



Long-Term Stewardship and the Nuclear Weapons Complex

The Challenge Ahead

by Katherine N. Probst

No matter how much money is spent on cleanup, some hazards will remain at most of the nation's former nuclear weapons production sites. To protect human health and the environment will require long-term stewardship—a program to ensure protection of public health and the environment in the decades to come.

Getting the U.S. Department of Energy to focus on environmental cleanup has been a long and difficult undertaking. For many years, the department denied that it was responsible for complying with the major environmental laws, notably those governing management of hazardous wastes and mixed wastes (that is, those that are both hazardous and radioactive) and the cleanup of contaminated sites.

A landmark court case decided in 1984, *LEAF v. Hodel*, changed that. Now, almost fifteen years later, one-third of DOE's budget goes to its Office of Environmental Management (EM). As noted in DOE's September 1997 Strategic Plan, environmental quality has become one of the department's four basic missions, along with energy security, national security, and science leadership. This environmental focus would have been unthinkable just ten years ago.

The charge to DOE's environmental management program is enormous: cleaning up the contamination, wastes, nuclear materials, and contaminated structures resulting from decades of nuclear weapons production at over 100 sites in thirty states around the country. At approximately \$6 billion, the annual budget for DOE's environmental management program is also enormous—twice as much as the total estimated public and private expenditures on nonfederal Superfund sites, and almost as large as the total annual operating

budget of the U.S. Environmental Protection Agency.

Much of EM's budget goes to activities few would define as "environmental management." For example, EM estimates that in recent years as much as 50 percent of its budget has gone to what are referred to as the "mortgage" costs of ensuring security and maintaining local infrastructure at the sites in the weapons complex. Some funds also go to managing excess nuclear materials stored at DOE sites.

Still, substantial sums of money are being spent on cleanup. Since 1989, DOE has spent approximately \$20 billion on cleanup tasks, and the end is nowhere in sight. Most experts believe that it will take decades before the department completes cleanup activities at all the sites in the weapons complex. The total price tag has been estimated to be almost \$150 billion.

Describing the EM program as a "cleanup" program is something of a misnomer, though. No matter how much money is spent, some hazards will remain at over two-thirds of the sites. The lack of proven technologies to address radioactive and other forms of contamination, widespread soil and groundwater contamination, as well as the fact that many DOE sites will continue to be home to waste storage and disposal facilities, means that hazards will remain for hundreds, if not thousands, of years. DOE will not be able to walk away from these sites, nor from its past con-

amination problems. A program of long-term stewardship will be needed.

Long-Term Stewardship

What is long-term stewardship? Broadly speaking, the term refers to the physical controls, institutions, information, and strategies needed to limit human exposure to, and environmental contamination from, remaining site hazards after cleanup of the weapons complex is completed.

Among the likely elements of such a program are: institutional controls to prevent inappropriate future land and groundwater use; maintenance of waste disposal facilities; preservation of institutional memory and communication mechanisms to keep future populations informed of site hazards; and long-term site surveillance and monitoring.

We need to address the issue of long-term stewardship now. Decisions made today about what types of environmental risks to address, how much to clean up, and how and where to dispose of it all affect the distribution and degree of hazards that remain at DOE sites. Today's choices will determine the kinds of long-term governmental responsibilities that will be needed to protect human health and the environment in the future—as well as the costs imposed on our children and grandchildren. Already there are twenty-eight sites where EM has completed its planned cleanup actions that require some kind of stewardship activities. Fifty-one additional sites are expected to fall into this category in the coming decades.

Perhaps most importantly, stewardship needs to be addressed now because the need for post-cleanup care has major institutional and financial implications. These implications are not adequately addressed either in DOE's current institutional structure or in its most recent budget request.

Addressing the challenge of long-term stewardship raises a number of difficult questions, given the political context surrounding the weapons complex and the long-lived nature of the hazards involved. What organization should be charged with ensuring protection at these sites? Is federal legislation needed to create a strong stewardship mandate? And, perhaps most difficult, how can the long-term financial security of the organization charged with stewardship be ensured? Providing answers to these questions is the

next major challenge facing the department's environmental management program.

Developing a Program

Experts agree that long-term stewardship will be needed at the weapons complex sites. But agreement among experts is not the same as action.

Defining the mission of a long-term stewardship program is in many ways a simple task: To take those actions necessary to protect human health and the environment from hazards that remain at sites in the weapons complex after "cleanup" (engineering solutions) have been implemented. Actually *creating* an enduring stewardship program is a much more difficult charge.

The most important next step is to stimulate a public dialogue as part of the process of developing a framework for a successful stewardship program. It is critical that participants include DOE and the full panoply of stakeholders—EPA, state agencies, local citizens, tribal nations, local governments, environmental groups, and DOE contractors. Absent such a dialogue, there will be no support for the difficult steps ahead.

Figuring out just what stewardship means in a given context, what organization should implement needed activities, and what organization should conduct external oversight are likely to be extremely controversial issues. The most daunting challenge will be to ensure that whatever institution is charged with stewardship responsibilities has the bureaucratic, political, and financial wherewithal to successfully implement them.

DOE is likely to have a role implementing stewardship activities. For that reason the department needs to show leadership on this issue now and start to put in place information and strategies that provide a sound base for developing a stewardship program. Currently, DOE does fund some external research on what will be needed (including RFF's own work). But internal research and analysis are confined to a few relatively small offices within EM.

One of the major stumbling blocks to a frank debate about stewardship is likely to be money. Right now, DOE's stewardship liabilities are not identified as such, even though everyone knows they exist. One of the reasons why these liabilities have not been identified is almost certainly the desire to show that the costs

Question Markers

ROBERT DEL TREDICI



A granite block stands in the Palos Park Forest Preserve, twenty miles from Chicago. Erected in 1978, it marks the burial site of radioactive materials that include wastes from the world's first nuclear reactor, built by Enrico Fermi for the Manhattan Project in 1942. While the tombstone cautions "DO NOT

DIG," its inscription also unequivocally assures park visitors that the site poses no danger to them.

Such markers could eventually appear at sites across the country, for they are one of the main ways that DOE has to warn people not to disturb hazardous and radioactive wastes and materials that will remain toxic for centuries to come. But would they adequately communicate the dangers that remained at the sites they marked? Or do such monuments present an "attractive nuisance" more than they do a deterrent?

of the EM program are decreasing over time. A critical next step is to estimate the institutional and financial costs of long-term stewardship for each of the more than seventy-nine sites that will require such a program, and to integrate planning and budgeting for stewardship into the department's internal processes. Focusing on these responsibilities will require that DOE come clean about its long-term environmental liabilities.

A Legislative Mandate

While there is much talk about completing cleanup at DOE sites by 2006, it is clear that the need for stewardship will extend well into the distant future. Congress and the agencies that regulate DOE (EPA, other federal agencies, and states) must begin to address the institutional and financial implications of this fact.

One obvious way to create a stewardship mandate would be to enact federal legislation. Specifically, Congress would need to outline the stewardship mission at DOE sites, setting out the various roles and responsibilities of the various organizations (such as DOE, other federal agencies, and state agencies, among others) to be charged with implementing stewardship functions.

A legislative mandate for stewardship is needed for three reasons. First, it is unlikely that a coherent stew-

ardship program will be created otherwise. Second, clear mechanisms of external accountability are essential. Third, only some kind of legislative driver can ensure that the required financial resources are dedicated to stewardship functions. Indeed, absent substantive legislation, we can almost be certain that whatever mission or organizational structure is created for stewardship will not endure and will not be successful.

Precedents exist for creating a regulatory structure for what is often referred to as post-closure care. The need to create a program to protect human health and the environment from long-lasting hazards is not unique to DOE sites and facilities. A number of federal regulatory programs already contain elements of stewardship. These include provisions for post-closure care at hazardous waste land disposal facilities under the Resource Conservation and Recovery Act and decommissioned commercial nuclear power plants under the Atomic Energy Act.

Typically, the stewardship functions (although they are not referred to as such) consist of requirements to ensure protection after a facility has ceased operation or after remediation at a site is completed.

In terms of opportunity, the Superfund reauthorization debate may well provide a good one for creating a legislative stewardship mandate. After all, stewardship activities will be required at many Superfund sites and at facilities under the purview of other federal agencies, such as the departments of defense, agriculture, and interior.

The most appropriate policy response may be to create a national stewardship mandate for all contaminated sites under the Superfund framework. One of the most politically charged issues in the reauthorization debate has been the role of land use in selecting site cleanups and the use, and enforcement, of institutional controls. Almost all of the Superfund bills introduced in this Congress include some kind of language addressing these issues. Moreover, because the largest and most expensive DOE sites are on the EPA National Priorities List, they would be subject to Superfund requirements should the act be reauthorized.

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