 2) The ability to hand off liability would encourage responsible parties to accelerate efforts to reach the LTM-only milestone and to invest in the development of cleanup technologies to help them reach that milestone. Many would conduct studies designed to demonstrate that active remediation is no longer effective for portions of their sites, so robust regulator and community oversight remains necessary to prevent them from halting active measures prematurely.
- 3) Pooling risk would minimize the impact of cost overruns at individual sites. There is never a complete guarantee that system-wide costs will not at some point exceed available resources, but major surprises could threaten any approach, not just LTMOO.
- 4) Common management of multiple complex sites would create economies of scale and make it easier to implement innovative approaches to monitoring.
- 5) LTMOOs could create uniform, accessible data bases of land use controls to help planners and developers determine when and where to propose site redevelopment.
- 6) By receiving liability soon after active remediation is completed, LTMOOs could serve as a buffer against the eventual insolvency of one or more parties at a site.
- 7) The elimination of multi-party committees that currently oversee sites jointly would significantly reduce transaction costs and result in more efficient management.

In our view, the confidence of the public is likely to be increased if an independent transparent organization (not the parties thought to be responsible for the contamination) manages the site over the long term to ensure protectiveness.

There are many difficult, but answerable questions to be resolved to make the LTMOO concept a practical reality. What must a responsible party demonstrate before

transferring responsibility to the LTMOO? When and where should transfer be in the form of real property acquisition? Is it possible for LTMOO to take responsibility for individual operable units within a larger listed property? Could it manage a plume that has migrated off the source property while the polluter retains responsibility for the source, including ensuring that no further migration occurs? What conditions should void transfer of liability (e.g., fraud)? Should participation be voluntary? How would the price of participation be calculated? Should the LTMOO be a government agency, a non-profit organization, or a business? Should environmental regulators participate in or regulate the LTMOO? Who should manage the managers, and how should they be selected or elected? How transparent should the LTMOO's operations be? Are there any details of contamination, remediation, or monitoring data that are unsuitable for public access? How could the LTMOO(s) be structured to provide an incentive to develop new lower-cost LTM technologies and new technologies that may enable the LTMOO to attain drinking water standards earlier than previously anticipated?⁶

LTM is by definition uncharted territory. Except for a handful of religions, there are no institutions on the planet that have been in place as long as required for the long-term management of residual hazardous wastes. We do not suggest the wholesale immediate adoption of the LTMOO concept. Rather, it should be carefully tested, perhaps at sites or a category of sites (such as recently closed military bases) where the federal government is the responsible party, to allow the government to resolve the inevitable start-up glitches in the process.

The LTMOO concept is simple, but it's different. As envisioned by the authors, this is not a method for "polluters" to escape responsibility (as illustrated above). Rather it is an effort to establish one or more bodies that will have the specialized skills, tools, funding, and focus needed to implement the challenges presented by long-term site management. This approach can provide reliable protection of the public (with a less adversarial approach) while creating an economic and practical incentive to hasten the completion of active remediation and transition to the appropriate end state. The likely current end state generally is long-term passive management. However, if the LTMOO process provides an incentive for research into new, more cost-effective remediation technologies to reduce residual concentrations in groundwater, ultimately technologies could be developed that may be able to lower contamination levels below drinking water standards (a result that is not possible at many complex sites with current or foreseeable remediation technologies). We believe that such a long-term management scheme can make the overarching remediation process (particularly the "end game") more reliable, efficient, and transparent.

⁶ As a practical matter, there is little current private sector incentive to develop better, lower-cost remediation technology. At least one model that could be explored is to have LTMOOs set up as public utilities (i.e., similar to electric utilities). They could have investors and would have an incentive to make a profit, but they would be regulated to ensure that their primary mission is to keep the sites protective. This group might set up a research arm similar to the Electric Power Research Institute or other groups to manage such research.