

Final Draft
Annotated Outline and Gap Analysis for Long-term
Stewardship at Brookhaven National Laboratory

May 15, 2002



Prepared for

DOE-CH Long-term Stewardship Pilot Project
Planning Critical Elements of the Transition to Long-term Stewardship
at Chicago Operations Facilities

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Table of Contents

Section	Page
1.0 Introduction	3
1.1 Background	3
1.2 Purpose	4
2.0 The Expected Transition Process	4
3.0 Resources and Schedule for Transition	6
4.0 Structure of the Proposed Baseline	7
5.0 Proposed Organizational Framework	8
6.0 The Requirements of LTS not Captured in the EM Baseline nor in Existing Laboratory Responsibilities	10
7.0 Annotated Outline	10
Attachment A – Annotated Outline of the LTS Plan	11
Attachment B – Comments on the Draft DOE LTS Plan Guidance	26

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DOE-CH Long-term Stewardship Pilot Project

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1.0 Introduction

1.1 Background

Highlights

- Recommend forming a transition team. Start transition planning in July 2003.
- The LTS Planning is estimated to take 2 years and require about \$250K in resources.
- LTS Plan could be organized functionally rather than by waste site.
- An LTS Plan outline was developed that is site-specific and graded according to guidance.
- A prioritized list of un-funded LTS scope is presented.
- The DOE guidance was found to be useful and flexible. However, several comments on the guidance were developed.
- Additional LTS Plan detail cannot be generated until the actual transition is closer in time and some outstanding issues are resolved.

The Department of Energy's Office of Environmental Management (EM) soon will complete its current clean-up mission at Brookhaven National Laboratory. Based on the approved EM baseline, it could be finished by FY 2006 or sooner. However, uncertainties in funding could extend the final date by up to five years. Once the mission is complete, EM would like to turn over responsibility for managing the site (long-term stewardship, or LTS) to the Program Secretarial Office (PSO) responsible for the site.

The Department of Energy's policy is that transfer of LTS responsibilities can occur only after the site's landlord (for Brookhaven it is the Office of Science, SC) and the EM agree that the EM's mission at the site is completed, and that technical planning has established an LTS operating baseline, describing the scope and operating costs for future LTS work. The policy also requires that budgetary authority and its target have been transferred to the receiving PSO for the amount equivalent to the operating costs for LTS activities. When all parties have agreed, a formal transfer agreement for LTS is developed and signed for each site. The intent of the DOE's policy was to allow sufficient flexibility so that portions of a site could be transferred. For example, the involved program offices could agree to transfer a portion of the

site, say the operations and maintenance (O&M) responsibilities, once all groundwater remedial actions were completed, followed by a facility-by-facility transfer of decommissioned radiological facilities.

1.2 Purpose

This document describes a basis and a proposed outline for a Long-term Stewardship Plan (LTS Plan) for Brookhaven National Laboratory (The Laboratory). This outline uses a graded approach to the prevailing draft DOE guidance (April 17, 2001). This plan will incorporate the site-specific elements required to support the transition of responsibilities to landlord programs.

This plan will communicate the necessary information to future stewards and provide the basis for planning the budget. Specifically, it is intended to

- Facilitate the formulation of a baseline scope, schedule, and cost for LTS
- Provide a mechanism for demonstrating the DOE's accountability to the public by clearly setting out the defined end-states, maintenance requirements, performance metrics, and monitoring and contingency plans.
- Integrate and coordinate under one "umbrella" all required post-cleanup work.

In addition to preparing the outline, the DOE's guidance itself was reviewed. A gap analysis evaluated the existing planning documents and management systems, and compared them against the requirements from the annotated outline. A preliminary estimate was made of the effort required to prepare the LTS Plan.

The proposals discussed in this document have not been accepted or rejected by senior site management; rather, they represent an approach for their consideration. EM and SC must first resolve several fundamental issues, before the site management will commit to LTS planning decisions.

2.0 The Expected Transition Process

Transferring the responsibility for LTS from EM to SC and the site landlord is an important process. Because of the many activities that must be undertaken and issues that must be negotiated to make such a transfer effectively, this work will take considerable time, perhaps more than the two years suggested in the LTS guide. The Laboratory has some firsthand experience in transferring responsibilities from EM to SC (i.e., the responsibility for waste management). The December 2000 DOE Policy to transition LTS to the site, discussions with ANL and the DOE-CH, and lessons learned from the waste management transfer were used to create a framework for the transition.

Clearly, several significant issues first must be resolved. However, there are some issues and concerns that may affect the initiation of the transfer. They are outlined below.

The need for more high-level communication/direction: The Brookhaven Team spent considerable time early in the pilot project to engage the attention of senior management on the issue of the LTS transfer and the purpose of the pilot program. Most information that BNL senior management is receiving on the LTS initiative is through this pilot study. They were advised that active planning for the transition, and identification of its needs, must begin in July 2003 to accomplish the transfer by July 2005. Presently, planning the LTS transition is a secondary issue because the process is not expected to start until July 2003. More high-level communication, direction, and clarification from the DOE on the issue of the LTS transfer issue could ensure significant progress in the transition negotiations.

Direction on sufficient and sustainable funding to support the LTS responsibility: The Brookhaven Team believes that funding is the single greatest impediment to initiating the transition. The site is anxious to resolve the funding issue. Although the Glauthier memo of December 2000 provided useful guidelines, recent reorganizations within the DOE, budget issues, and world events necessitates confirmation or an update from the DOE on the funding concepts.

Resources for developing an LTS Plan and for transitioning: By participating in the pilot study, the Brookhaven Team realized that a major effort would be entailed in developing the plan and in transitioning activities. This likely will require additional resources.

Timing and agreement with the Office of Science: Only one party appears interested and willing to develop an agreement to transfer the LTS responsibility to the landlord; The EM favorably disposed; the SC is not so inclined. Without these parties having a real driver and commitment to reach an agreement, a great deal of effort could go into planning the transition, with the transfer never happening or being delayed beyond the proposed date (July 2005).

The following list the tasks that must be done during the transition period.

1. Identify an Site Steward to act as a central point-of-contact for technical activities and program management of LTS responsibilities. Establish transition team.
2. Identify which Brookhaven management system will own LTS (i.e., EMS??)
3. Develop a schedule for the transition, and identify the resources needed for it so that the site can support the process
4. Develop an organizational/staffing plan
5. Fill gaps in the developing plan (e.g., plans for community participation, information management, and a records repository)
6. Consider issues requiring resolution Support negotiations and discussions between EM and SC. The key unresolved issues include
 - Funding (overhead vs. dedicated funding)
 - Criteria for transfer from EM to landlord
 - Accommodating future contaminated excess facilities
 - Timing and scope of transfer
 - Future liabilities
 - Out year costs
 - Failure of remedies
 - New Requirements
 - New discovery of legacy contamination
7. Finalize an MOA between the EM and the SC Document the resolutions to the above issues
8. Formalize agreements for the EM to conduct certain LTS work based on PSO's request. Formally document any LTS scope for which EM will be responsible
9. Prepare an LTS plan for the EM's approval
10. Prepare an LTS baseline, define/update its scope, schedule, and resources
11. Transfer budgetary authority and target from the EM
12. Incorporate the LTS plan into the site's PBS

The Site will need direction on when to shift from Total Project Cost management in the EM Baseline to deferring any newly identified LTS scope and cost to a future LTS Baseline. For

example, when does the site cease submitting EM Baseline Change Proposals to capture LTS activities in the out years? LTS work is currently managed as part of the Total Project Cost.

3.0 Resources and Schedule for Transition

The DOE's LTS Planning guide suggests that it will take two years to transfer LTS responsibilities from the EM to SC and into the site's PBS. This estimate is consistent with Brookhaven's experience with transitioning the responsibility for waste management responsibility and preparing the EM baseline.

The following is a high-level schedule of the transition activities listed above. It was calibrated against The Laboratory's experience with conveying waste management responsibility. The local resources required to support the transfer are difficult to estimate as The Laboratory has no direct experience in an LTS transfer and some complex issues remain unresolved.

Several significant assumptions must be made in developing a planning schedule. It is most important that the outstanding issues are settled quickly and predictably.

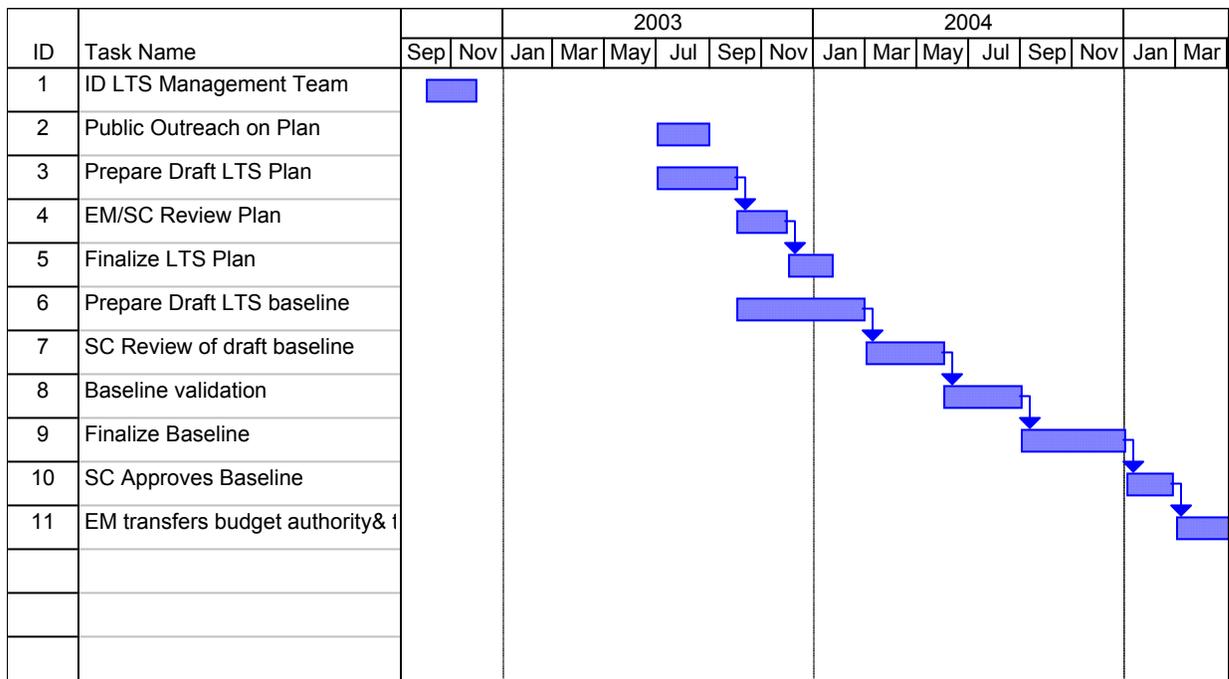


Figure 1. Draft LTS Transition Schedule

Table 1 summarizes our preliminary estimate of the resources required to complete these tasks.

Table 1.

Task	Site Resources (labor hrs)
<i>ID LTS Management Team</i>	40
<i>Public Outreach on Plan</i>	120
<i>Prepare Draft Plan</i>	320
<i>EM/SC Plan Review</i>	40
<i>Finalize LTS Plan</i>	100
<i>Prepare Draft LTS Baseline</i>	800
<i>SC Reviews Draft Baseline</i>	160
<i>Baseline Validation</i>	80
<i>Finalize Baseline</i>	640
<i>SC Approves Baseline</i>	100
<i>EM Transfers Budget Authority and Target</i>	120
TOTAL	2520

Assuming a crude labor rate of \$100/hour, this transition process will cost about \$250,000; this preliminary estimate does not include expenses and materiel.

4.0 Structure of the Proposed Baseline

This section of the plan will be organized to satisfy the responsibility of EM and the PSO to develop an “LTS Baseline” before the transfer, consistent with the DOE’s Policy on Long-term Stewardship Transition to Site Landlord, Dec 15, 2000. LTS responsibilities currently are captured in the EM Baseline for the site. Two organizational options were considered: (1) the existing EM WBS structure that is organized by Operable Unit and project; and, (2) a new structure that organizes LTS WBS by function. The value of the first option is known, but that of the second option is not; therefore, its pros and cons were evaluated in the context of the Pilot program.

The scope for the LTS Baseline will be developed from the EM baseline with revisions based on reviewing LTS requirements. The WBS for these activities probably will be redefined. For example, the EM Baseline is structured around Operable Units, whereas the WBS for the LTS baseline probably will be configured by activity. The LTS work could be re-compiled into the following work packages

- Function of Site Steward,
- Operations and maintenance of groundwater-treatment systems,
- Groundwater restoration management,
- Landfill maintenance
- Maintenance of the Peconic River,
- Monitoring of landfills and the Peconic River,
- Management of information.

- Outreach to Community,
- Management of land use/institutional control,
- Surveillance & Monitoring of the reactors.

One benefit of this structural approach is that the WBSs are aligned with Brookhaven's existing systems and organizations. For example, it is envisioned that the Plant Engineering Division (EP) of BNL would be responsible for operating and maintaining the groundwater treatment systems. They then would be responsible for WBS #2, with funding from the Site Steward. Under the EM baseline structure, EP would be responsible for fractions of several WBSs. Reorganizing a baseline into a new format initially will take an investment in resources, but it may streamline the management of the program and better clarify roles and responsibilities.

5.0 Proposed Organizational Framework

The point-of-contact for the LTS will be responsible for the Site Steward's functions. These functions essentially will be as a program manager, a spokesperson, and a keeper of institutional knowledge. The following are some responsibilities of the Site Steward

- Manage the Program
- Participate in Senior Management Review
- Prepare Five -Year Review
- Facilitate achievement of cleanup goals
- Facilitate delisting site from National Priority List
- Procure internal & external services
- Coordinate with community involvement (CEGPA)
- Conduct self-assessment and EMS reviews
- Maintain a central repository of archive records

There are five options about which organization the Site Steward would belong to, and what management level would be appropriate for that function. **Figure 2** summarizes them. Some Brookhaven Team members suggested an option where the existing site Environmental Management Directorate redefines its mission to include supporting the Office of Science with LTS. This option could preserve institutional knowledge and could result in less local transition issues needing resolution. No site consensus was gained on this issue during this pilot project.

DRAFT - FOR COMMENT
 Options for LTS Steward Home
 April 24, 2002

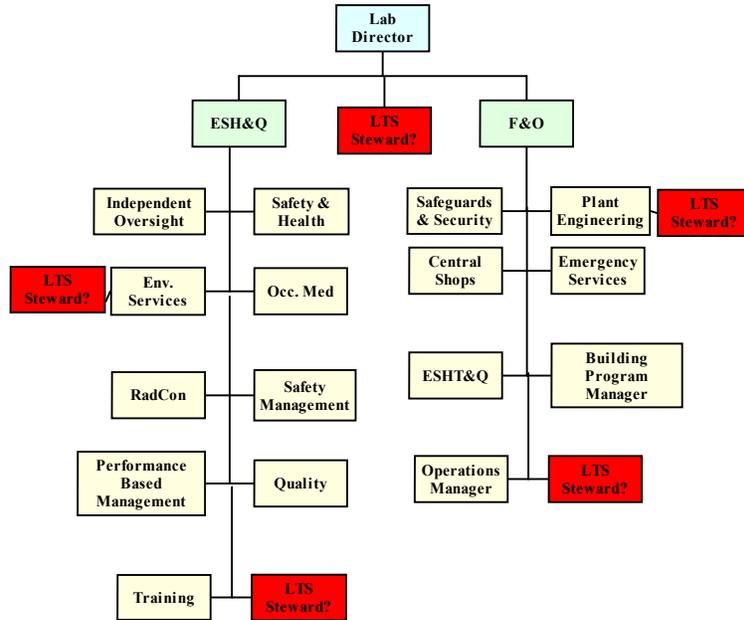


Figure 2. Reporting Options for the Site Steward.

The actual tasks of stewardship will be undertaken by existing Brookhaven organizations and outside contractors, as necessary. The following table outlines the major responsibilities by division.

LTS Roles & Responsibilities

<i>Environmental Services Division</i>	<i>Plant Engineering Division</i>	<i>CEGPA</i>	<i>Radiological Control Division</i>
Groundwater Remediation Management	O&M of groundwater treatment systems	Community Outreach	Reactor Surveillance & Monitoring
Landfill & Peconic River Monitoring	Landfill maintenance		
Information Management	Peconic River Maintenance		
	LU/IC Management		

This table does not include activities that support stewardship (e.g., waste management, training, work control, records management, and environmental management systems).

6.0 The Requirements of LTS not Captured in the EM baseline nor in Existing Laboratory Responsibilities

This LTS Pilot Study identified a number of potential needs for a successful LTS program at Brookhaven. Some of them are obvious omissions from the required scope of work while some are desirable activities that would enhance the core programs. Because these requirements currently are not funded, they were prioritized. Those listed below are in order of descending priority, in the study team's judgment. This list will help in developing the LTS baseline and plan. Funding will be sought based upon their priority.

1. O&M for the three landfills
2. Forthcoming LTS requirements for the BGRR
3. Forthcoming LTS requirements for the Peconic River
4. Development of the LTS Plan and Baseline, and support of the negotiations between the EM and landlord
5. LTS Communication Plan and implementation of Outreach Activities
6. Information Management Plan
7. Five-year updates of LTS Plan/Baseline; in-house value engineering to seek better efficiencies from technology, organizational work, and value-added activities
8. Consolidation and transfer of duplicative records to centralized location
9. Review & update of SBMS (EM procedures that need to be applied to Laboratory-wide)
10. LU/IC Management System
11. Development of Environmental Process Assessments for EM facilities

7.0 Annotated Outline

The DOE's planning guidance for LTS allows flexibility in designing the LTS Plan. Because Brookhaven may integrate LTS responsibilities into existing programs according to their scope rather than location, the LTS plan will be organized functionally, rather geographically.

This plan is a means for organizing existing data to formulate a baseline for communication to future stewards, and to provide a basis for budgeting.

This section describes the probable content of the LTS plan; the actual content will be decided upon after discussions between the EM and SC. **Attachment A** contains the outline.

Attachment A

Annotated Outline of the LTS Plan

Table of Contents

Annotated Outline of the LTS Plan

Section

- 1.0 Introduction
- 2.0 Purpose and Scope
- 3.0 Site Description and Uncertainties
 - 3.1 Site History
 - 3.2 Legal Description of Site
 - 3.3 Regulatory Framework
 - 3.4 Physical and Baseline Conditions
 - 3.5 End-state Objective
 - 3.6 Remedial Actions
 - 3.7 Assumptions and Uncertainty Management
 - 3.8 Site Conceptual Model
 - 3.9 Relationship to Other Site Documents
- 4.0 Outline of LTS Activities (Baseline Summary)
 - WBS-1 Site Steward
 - WBS-2 Groundwater Treatment O&M
 - WBS-3 Groundwater Remediation Management
 - WBS-4 Landfill Maintenance
 - WBS-5 Peconic River Maintenance
 - WBS-6 Landfill and Peconic River Monitoring
 - WBS-7 Information Management
 - WBS-8 Community Outreach
 - WBS-9 Land Use/Institutional Control Management
 - WBS-10 Reactor Surveillance and Monitoring
- 5.0 Cost Estimating, Funding, and Financial Management
- 6.0 Roles and Responsibilities
- 7.0 Checking and Corrective Action
- 8.0 The Community's Role

1.0 Introduction

This section will describe Brookhaven's mission, cleanup plans, and LTS work. Established in 1947, Brookhaven is a multi-program National Laboratory operated by Brookhaven Science Associates for the U.S. Department of Energy (DOE). [Four Nobel Prizes](#) have been awarded for discoveries made at The Laboratory.

Staff

3,000 scientists, engineers, technicians, and support staff; over 4,000 guest researchers annually.

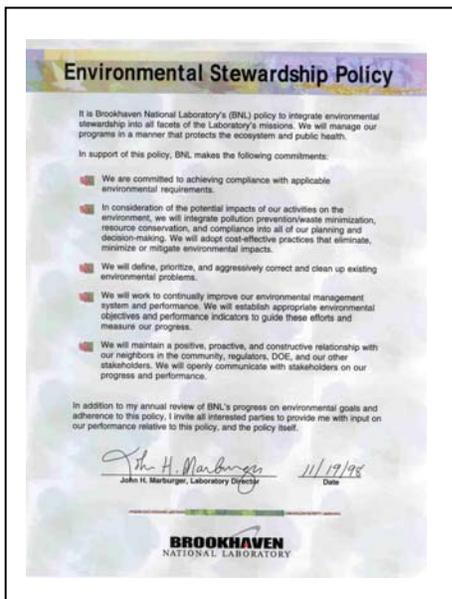
Location

On Long Island, Upton, New York. [See a map](#) (PDF) of where we are.

Mission

The Department of Energy's Brookhaven National Laboratory conducts research in the physical-, biomedical-, and environmental-sciences, as well as in energy technologies. Brookhaven also builds and operates major facilities that are available to university-, industrial-, and government-scientists. The Laboratory's broad mission is to generate excellent science in a safe, environmentally sound manner with the cooperation, support, and appropriate involvement of its many communities. Brookhaven supports the DOE's strategic missions in carrying out basic and applied research in long-term programs at the frontiers of science.

2.0 PURPOSE & SCOPE



This plan will communicate necessary information to future stewards and provide the basis for planning the budget. Specifically, this plan is intended to

- Facilitate the development of a baseline scope, schedule, and cost for LTS
- Provide a mechanism for demonstrating the DOE's accountability to the public by clearly communicating the defined end-states, maintenance requirements, performance metrics, and monitoring- and contingency-plans.
- Integrate and coordinate under one "umbrella" all required post-cleanup work.

In 1997, Brookhaven implemented a single, integrated Environmental Stewardship Policy that embodies the principles of LTS. The Laboratory's commitments in this policy are Pollution Prevention, Compliance, Clean Up, Community Outreach, and Continual Improvement. This policy was communicated widely to employees, visiting scientists, regulators, and community members. The ISO 14001 registration certificate attests to fact that each employee knows the policy's commitments, knows their role in achieving those commitments, and does their part in fulfilling them

The scope of the LTS program is those activities necessary to protect public health and the environment from residual contamination at completed environmental restoration sites. They are generally summarized in **Table 1 and Table 2** (scope matrix).

Table 1. Brookhaven's LTS Work

- Operations, maintenance, and monitoring of 17 groundwater- treatment systems (with a combined treatment capacity of approximately 4500 gallons per minute, and approximately 650 groundwater monitoring wells)
- Maintenance & monitoring of three landfills,
- Land use and institutional controls of restricted cleanup areas (e.g., STP, former hazardous waste management facility),
- Surveillance and monitoring of the Brookhaven Graphite Research Reactor, the High Flux Beam Reactor, and the Peconic River.
- Records management, reporting
- Regulator/stakeholder participation & communication.

The LTS Baseline's scope will be developed from the EM baseline, with revisions added after reviewing LTS requirements. The WBS for these activities probably will be redefined. For example, the EM Baseline is built around Operable Units; the WBS for the LTS baseline probably will be structured by activity. Some potential organizational structures are

- Site Steward function
- Operations and maintenance of groundwater treatment systems,
- Groundwater management,
- Landfill maintenance

- Peconic River maintenance
- Landfill and Peconic River Monitoring
- Information management
- Community outreach
- Land Use/Institutional Control Management
- Reactor Surveillance & Monitoring

This plan will apply to all LTS activities at Brookhaven, both on-site and off-site. For defining the applicability of this plan, these areas will include The Laboratory's on-site property and the off-site areas delimited by the DOE-funded public-water extension south of the Laboratory and segments of the Peconic River.

3.0 Site Description and Uncertainties

3.1 Site History - Currently there is no concise history about the clean up of the site. This will be compiled from existing CEGPA documentation. Links will be established to Brookhaven's web pages whenever possible (i.e., the HFBR, BGRR). Brookhaven's Area of Concern Reference Handbook (June 1998) also will be updated and cited. This section also will link The Laboratory's Environment web page to a site Waste-status map and those showing existing and future land uses for the site.

Table 2
BNL Waste Sites Requiring LTS
Groundwater Program

OU	Site	Residual Contamination	Remedial Activities	LU/IC	Inspection/ Main.	Operation	Monitoring	Compliance Reporting
OU I	RA V	VOCs and low level radonuclides in groundwater	Pump & treat, air stripper, 700 gpm	X	X	X	X	X
OU III	South Boundary	VOCs in groundwater	Pump & treat, air stripper, 600 gpm	X	X	X	X	X
OU III	Middle Road	VOCs in groundwater	Pump & treat, air stripper, 600 gpm	X	X	X	X	X
OU III	HFBR	Tritium in groundwater	Natural attenuation with monitoring, groundwater re-circulation system in standby	X	X	X	X	X
OU III	Bldg. 96	VOCs in groundwater	Inwell stripping system, air stripper	X	X	X	X	X
OU III	Carbon tet	VOCs in groundwater	Pump & treat, carbon, 100 gpm	X	X	X	X	X
OU III	Western S. Boundary	VOCs in groundwater	Pump & treat, air stripper, 200 gpm	X	X	X	X	X
OU III	Industrial Park	VOCs in groundwater	Inwell stripping system, air stripper, VGAC	X	X	X	X	X
OU III	Chem Holes	Sr-90 and VOCs in groundwater	Pump & Treat, ion exchange	X	X	X	X	X
OU III	BGRR/WC F	Radionuclides in groundwater	Pump & Treat, ion exchange	X	X	X	X	X
OU III	LIPA	VOCs in groundwater	Pump & treat, LGAC/VGAC	X	X	X	X	X
OU III	North Street	VOCs and low level tritium in groundwater	Pump & treat, LGAC/VGAC	X	X	X	X	X
OU III	Airport	VOCs in groundwater	Pump & treat, LGAC/VGAC	X	X	X	X	X
OU III	North St. East	VOCs and low level tritium in groundwater	Pump & treat, LGAC/VGAC	X	X	X	X	X
OU III	Industrial Park East	VOCs in groundwater	Pump & treat, LGAC/VGAC	X	X	X	X	X
OU IV	Central Steam Plant	VOCs in groundwater	AS/SVE	X	X	X	X	X
OU V	STP plume	VOCs and low level tritium in groundwater	Natural attenuation with monitoring	X		X		X
OU VI	EDB	EDB		X	X	X	X	X

	Sitewide Groundwater Monitoring	VOCs and radionuclides in groundwater, water levels	Sitewide groundwater monitoring, information management, reporting		X		X	X
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**BNL Waste Sites Requiring LTS
 Soil Program**

Operable Unit	Site	Residual Contamination	Remedial Activities	LU/IC	Inspection/ Main.	Operation	Monitoring
OU I	Former HWMF	Cs-137; sr-90; heavy metals	Excavation, offsite disposal (pending); cleanup to industrial stds.	X	X		X
OU I	Reclamation Facility & sump outfall	Radionuclides	Excavation, offsite disposal (in progress)	X	X		X
OU I	Storm recharge basin	Heavy metals		X			
OU I	Upland Recharge/Meadow marsh	Heavy metals	Excavation, offsite disposal	X	X		X
OU I	Ash pit	Heavy metals; radionuclides	Cap; Monitoring & maintenance	X	X		X
OU I	Former & Interim Landfill	Heavy metals; radionuclides; VOCs	Cap; Monitoring & maintenance	X	X		X
OU I	Current Landfill	Heavy metals; radionuclides; VOCs	Cap; Monitoring & maintenance	X	X		X
OU I	Chemical Holes	Heavy metals; radionuclides	Excavation, offsite disposal	X			
OU II/VII	Waste Concentration Facility	Heavy metals; radionuclides	Tank removal; soil excavation, offsite disposal	X			
OU II/VII	Lawns & Landscape soils	Radionuclides	Excavation, offsite disposal	X			
OU II/VII	AGS Storage yards	Radionuclides	Monitoring & maintenance	X	X		
OU II/VII	BLIP	Radionuclides	Cap, source stabilization with VLB	X	X		X
OU IV	Central Steam Facility	Petroleum; metals	Air Sparging/soil vapor extraction	X			X

**BNL Waste Sites Requiring LTS
 Reactor Program**

Reactor	Site	Residual Contamination	Remedial Activities	LU/IC	Inspection/ Main.	Operation	Monitoring	Estimated Completion Date	Compliance Reporting
BGRR				X	TBD	TBD	TBD	TBD	TBD
	Fan & Fan House	Radionuclides	Removed fans for offsite disposal, limited decontamination						
	Pile fan Sump	Radionuclides	Removed structure, excavated soil to background levels, offsite disposal						
	Above Ground Ducts	Radionuclides	Removed ducts for offsite disposal						
	Fuel Canal/WT House	Radionuclides	pending						
	Below Ground Ducts	Radionuclides	pending						
	Reactor Pile & Building	Radionuclides	pending						
	Soils	Radionuclides	pending						
HFBR			TBD						
BMRR			TBD						

Note: Surveillance, maintenance, and monitoring requirements for BGRR will be identified at the completion of the remedial/removal activities (TBD)

3.2 Legal Description of Site – The Site Description in the IAG will be used to describe the site. This will be supplemented with the legal description of the site.

3.3 Regulatory Framework- At Brookhaven, all of the EM cleanup work is being performed under the CERCLA regulatory framework, specifically a Federal Facility Agreement under CERCLA section 120 (also called the Interagency Agreement [IAG]). While this process is complex, it is unified and addresses many elements necessary for LTS.

In addition to the CERCLA requirements, the DOE orders and state and local regulations apply. This will be summarized in a table. Some EMS requirements also may be applicable. The foundation for this table will be the "[Major Statutes, Regulations, and Executive Orders for Long-term Stewardship at DOE Sites](#), and [DOE Orders and Policies that are relevant to the LTS statutes, regulations, and executive orders](#), available on the DOE's EM website. This table will be updated with the EMS requirements of Brookhaven, the state, county, and town.

3.4 Physical and Baseline Conditions- Reference will be made to a description of the site environment in the Annual Site Environmental Report. The DOE's guidance in this area is quite prescriptive. Much of the information required is available but not compiled. A post-cleanup conceptual model has not been developed. The following is Brookhaven's proposed alternative based on site-specific conditions and community interest.

The presumed future mission of the laboratory and future land use planning assumptions will be summarized as a basis of the cleanup decisions and the end-state objectives. This will be based on BNL Future Land Use Plan and Institutional Plan.

Four categories of waste sites are expected to be transferred from EM to the site landlord by July 2005. The sites or projects within each category have similar remedial objectives and LTS requirements. Each waste site within each category will be described briefly. The waste site categories will be

- Remedy-in-place-Operations, Maintenance, and Monitoring
These sites include landfill maintenance and monitoring, groundwater-treatment systems operation and monitoring, and maintenance and monitoring of the Peconic River.
- Remediation Complete-Free Release/Unrestricted Use
The scope of LTS work for these sites is envisioned as including archiving and maintenance of records of closure, and agency documentation agreeing to completeness. An example is the Landscape Soils Remediation project where soils were remediated to a residential-land-use risk scenario.
- Active Remediation Complete-No Further Action
These projects meet cleanup criteria defined for the project, but do not support free release or unrestricted use. For example, the former Hazardous Waste Management Facility will be restored to an industrial-land-use risk scenario and will likely require institutional controls, surveillance, and monitoring.
- Radiological Facilities with D&D Complete for Restricted Use
These projects meet cleanup criteria defined for the project, but do not support free release or unrestricted use. For example, the Brookhaven Graphite Research Reactor will be

decontaminated to an industrial-land-use risk scenario and will require institutional controls, surveillance, and monitoring.

In preparing the Plan, we will focus on those sites that will be transferred to SC by July 2005. It also would be useful to compile a list of documents for each project/site defining the cleanup project, the site-specific remedial decision- process, risks, and LTS requirements.

The residual risk and liability associated with each site/project being transferred will be stated. It must be verified that the existing documentation suitably summarizes information about these sites, including their location, size, type of past and present operations, environmental restoration actions completed, regulatory status, and the nature of known or suspected contamination. The type and magnitude of waste materials, contaminated media, or radiological contamination within structures needs to be ascertained. From this documentation, a summary statement will be prepared on the potential consequences of this residual contamination and included in the LTS Plan to assist in prioritizing efforts.

To assist in planning and revising future LTS Plan revisions, non-EM sites awaiting D&D or remediation also should be listed. At Brookhaven, it would include the High Flux Beam Reactor (HFBR), and the Brookhaven Medical Research Reactor (BMRR).

3.5 End State Objective- This section will summarize the state of the waste site at the time of transfer (i.e., operational groundwater-treatment system requiring 15 years of operation, restrictions on the use of groundwater). It also will include the end-state objectives (e.g., unrestricted use, or restricted use suitable for industrial purposes).

3.6 Remedial Actions- A table will be prepared summarizing the documents for the remedial designs, remedial action work plans, as-built drawings, and closeout reports, as applicable, on a project specific basis.

The summaries provided in the Brookhaven Area of Concern Reference Handbook (June 1998) will be updated and referenced in this section.

3.7 Records Disposition- Describe how to compile best available project documents and considerations in converting key documents into electronic format. Develop a permanent; redundant records “reading room” for records of key decisions and end-states. This will also describe how the “reading room” will be developed and maintained.

3.8 Assumptions and Uncertainty Management- The Laboratory has several contingency plans to detect and manage changing site conditions. The role of the Groundwater Protection Contingency Plan, the Environmental Incident Procedure, and the Land Use Controls Management Plan will be discussed. This section also will include the cost contingency language in the EM Baseline. Key cost/risk issues include the treatment of the Magothy aquifer, the duration of groundwater treatment required to meet objectives, and access to off-site property.

Adequate funding for LTS activities also is a major uncertainty. While monies can be requested, but there is no guarantee that they will be granted. This point will be made in the plan.

3.9 Site Conceptual Model- A Site Conceptual Exposure Model (SCEM) will be outlined to summarize potential pathways and receptors of contamination should the layers of engineered and operational controls fail. Separate models will be developed for general classifications of waste sites and remediation goals. The SCEM Builder computer application could be used in preparing

these models. This is a user-friendly application developed by the DOE's Office of Environmental Policy and Guidance (EH-413).

3.10 Relationship to Other Site Documents- This section will briefly describe the relationship of the LTS Plan to other sites' management documents, including the LTS Baseline, Subject Based Management System, the Future Land Use Plan, the site Institutional Plan, the Site Environmental Monitoring Plan, and the Site Environmental Report.

4.0 Outline of LTS Activities (Baseline Summary)

This section of the plan will be formatted to satisfy the responsibility of EM and the PSO to develop an "LTS Baseline" before transfer, consistent with the DOE's Policy on Long-term Stewardship Transition to Site Landlord, Dec 15, 2000. The EM Baseline currently captures the site's LTS responsibilities. This work is managed via the Total Project Cost (TPC) approach. The LTS work could be re-compiled by function into the following work packages.

WBS 1. Site Steward

Activities:

- Act as Point-of-Contact
- Manage the Program
- Participate in Senior Management Review
- Prepare Five-Year Review
- Facilitate/coordinate achievement of clean-up goals
- Facilitate de-listing site from NPL
- Procure internal & external services
- Coordinate with the CEGPA
- Conduct Self-assessment and EMS reviews

These technical- and program management activities currently are included in the EM Baseline. They need to be reviewed in light of the latest LTS guidance and the outcome of negotiations between EM and SC.

WBS 2. Operations and maintenance of groundwater treatment systems

Activities:

- Act as System Operator
- Carry out maintenance
- Undertake repairs
- Maintain utilities

- Employ engineering to modify systems, as necessary

The EM Baseline presently captures this technical and program management work.

WBS #3 Groundwater remediation management

Activities

- Undertake monitoring
- Review technology
- Plan and justify modifications to systems/technologies
- Maintain system optimization
- Demonstration/documentation shut-down
- Prepare annual technical report
- Prepare quarterly status report
- Coordinate and report on compliance

These technical and program management activities currently are captured in the EM Baseline. They should be reviewed in light of the latest LTS guidance and the outcome of negotiations between EM and SC.

WBS #4 Landfill maintenance

Activities

- Perform mowing
- Repair any erosion to the cover
- Maintain passive landfill gas-vents and access roads

WBS #5 Peconic River maintenance

The work will be determined based upon the pending Record of Decision. One activity may include the physical removal of invasive species in revegetated areas.

WBS #6 Landfill and Peconic River Monitoring

Activities

- Maintain monitoring plans
- Prepare reports
- Inspect landfills
- Monitor landfill gases

- Sample surface waters and sediments

WBS #7 Information management

- Maintain the Environmental Information Management System database
- Maintain the web-based information applications
- Maintain the geographical information systems

WBS #8 Community outreach

- Maintain the communication plan
- Facilitate the CAC and BER
- Generate periodic newsletters or other communication tools
- Maintain the Administrative Record

WBS #9 Land Use/Institutional Control Management

- Maintain the Land Use Controls Management Plan
- Maintain the Land Use/Institutional Control Information and mapping system
- Inspect and report on controls
- Assist with any property transfers

WBS #10 Reactor Surveillance & Monitoring

- Maintain and inspect engineering controls containing residual contamination
- Monitor to detect any failure in engineered- or operational-controls.

5.0 Cost Estimating, Funding, and Financial Management

This section will describe the fundamental assumptions used in developing a cost- estimate, the level and source of funding, and the organizational framework of financial management.

6.0 Roles and Responsibilities

This section will identify the team of decision makers for LTS by organization. The following organizational framework will be discussed and details on roles and responsibilities will be developed. The role of The Site Steward will be defined as well as its line of reporting within the Brookhaven organization.

<i>Environmental Services Division</i>	<i>Plant Engineering Division</i>	<i>CEGPA</i>	<i>Radiological Control Division</i>
Groundwater Remediation Management	O&M of groundwater treatment systems	Community Outreach	Reactor Surveillance & Monitoring
Landfill & Peconic River Monitoring	Landfill maintenance		
Information Management	Peconic River Maintenance		
	LU/IC Management		

7.0 Checking and Corrective Action

One key to successful stewardship is to have oversight (a “watchdog”) of the organization responsible for stewardship and its activities. Brookhaven plans to use several overlapping oversight elements to ensure the continuation of proper LTS. This section will describe the roles and responsibilities of

DOE-BAO

Ultimately, the elements of Brookhaven’s LTS Plan will become part of all relevant site-management initiatives and planning. A framework of LTS related critical outcomes, objectives, and performance measures (CO/O/PM) could be incorporated into the evaluation system for Site Operations’ contract performance. CO/O/PM is a valuable management tool to measure progress on LTS planning and performance in achieving its goals.

The DOE-BAO administers this contract.

IAG and the five –year review process

CERCLA requires a five-year review with the overall purpose of assessing whether the remedies at a site protect human health and the environment. When a site has on-going remedial actions, this review confirms that immediate threats have been addressed, and that the completed remedy will be protective. The main purpose of the five-year review is not to reconsider decisions made when selecting the remedy, but to evaluate its implementation and performance. However, in some cases, a five-year review may recommend that the remedy be re-evaluated, or that an additional response be considered. To do this, the technical assessment conducted as part of the five-year review examines the three basic questions shown below:

- Is the remedy functioning as intended by the decision documents?
- Are the assumptions made at the time when the remedy was selected still valid?
- Has any other information come to light that could question the protectiveness of the remedy?

Most five-year reviews encompass examination of documents, interviews, and a site inspection. Many also consider newly promulgated standards, and changes in the standards that were identified as applicable, or relevant and appropriate requirements at the time of the ROD; this may include the factors used to develop site-specific, risk-based levels. This information is reviewed to determine if any changes occurred since the ROD that challenges the remedy's value. Some reviews also re-calculate risk or the risk assessment, when necessary, to determine whether a remedy guards human health and the environment. When applicable, monitoring and the documentation of O&M also are examined.

Brookhaven's Environmental Management System

A central element of Brookhaven's EMS is a formal process of checking and taking corrective action. The Laboratory will employ these same processes to manage its LTS responsibilities.

Brookhaven has formal programs to identify and investigate nonconforming items and processes that potentially might impact the environment, and take action to correct and prevent them from recurring. These programs are implemented with a graded approach, with more serious incidents requiring more formal responses. The program requirements are documented in the following Laboratory-wide procedures (subject areas):

- [Emergency Preparedness](#)
- [Groundwater Protection Contingency Plan](#)
- [Spill Response](#)
- [Investigation of Incidents, Accidents, and Injuries](#)
- [Critique](#)
- [Nonconformance and Corrective and Preventive Action](#)
- [Occurrence Reporting and Processing System \(ORPS\)](#)
- [Lessons Learned](#)
- [Corrective Action Management and Tracking for Internal and External Assessments](#).

The Integrated Assessment Program provides a framework to support continual improvement in environmental strategic objectives. Departments and divisions generate and evaluate information on scientific, technical, Environmental Safety & Health programs, quality, community involvement, business, and operational performance, and provide the information to Brookhaven's management, staff, neighbors, regulators, and the DOE. The environmental parameters of this program achieve the following:

- provide accurate information on environmental performance to promote the early identification and resolution of problems that may affect The Laboratory's ability to achieve its strategic objectives;
- verify and address the public's expectations to improve the environmental aspects associated with operations and research; and

- verify conformance to established internal- and external-regulatory requirements.

The Laboratory's EMS system requirement for Management Review offers a forum for senior management to assess the adequacy, suitability, and effectiveness of the EMS Program and its key elements, including those that were expanded to incorporate LTS requirements. During their review, senior managers identify and authorize action items and opportunities for improvement that will be pursued in the following year. This process is customized to the organizations' operations. Thereby, it encompasses the CERCLA evaluation criteria, as well as the LTS criteria for the organization(s) with LTS responsibilities & operations, such as the performance of a remedial system and opportunities to optimize the remedial action by introducing new technologies or approaches. The EMS Management Review will not replace the five-year review, but will facilitate proactive actions to ensure that human health and the environment are protected.

8.0 The Community Role

A challenge to any site planning for its LTS responsibilities is developing processes for meaningful public involvement and establishing partnerships with neighbors, elected officials, and regulators. Brookhaven already made significant progress in this area. Several initiatives were undertaken to reach out to these interested parties. The underlying goal was to "*inform and involve*". A Community Advisory Committee was formed, made up of civic-, activist-, and community-groups, to provide direct input to The Laboratory's Director. To facilitate two-way communication with elected officials and regulators, DOE created the "Brookhaven Executive Roundtable". A Community Involvement Plan was developed to guide managers in soliciting and using the public's input in their decision-making processes. Finally, BNL turned to their employees, a previously untapped yet invaluable resource to reach out to the community. Through personal contacts, employees developed relationships with key leaders of opinion in the community and established new channels for information flow, including support of educational programs. Through each of these channels, plus other formal educational programs environmental education programs were established. A holistic community involvement program such as this will enable Brookhaven to fulfill its LTS commitments.

This section will summarize the LTS communication plan.

COMMENTS ON THE DRAFT DOE GUIDANCE DOCUMENT

The guidance was well written and comprehensive, as far as possible with guidance documents. Considering the length of the Plan, it allows for a graded-type approach. However, they want the aspects of the outline addressed. I suggest that we could do this with just enough text to address the issue, and refer to other documents to the extent practicable. Either way, it is a significant effort.

One question I have is which table of contents for preparing the Plan applies to Brookhaven (activity based or geographically based)? Examples of these should be given. A few other comments:

- p. 13, 3.2.1 First bullet. The EPA does not typically (at least not Region 2) give written approval of the Remedial Action Report (RAP). Also, there may be several RAPs for a site, since one is prepared for each treatment-system start-up.
- p. 19, last paragraph. Some examples should be cited of existing LTS Plans, preferably one from each of the "type" of sites identified on p. 10 (e.g., sites with planned on-going missions, EM landlord sites)
- p. 21, 3.3. It should state that this section should be brief and refer to other documents to the extent possible. Also p. 31, top bullet. Ramp down or exit strategies are not specific to monitoring activities since they also apply to groundwater treatment systems.
- p. 36. The model table of contents is very long; however, the authors say that they do not expect all sites to go to that level of detail.

The guidance is useful, but it focuses on preparing a document. The real value to this transition process is communication between the parties, verifying and understanding the liabilities being transferred, resolution of issues and the preparation of a MOA. That's where the real work is. Guidance on the transition process is needed; unfortunately, there still are too many unanswered questions. Include a timeline of the transition process that is in synchrony with the current DOE LTS Transition Policy.

Part II of the document does not match the example Table of Contents that is given. This makes the guide confusing at times.

Guidance would be useful on an oversight system commensurate with risks.