**ARGONNE NATIONAL LABORATORY-WEST**


# Final Draft
# Annotated Outline and Gap Analysis for a Long-Term Stewardship Implementation Plan For Argonne National Laboratory-West

**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



List of Tables



List of Appendices

# Annotated Outline and Gap Analysis For a Long-Term Stewardship Implementation Plan At Argonne National Laboratory-West

## 1. INTRODUCTION

This document describes the preparation of a draft-annotated outline for a Long-Term Stewardship (LTS) Implementation Plan for Argonne National Laboratory – West. This work was done as part of a DOE-CH pilot study regarding the development of LTS Plans for three DOE-Chicago sites, Argonne National Laboratory–East (ANL-E), Argonne National Laboratory–West (ANL-W), and Brookhaven National Laboratory (BNL).

## 2. BACKGROUND

It is anticipated that by the close of FY 2002 phytoremediation activities for three of the five ANL-W waste sites will be completed and long term monitoring (i.e., natural attenuation) instituted. These activities have been funded and managed by the DOE Environmental Management (EM) program. In late FY 2002 or early FY 2003, verification sampling will be performed to validate that the remediation remedy is functioning as designed. At ANL-W, the transfer of responsibility from EM to NE of ongoing environmental restoration activities under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) is scheduled for FY 2003/FY 2004.

The EBR-II Complex consists of Buildings 766, 767, and 795. These buildings house the equipment that contains the primary and secondary Na and NaK. The EBR-II Complex (a former nuclear facility) primary and secondary sodium systems have been placed in an industrially and radiologically safe condition. This has been accomplished by the following:

- Draining and processing the bulk sodium (Na) and sodium potassium alloy (NaK) in the Sodium Process Facility, and
- Providing a carbonate layer on the surface layer of the residual sodium.

These sodium systems will have ongoing surveillance and monitoring (S&M) of radiological contamination until decontamination and decommissioning (D&D) are performed. However, the Idaho Department of Environmental Quality (IDEQ) is requiring that treatment of the Hazardous Waste Management Act / Resource Conservation and Recovery Act (HWMA/RCRA) hazardous waste residuals (Na and NaK), either by physical removal or chemical reaction, contained in these systems be performed in the near future.

The remediation of ANL-W waste sites and stabilization of the EBR-II primary and secondary Na and NaK systems has occurred or will occur in a number of different ways. The sites that are undergoing or will undergo phytoremediation will have the nonradiological contamination reduced to levels that allow for release of the site for unrestricted use. The EBR-II primary and secondary Na and NaK systems will have the Na and NaK physically removed or the hazardous waste residue will be treated in-place. However, for several of the waste sites and for the primary and secondary systems, the radiological contamination will require ongoing surveillance, maintenance, monitoring and institutional control as part of the long-term stewardship of these sites. All the sites will require long-term management of historic records to

document investigations and that cleanup was complete to the satisfaction of the Environmental Protection Agency (EPA) Region X, IDEQ and DOE, and to describe how much contamination is still present. These activities, and administrative mechanisms needed to support these activities, will constitute the Long-Term Stewardship program for ANL-W.

## 3. TECHNICAL SCOPE OF LTS PROGRAM

The ANL-W waste sites that will require LTS are listed in Table 3-1. The sites are grouped into two types, those with residual contamination, which require some form of stewardship other than record keeping, and the sites which were closed with residual contamination below acceptable levels and require only record keeping. The EBR-II Complex (a former nuclear facility) primary and secondary Na systems requiring surveillance and maintenance are identified in Table 3-2. Provided in Tables 3-1 and 3-2 are descriptions of the residual contamination, if any, within the sites and a summary of which LTS activities are required at each site.

The remediation of several of the waste sites shown (in bold) in Table 3-1 is not yet complete. The anticipated end-state of these sites is listed in the tables.

To identify the nature of activities necessary to properly manage the remediation sites and former nuclear facilities the following sources were reviewed to identify all requirements of the program:

- Regulatory requirements in various work plans, reports and regulatory correspondence,
- DOE guidance regarding preparation of a LTS Plans,
- *Site-Specific Requirements in Support of LTS Transfer for Argonne National Laboratory-West.*

The LTS program will be designed and implemented to ensure that all of the identified requirements will be satisfied, for as long as necessary. It is clear that aspects of the LTS program will continue far into the future since some of the residual hazards (radioactive constituents) will exist for many years. However, radioactive decay of the Cesium-137 (approximately 110 years for ANL-W CERCLA sites) will eventually decrease residual contamination to levels acceptable for unrestricted use and unlimited access. LTS requirements will change over time, as sites achieve clean-up goals, former nuclear facilities are demolished, or currently active nuclear facilities are decommissioned. As a result, the LTS program will be structured to require regular updates and modification to adjust to these changes.

The given level of LTS requirements for a given site is related to the degree of hazard posed by the residual contamination and the protectiveness of the engineered or institutional controls put in place. All of the LTS waste sites at ANL-W contain relatively small amounts of hazardous materials and except for the EBR-II primary and secondary systems small amounts of radioactive contamination. The hazardous material remaining is contained within structures (i.e., primary sodium tank) or in low-permeability soil that prevents movement of the contaminant. As long as the institutional controls are maintained there should be no significant health risk or damage to the environment from these sites, either on or off-site. Many of the LTS activities are intended to ensure that these institutional controls remain effective.

**Table 3-1: Summary of Wastes Sites Requiring Long-Term Stewardship**

| SWMU No. | Description | Human Health or Ecological Risk | | Actual or *Expected* End State | Residual Contamination | Inspection | Operation | Maintenance | Monitoring[2] | Institutional Controls |
|---|---|---|---|---|---|---|---|---|---|---|
| | | HH | E | | | | | | | |
| Sites Requiring Long-Term Operations and Maintenance and/or Institutional Controls | | | | | | | | | | |
| **ANL-01** | **Industrial Waste Pond** | X | X | NFR[1] | Hazardous Constituents (Cr-III, Hg, Se, Zn)<br>Radiological Constituent (Cs-137) | | X | | X | X |
| **ANL-04** | **Sewage Lagoons** | | X | NFR | Hazardous Constituent (Hg) | | X | X | X | X |
| **ANL-09** | **Interceptor Canal-Canal** | X | | NFR | Radioactive Constituent (Cs-137 ) | | | | X | X |
| **ANL-09** | **Interceptor Canal-Mound** | X | | NFR | Radioactive Constituent (Cs-137 ) | | | | X | |
| Sites Requiring Only Information Management | | | | | | | | | | |
| ANL-01 | Ditch A | | X | NFR | Hazardous Constituent (Hg) | | | | | |
| ANL-01 | Open portion Ditch B | | X | NFR | Hazardous Constituents (Cr-III, Zn) | | | | | |
| ANL-01A | Main Cooling Tower Blowdown Ditch | | X | NFR | Hazardous Constituents (Cr-III, Hg) | | | | | |
| ANL-35 | Industrial Waste Lift Station Discharge Ditch | | X | NFR | Hazardous Constituent (Ag) | | | | | |
| ANL-01 | Buried portion Ditch B | | | NA[2] | | | | | | |
| ANL-01 | Ditch C | | | NA | | | | | | |
| ANL-05 | ANL Open Burn Pits #1 | | | NA | | | | | | |
| ANL-05 | ANL Open Burn Pits #2 | | | NA | | | | | | |
| ANL-05 | ANL Open Burn Pits #3 | | | NA | | | | | | |
| ANL-08 | EBR-II Leach Pit (Radioactive) | | | NA | | | | | | |
| ANL-10 | Dry Well between T-1 and ZPPR Mound | | | NA | | | | | | |
| ANL-11 | Waste Retention Tank | | | NA | | | | | | |
| ANL-12 | Suspect Waste Retention by 793 | | | NA | | | | | | |
| ANL-14 | Septic Tank and Drain Fields (2) by 753 | | | NA | | | | | | |
| ANL-15 | Dry Well by 768 | | | NA | | | | | | |
| ANL-16 | Dry Well by 759 (2) | | | NA | | | | | | |
| ANL-17 | Dry Well by 720 | | | NA | | | | | | |
| ANL-18 | Septic Tank and Drain Field by 789 | | | NA | | | | | | |

| SWMU No. | Description | Human Health or Ecological Risk | | Actual or *Expected* End State | Residual Contamination | Inspection | Operation | Maintenance | Monitoring(2) | Institutional Controls |
|---|---|---|---|---|---|---|---|---|---|---|
| | | HH | E | | | | | | | |
| Sites Requiring Only Information Management (continued) | | | | | | | | | | |
| ANL-19 | Sludge Pit West of T-7 (Imhoff Tank) | | | NA | | | | | | |
| ANL-20 | Septic Tank and Drain Field by 793 | | | | | | | | | |
| ANL-21 | TREAT Suspect Waste Tank and Leaching Field (Non-Radioactive) | | | NA | | | | | | |
| ANL-22 | TREAT Septic Tank and the current Leaching Field | | | NA | | | | | | |
| ANL-23 | TREAT Seepage Pit and Septic Tank West of 720 | | | NA | | | | | | |
| ANL-24 | Lab and Office Acid Neutralization Tank | | | NA | | | | | | |
| ANL-25 | Interior Building Coffin Neutralization Tank | | | NA | | | | | | |
| ANL-26 | Critical Systems Maintenance Degreasing Unit | | | NA | | | | | | |
| ANL-27 | Plant Services Degreasing Unit | | | NA | | | | | | |
| ANL-28 | EBR-II Sump | | | NA | | | | | | |
| ANL-29 | Industrial Waste Lift Station | | | NA | | | | | | |
| ANL-30 | Sanitary Waste Lift Station | | | NA | | | | | | |
| ANL-31 | Industrial/Sanitary Waste Lift Station (Ind.Side Not Used) | | | NA | | | | | | |
| ANL-32 | TREAT Control Bldg. 721 Septic Tank and Leach Field | | | NA | | | | | | |
| ANL-33 | TREAT Control Bldg. 721 Septic Tank and Seepage Pit | | | NA | | | | | | |
| ANL-34 | Fuel Oil Spill by Building 755 | | | NA | | | | | | |
| ANL-36 | TREAT Photo Processing Discharge Ditch | | | NA | | | | | | |
| ANL-53 | Cooling Tower Riser Pits | | | NA | | | | | | |
| ANL-60 | Knawa Butte Debris Pile | | | NA | | | | | | |
| ANL-61 | EBR-II Transformer Yard | | | NA | | | | | | |
| ANL-61A | PCB-contaminated soil (Adjacent to ANL-61) | | | NA | | | | | | |
| ANL-62 | Sodium Boiler Building (766) Hotwell | | | NA | | | | | | |
| ANL-63 | Septic Tank 789-A | | | NA | | | | | | |

(1) NFR - Sites that require no further remedial actions unless anticipated use changes, but will require some type of ongoing operations, inspection, or maintenance

(2) No Action (NA) - Sites that are unrestricted. LTS responsibilities include groundwater monitoring through 2018 and record keeping

**Table 3-2: Contaminated Facilities Requiring Long-Term Stewardship**

| Description | Status | Completed Actions | Residual contamination | Surveillance | Maintenance |
|---|---|---|---|---|---|
| Incomplete Project Requiring Long-Term Surveillance and Maintenance | | | | | |
| Bldg. 766 (Sodium Boiler Building) | In S&M | Passivated(1) | Na, NaK, radioactive contaminants | X | X |
| Bldg. 767 (EBR-II Reactor Building) | In S&M | Passivated | Na, NaK, radioactive contaminants | X | X |
| Bldg. 795 (Cover Gas Cleanup Building) | In S&M | | Na, radioactive contaminants | X | X |

(1) Passivated: A protective carbonate layer formed on surfaces of residual sodium

The various activities to be included in the LTS Program for ANL-W, and the units where such activities are needed are identified in Tables 3-1 and 3-2. The following is a general description of these activities:

## 3.1. OPERATION

Two of the five ANL-W waste sites, which are currently in use or recently became inactive, will still require phytoremediation (planting and harvesting) to achieve the remediation goals. These two waste sites will be a continuation of the phytoremediation activities once these units are no longer being utilized at the ANL-W site. To continue to achieve the necessary level of control, these systems must remain in operation until the remediation objectives are met. Phytoremediation was chosen in part because it is very simple and requires very little operator attention; however, maintaining effective operation still requires periodic assessment (sampling) of the system's performance and adjustments and modifications as needed.

The EBR-II facility will require operation of systems such as the Argon or Carbon Dioxide cover gas systems for protection of the residual waste (reactive metals). These systems will need to be maintained operational until such time that closure has been completed for the HWMA/RCRA tank systems.

## 3.2. MAINTENANCE

Periodic maintenance of components and facilities is critical to ensuring long-term reliability and protectiveness. Maintenance requirements include:

- Regular preventive maintenance and repair of groundwater monitoring wells,
- Replacement of harvested, diseased or damaged phytoremediation trees,
- Repair of signs, fences and other barriers, and,
- Upkeep and repair of building systems needed to prevent the release of radioactive materials and mixed waste from former nuclear facilities (roof systems, heating and ventilation, sump pumps, electrical power, etc.).

## 3.3. MONITORING

Collecting information regarding the presence of contaminants in the environment (and other factors) within and surrounding the LTS sites constitutes the monitoring program. This takes a variety of forms, but the most common type of monitoring at ANL-W is groundwater sampling and analysis. A small amount of air, surface water, soil or sludge sampling will also be conducted. The frequency of these efforts varies from unit to unit and is primarily identified in CERCLA Record of Decision (ROD) and Remedial Design and Remedial Action (RD/RA) approved documents and other similar documents. The monitoring of former nuclear facilities will generally consist of radiological monitoring and sampling and analyses of the residual waste after insitu treatment of the Na and NaK has occurred.

## 3.4. SURVEILLANCE

The EBR-II reactor building (Bldg. 767) and the Sodium Boiler Building (Bldg. 766) contain components that have significant levels of radioactive contamination, which require inspections to detect potential releases. Daily visual inspections of these sites are required because these two facilities are permitted HWMA/RCRA tank treatment and storage units.

## 3.5. INFORMATION MANAGEMENT

Information management will be accomplished for all of the LTS sites. It will include the retention of historic records of the site that may be of value to future site users, regulatory agencies, ANL-W and DOE managers, and other affected stakeholders. Retention of the full administrative record for ANL-W former waste sites regulated by the EPA and IDEQ will be located at the INEEL Administrative Records Repository.

## 3.6. PERIODIC PERFORMANCE ASSESSMENT

On a regular basis (every 5 years) the monitoring data and other information will be assessed in detail to determine how well the system is performing and if any improvements or modifications are needed. This assessment will determine if remedial objectives have been met and the site can be closed, or if additional remedial efforts are needed to improve or accelerate the clean up of residual contamination.

## 3.7. CONTINGENCY PLANNING

The facility-specific emergency and contingency plan and the HWMA/RCRA hazardous waste unit contingency plans provide the required information to properly respond to almost any event. However, procedures need to be put in place to monitor for off-normal situations that require some type of corrective action due to possible releases. The types of off-normal situations that could develop, ways to identify when such a situation develops and what would be done if such a situation occurs will be discussed. None of the former waste sites have the potential for catastrophic failure or uncontrolled release. However, the ground water monitoring could identify problems that may require a response.

### 3.8. FINAL PROJECT CLOSEOUT

At the completion of all remedial actions (including institutional controls) for the former waste site the monitoring systems and/or institutional controls put in place will need to be removed and the site restored to natural conditions. This will involve closure of groundwater monitoring wells and pumps; removal of signs and fences; and removal of non-native phytoremediation trees and bushes. Native vegetation consistent with the surrounding environment will be planted. For the former nuclear facilities, final project closeout could include demolition and off-site disposal of the facility and all associated structures. If the facility is demolished in place, leaving contaminated demolition debris on-site, the LTS requirements may change but they will not go away completely.

## 4. REVIEW OF DOE GUIDANCE

An element of the LTS pilot project is to evaluate the effectiveness of the current LTS Plan guidance by using it to prepare plans for representative sites. The LTS guidance was examined in light of the LTS requirements at ANL-W. This involved examining the current guidance in terms of its usefulness to a site such as ANL-W, which has a continuing mission. It involved examining the completeness of the guidance in terms of identifying and addressing important issues and evaluating the usefulness of the guidance in terms of structuring an LTS Plan for ANL-W.

This review yielded comments, both general in nature and specific to certain aspects of the document. All the comments are contained in Appendix A

## 5. ANNOTATED OUTLINE FOR LTS IMPLEMENTATION PLAN FOR ANL-W

The DOE guidance was used to develop a list of requirements that the LTS program would need to satisfy. A review of the requirements, for ANL-W, identified two documents that should be prepared. The documents to be prepared are (1) the LTS transition plan and (2) the LTS Implementation Plan.

Transition Plan – This plan will describe the process of moving oversight responsibility for management of former waste sites and nuclear facilities from the EM program to NE. It will discuss specific agreements and commitments between EM and NE related to the transfer and the schedule for the transfer of former waste sites. Its purpose is to facilitate the transfer. It will not be updated after the transfer is complete, but will be an appendix to the LTS Implementation Plan.

Long-Term Stewardship Implementation Plan (LTS)– This document will describe the LTS program and the procedures that will be used to satisfy LTS requirements. It will contain summary information on the ANL-W waste sites and contaminated facilities and on the LTS program elements. More detailed project documents will be incorporated or referenced to provide additional background information on the sites. This document will describe programs and procedures for ANL-W designed to properly identify applicable LTS activities, to ensure adequate management of the LTS program, and to ensure that sufficient funding to support the

program has been identified. The annotated outline is contained in Appendix B. Appendix C contains the list of activities and some unresolved issues.

Preparing the LTS Program for ANL-W will require considerable effort to compile the large amount of information needed, put it in the proper format, and prepare the document. The general tasks to complete the plan can be summarized by the following:

- Describe agreements related to roles, responsibilities, commitments and schedules negotiated between EM and NE.

- Prepare new document that contains background information, program descriptions, summary level site information, description of LTS activities, management strategies, etc.

- Establish a permanent record storehouse for project documents.

- Develop a report to make monitoring data available and understandable to interested stakeholders.

- Develop a plan and schedule for periodic performance assessments, final site closure, facility demolition and other non-routine future work.

- Update the contingency plans for the former waste sites and contaminated facilities, as necessary.

In addition to the technical efforts of preparing the plan components, DOE policy requires that the site stakeholders should be involved in the development of the program. The INEEL stakeholder community in the past has shown little interest to be involved in other planning efforts for ANL-W activities. New ways, as appropriate, to encourage stakeholder participation in the planning effort need to be identified.

## 6. GAP ANALYSIS

In evaluating the integration of the LTS program at ANL-W, it was found that some of the existing information does not completely satisfy the requirements of LTS. In general, the following gaps between requirements and the actual situation were identified:

- There are currently no DOE or ANL-W policy statements regarding LTS at ANL-W.

- There is currently no single up-to-date document that describes monitoring or O&M requirements and procedures. The requirements and procedures to be used are contained in a number of different documents.

- The procedures needed to remove monitoring systems, stabilize the sites, and document that remedial objectives have been met have not yet been devised or documented.

- Organizational responsibilities, management procedures and a funding source for implementing the LTS program have not been determined.

# Appendix A: DOE LTS Plan Preparation Guidance Review Comments

# DOE LTS PLAN PREPARATION GUIDANCE REVIEW COMMENTS PREPARED FOR THE LTS PLAN ANNOTATED OUTLINE FOR ANL-W

## A.1 Introduction

The document summarizes observations regarding the current DOE guidance relating to preparation of LTS Implementation Plans. These observations are written from the perspective of the ANL-W site.

## A.2 Comments

The draft DOE guidance (April 2001) provides a framework that, in general, is adequate to capture most of the technical issues and concerns involved in ANL-W LTS activities. There are a number of key issues that exist at a site with ongoing mission that are not addressed in the guidance. For the ANL-W site these issues are:

- The transferring of LTS responsibilities from EM to the Landlord.
- Integrating the LTS program into existing programs that have major regulatory overview by EPA and/or the State regulators.
- Future remediation of former nuclear facilities (contaminated facilities).

The transfer process is not addressed. At ANL-W, the transfer of responsibility from EM to NE for completion of all remaining and ongoing environmental restoration activities under the CERCLA is scheduled for FY 2003/FY 2004. Transferring the EM sites from EM to the Landlord will require careful planning, identification of roles and responsibilities, determining a schedule, identifying transfer criteria and other factors. A formal transition plan or memorandum of agreement will be required for this process.

At ANL-W the LTS requirements will be integrated into the overall environmental management program for the ANL-W site. The activities required are similar in nature to many ongoing activities and should be absorbed by existing organizations.

Even though the program will be integrated into existing programs, it will still be vital to identify a LTS program manager with overall responsibility for implementing the LTS program. This individual should have responsibility for coordinating LTS activities, reporting on the performance of the LTS program, responding to information requests, ensuring day-to-day activities occur as required, and periodic assessments and audits. The LTS guidance should generally describe integration of the LTS programs into existing organizations with emphasis on the duties of a LTS program manager at each site. There is likely to be no other organization tasked with tracking the history of the remediation program other than the LTS program manager and all historical information about this program should be managed under one program.

Section 2.3 of the guidance states that the primary effort will be to identify and consolidate existing planning documents. Consolidating information into the LTS plan increases the effort needed to complete the LTS plan. When the information exists in other documents the LTS plan

should only reference this information, not duplicate it. The guidance should emphasize referencing documents that satisfy the information needs.

Section 3 of the guidance discusses the start date for LTS. The HWMA/RCRA start date should be reviewed in the same context as long-term remedial actions, which is included in the LTS definition. Activities necessary for closing a HWMA/RCRA facility may take many years. For example the EBR-II primary and secondary sodium systems may take up to 20 years for completing activities before being able to certify HWMA/RCRA closure. The LTS program and guidance should include these types of long-term activities.

The ANL-W site will have future remedial actions on a number of nuclear facilities that will require LTS after they are closed at some point in the future. Dealing with future remedial actions and LTS requirements should be addressed to some degree in the LTS Plan

Even though a site was declared clean, this does not mean the site is suitable for unrestricted use and unlimited access. If the site is disturbed by construction activities or activities that would provide a means to initiate migration of the contaminants, the residual levels may no longer be adequately protective and additional remedial actions may be needed in the future. Retaining the data regarding the levels of contamination remaining, and the criteria used to declare the site clean, is very important and should be included in the LTS program and the guidance.

To make the plan meaningful and manageable the information included or referenced must be sufficient to describe the site or activities in question but it should also be tailored to the significance of each site. Each site is treated the same in the guidance, regardless of the nature and extent of residual contamination. To ensure that the program wisely utilizes the limited resources that will likely be available to support these programs, the sites should be prioritized based on the actual or perceived risk to human health or the environment. All aspects of the LTS should be based on risk (i.e., monitoring, reporting, surveillance, cleanup, etc.). The amount of information provided to future stakeholders and ease of accessing this information would then be tailored to the level of significance of each site.

Section 7.3 is based on a stand-alone program with direct funding. The LTS program at ANL-W may not be a stand alone program and receive direct funding. Therefore, the information requested by this section in not applicable to ANL-W and similar sites. An entirely different financial management scheme other than the one briefly described in this section will be needed in most cases.

# Appendix B: Draft Annotated Outline for a Long-Term Stewardship Implementation Plan for ANL-W

# DRAFT
# ANNOTATED OUTLINE FOR THE LONG-TERM STEWARDSHIP PROGRAM IMPLEMENTATION PLAN FOR ARGONNE NATIONAL LABORATORY - WEST

## 1.0 INTRODUCTION

This document was prepared to facilitate the development of a Long Term Stewardship Implementation Plan (LTS Plan) as defined by DOE guidance. It contains an annotated outline of the anticipated plan for the ANL-W site. It was developed by identifying all known LTS requirements contained in regulatory documents, the April 17, 2001 DOE guidance for preparing a LTS Implementation Plan, the document titled *Site-Specific Requirements in Support of LTS Transfer for Argonne National Laboratory-West (March 2002)*, and other sources. It was prepared based on the assumption that LTS work will be integrated into existing programs and practices within the ANL-W site.

The LTS Plan for ANL-W will consist of two elements, the Transition Plan and the LTS Implementation Plan

The LTS Transition Plan will describe the process of moving funding and oversight responsibility for management of former waste sites from the DOE-Environmental Management (EM) program to the DOE Office of Nuclear Energy (NE). It will discuss specific agreements and commitments between EM and NE related to the transfer. Its purpose is to facilitate the transfer. The LTS Implementation Plan for ANL-W will contain the LTS Transition Plan as an appendix. Since the LTS transition plan will not provide for the day-to-day operation of the LTS program, providing this information as an appendix to the LTS plan will maintain clarity in the ANL-W LTS plan

The LTS Implementation Plan will describe the LTS program elements and the procedures that will be used to satisfy LTS requirements. The LTS plan will provide the necessary information to describe DOE and ANL-W management of the LTS program, provide schedules and cost plans for sufficient funding to support the LTS program.

In the following annotated outlines, the organization of the documents, the contents of each section and interrelationships between various sections and plans are discussed. Some of the more general sections model language (*shown in italics*), adapted from various sources, is provided. This language will likely change as the final document is prepared.

# 2.0 TRANSITION PLAN ANNOTATED OUTLINE

This section describes the likely content of the Transition Plan. The actual content will be determined following discussions and negotiations between EM and NE. The information in the transition plan document is not pertinent to the day-to-day operation of the LTS program and thus will be included only as an appendix to the LTS plan.

## 2.1 Introduction

This section will describe the purpose of the document and its relationship to other LTS planning documents.

*This plan describes the process to be followed by EM and NE to transfer the responsibility for funding and implementing Long-Term Stewardship activities at ANL-W EM-funded remediation sites from EM to NE.*

## 2.2 Use of Terms

Key terms used in the transition plan will be defined to ensure accurate communication and consistent understanding between the effected parties

## 2.3 Roles and Responsibilities

Specific roles and responsibilities for EM and NE during and after the transfer will be defined. Areas where roles and responsibilities should be defined include

- Program management;
- Funding;
- Ongoing remedial actions;
- Committed LTS activities:

  O&M, environmental monitoring, surveillance and maintenance, periodic performance assessment, institutional controls; planning and executing future remedial actions; final closeout of former EM sites; management of information regarding closed waste sites; and other areas.

## 2.4 Transfer Criteria

This section will include a list of criteria that define when the long-term remedial actions for ANL-W waste sites are valid and the site is ready for transfer to the LTS program. The criteria will include both regulatory factors as well as technical factors. A preliminary list of likely criteria includes the following:

- Active remedial actions (phytoremediation, monitoring well installation, etc.) must be either complete or instituted as the long-term remediation activity and shown to be working as designed,
- Site restoration (e.g., excavations filled) following the short-term remedial actions must be complete,

- LTS requirements must be well defined, and
- Reliable cost estimates for any ongoing LTS requirements must be prepared.

### 2.5 Continuation and Completion of Remedial Actions

At the time of the LTS transition plan preparation (possibly in late FY2002 or early FY2003) remedial actions at two waste sites will not have commenced. This is because these sites are still active facilities or recently became inactive. The conditions needed to begin remedial actions as well as the schedule for completing the outstanding waste site projects will be addressed. A commitment by NE to complete the outstanding FFA/CO projects will be included.

### 2.6 Transfer Schedule

This section will define the schedule for the transfer process. It will identify the important events in the transfer process and the sequence in which these events will occur.

### 2.7 Renegotiation Triggers

The various agreements described in the transition plan will be based on a certain understanding of site conditions and future LTS requirements. The projected funding needs and technical requirements will be based on this understanding. Should conditions develop that are significantly different than the anticipated conditions, some of the agreements and commitments may need to be revisited. A list of criteria, which will describe a number of such possible conditions, will be listed. Such conditions could include the following:

- Changing clean-up standards
- Changing regulatory requirements
- Funding at less than planned levels
- Technical problems.

# 3.0 ANNOTATED OUTLINE OF THE LONG-TERM STEWARDSHIP IMPLEMENTATION PLAN

The LTS Plan will be an activity based written plan. It will be developed to satisfy the majority of inquiries into the ANL-W LTS program, providing enough information to satisfactorily answer most questions without the need to provide more complex documents. It will be publicly available to interested stakeholders. The LTS Plan will be organized to provide summary level information about the LTS program with references to detailed information about specific aspects of the program, which for ANL-W waste sites have been developed for the CERCLA program. This document will eventually be integrated into an environmental management system (EMS) for the entire ANL-W site.

## 3.1 Overview of the ANL-W Site

This section will provide a summary of the ANL-W site and the cleanup activities that have or will be undertaken.

## 3.2 Introduction to the LTS Program

This section describes the LTS Program at ANL-W in general terms. The description will be similar to the following:

*The LTS program at ANL-W consists of activities designed to minimize any hazards posed by residual contamination or wastes remaining at waste sites and contaminated facilities (or portions of a site/facility) after cleanups are completed. These activities include institutional controls, operation and maintenance, environmental monitoring and reporting, performance assessment, contingency planning and information management. The program will be funded and overseen by DOE and administered by various organizations within ANL-W. Long-term stewardship activities are designed to ensure that the remedial actions in place remain effective for an extended period of time, until such time that the residual hazard is reduced to levels that allow unrestricted use and unlimited access.*

## 3.3 Purpose and Scope

The section will contain the purpose and scope of the LTS program at ANL-W. It will provide the following objectives

- DOE and ANL-W commitment to the public (regulators and stakeholders) to maintain vigilance (provide stewardship) on waste sites at ANL-W until such time as these sites can be released for unrestricted use.
- Complete remedial actions for the former waste sites transferred from EM to NE.
- Maintain site records and information so that future custodians can continue to provide effective stewardship
- Provide a forum for stakeholder and regulator involvement for the protection of the site.

DOE and ANL-W policy statements providing a commitment to interested stakeholders to protect human health and the environment will be prepared and included in this section.

### 3.4 ANL-W Site Description

This section will contain a brief description of the ANL-W site, its location, its missions (past and present) and the waste sites for which LTS activities are needed. A summation of the current status of the waste sites will be provided with reference to more detailed CERCLA project documents that provide more information.

Included in this section will be the assumptions and uncertainties that were identified for the CERCLA project and for the former nuclear facilities.

The off-site locations and characteristics will not be discussed in the ANL-W LTS Plan. The reason is that the ANL-W site is located on the INEEL and any waste sites off the legal boundaries of the ANL-W site are encompassed in the INEEL remedial activities.

#### 3.4.1 Waste Site Description and Regulatory Framework

The regulatory description will be similar to the background information provided in the *Site-Specific Requirements in Support of LTS Transfer for Argonne National Laboratory-West (March 2002).* A description of each waste site that will have LTS activities will be provided along with a table of those sites that were found to require no further action. The physical conditions of the ANL-W site will be provided

#### 3.4.2 Remedial Action Program Description

This section will describe the waste units that are being remedied. It will describe the phytoremediation activities and remediation goals. It will describe the sites where excavation was performed and where actions such as bentonite layers were placed and the area backfilled. This section will also describe the activities that will be ongoing at the EBR-II reactor (surveillance and maintenance and RCRA activities).

### 3.5 LTS Implementation

This section will explain the general approach to carrying out the LTS program.

*The LTS program is funded by DOE NE and managed through the DOE Argonne Area Office. Day-to-day implementation is carried out by ANL-W, an element of the University of Chicago. The LTS program is carried out by organization in the four Divisions at ANL-W, as well as the Environment, Safety and Health Oversight. The various LTS functions have been integrated into ongoing programs within these organizations. An individual designated as the Site Steward who resides within ANL-W coordinates the LTS activities. This individual serves as the single point of contact for all LTS issues.*

### 3.5.1 Operation and Maintenance

The ANL-W LTS program will be integrated into existing management systems, including the Integrated Safety Management (ISM). ISM has been fully implemented at ANL-W. This section will describe the following:

- Institutional Controls
    - Access controls
    - Digging restriction
    - Land and facility use controls
- O&M
    - Groundwater Monitoring Network
    - Phytoremediation
- Facility maintenance

### 3.5.2 Surveillance and Monitoring

This section will provide a discussion on the S&M that is required by commitments, regulatory requirements and DOE directives. It will describe the sampling and analysis programs conducted by ANL-W for the waste sites in accordance with the ANL-W Environmental Monitoring Program.

- Surveillance
    - Facility surveillance and monitoring
    - Waste site surveillance and monitoring
        - Groundwater monitoring requirements through the year 2018.

### 3.6 Schedules and Cost

This section will provide a baseline schedule and cost. It will utilize the EM schedules and costs with revisions to incorporate the LTS activities not currently funded by EM.

### 3.7 Management Roles and Responsibilities

This section will contain the list of organizations and tasks they are responsible for in the LTS Program. This section explains the LTS activities that will be carried out at ANL-W, including oversight, administration, field implementation of requirements, monitoring, data management and review, and information management.

Even though the program will be integrated into existing programs, it will still be vital to identify a program manager with overall responsibility for implementing the program. This individual will have responsibility for coordinating LTS activities, interfacing with the INEEL on stakeholder involvement, reporting on the performance of the LTS program, responding to information requests, ensuring day-to-day activities occur as required, and periodic assessments (i.e., 5-year reviews) and audits.

In addition to describing the means for ensuring that required LTS activities are carried out, the LTS plan will describe the administrative mechanisms needed to support these actions. The magnitude of LTS activities at ANL-W is not great; however, adequate management attention will be needed to ensure that they are faithfully carried out many years into the future.

### 3.7.1 Communication and Reporting

This section will discuss two key elements of the LTS program, Information Management and Stakeholder Involvement. The Information management program and the Stakeholder involvement are vital to the success of the LTS program.

#### 3.7.1.1 Information Management

Records retention will consist of CERCLA Administrative Record documents (i.e., ROD, RD/RA reports), project work plans, monitoring results, final construction reports, final survey reports, correspondence, and other applicable documents which describe the actions taken and the final conditions of the site. The retention of the records at the INEEL repository for the Administrative Record and retention of all other records at ANL-W will be discussed.

#### 3.7.1.2 Stakeholders

Stakeholder participation in planning for LTS activities and participating in the assessment of remedial performance over the long-term will be discussed. Stakeholder involvement will be identified in a Public Participation Plan (DOE-Idaho document) with ANL-W's input.

### 3.8 Emergency Preparedness and Response

This section will describe the procedures that have been put in place to monitor for off-normal situations that require some type of corrective action. The types of off-normal situations that could develop, ways to identify when such a situation develops and what would be done if such a situation occurs will be discussed. None of the former waste sites have the potential for catastrophic failure or uncontrolled release. However, the ground water monitoring could identify problems that may require a response.

### 3.9 Audits

A system of periodic audits, conducted by knowledgeable personnel not directly responsible for LTS activities will be described.

### 3.10 Management Review

A program of periodic assessment of the LTS program by DOE and Laboratory management, done in conjunction with the LTS audits, results of routine inspection and monitoring activities, and other information, will be described. The program will rely on existing oversight and review functions for environmental protection issues. Modifications to the LTS program resulting from management reviews will be incorporated into the LTS Implementation Plan.

### 3.11 Final Project Closeout

At the completion of all remedial actions (including institutional controls) for the former waste site the monitoring systems and/or institutional controls put in place will need to be removed and the site restored to natural conditions. This section will describe the activities necessary to ensure the LTS activities have been completed prior to removing the site or facility from the LTS program.

# Appendix C: LTS Plan Elements and Associated Effort to Complete, Unresolved Issues

## Appendix C - LTS Plan Elements and Effort to Complete Unresolved Issues and Resource Gap

| LTS TRANSITION PLAN | | | |
|---|---|---|---|
| **Work Item** | **Actions Needed** | **Effort to complete** | **Unresolved issues** |
| 2.1 Introduction | New text | Prepare new text, finalize after negotiations | |
| 2.2 Use of Terms | New text | Prepare new text, finalize after negotiations | Some of the key definitions may require negotiation between NE and EM to arrive at a mutually agreeable wording. |
| 2.3 Roles and Responsibilities | New text | Prepare new text, finalize after negotiations | Some of the key roles and responsibilities may require negotiation between NE and EM. |
| 2.4 Transfer Criteria | New text | Prepare new text, finalize after negotiations | |
| 2.5 Completion of Ongoing Remedial Actions | New text | Prepare new text, finalize after negotiations | Acceptance of waste sites where remedial activities have not commenced. |
| 2.6 Transfer Schedule | New text | Prepare new text, finalize after negotiations | The main outstanding decision affecting the schedule is when the transition will occur. |
| 2.7 Renegotiation Triggers | New text | Prepare new text, finalize after negotiations | |

## Appendix C - LTS Plan Elements and Effort to Complete, Unresolved Issues and Resource Gap

| LTS Implementation Plan | | | | |
|---|---|---|---|---|
| | **Work Item** | **Actions Needed** | **Effort to complete** | **Unresolved issues** |
| | 3.1 Overview of ANL-W Site | New text | | |
| | 3.2 Introduction to LTS Program | New text | Prepare new content | |
| | 3.3 Purpose and Scope | New text | Prepare new content. Policy statements need to be prepared and approved by DOE and ANL-W management | Scope of LTS program not completely defined |
| | 3.4 ANL-W Site description | New text | Prepare new content | |
| | 3.4.1 Waste Site Description and Regulatory Framework | New text | Prepare new content | |
| | 3.4.2 Remedial Action Program Description | New text | Prepare new content | |
| | 3.5 LTS Implementation | New text | Prepare new content | |
| | 3.5.1 Operation and Maintenance | New text | Prepare new content | |
| | 3.5.2 Surveillance and Monitoring | New text | | |
| | 3.6 Schedules and Cost | New text | Prepare content | |
| | 3.7 Management Roles and Responsibilities | New text | Prepare new content | Organizational responsibility not defined |
| | 3.7.1 Communication and Reporting | New text | Prepare new content | |
| | 3.7.1.1 Information Management | New text | Prepare new content | |
| | 3.7.1.2 Stakeholders | New text | Prepare new content | Coordination with the INEEL not defined |
| | 3.8 Emergency Preparedness and Response | New text | Prepare new content | |
| | 3.9 Audits | New text | Prepare new content | |
| | 3.10 Management Review<br>3.11 Final Project Closeout | New text<br>New text | Prepare new content<br>Prepare new content | <br>End state criteria |