



One Chicago Long-Term Stewardship Pilot Study

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Brookhaven Science Associates
U.S. Department of Energy



Purpose of LTS Pilot Study

- To coordinate, leverage, and enhance LTS activities across several CH facilities to identify and resolve efficiently critical site and national stewardship issues.
- Leaders: Mark Bollinger and Susan Heston
- CH Participants: PMO, EML, Area Offices, ANL (E & W), and BNL.
- Purpose of today's briefing
 - Present Overview of Project
 - Update status
 - Discuss next steps

DOE-CH Long Term Stewardship Pilot Project

- Support DOE-HQ LTS Office in finalizing guidance
- Accelerate LTS planning at three DOE-CH facilities
 - ANL-E
 - ANL-W
 - BNL
- Sites near completion with ongoing missions

What is Long Term Stewardship?

- Doing whatever it takes to protect human health and the environment from residual waste materials until the site is suitable for unrestricted use and unlimited access

What is Long-Term Stewardship? (ANL)

- What you do after remedial action construction is “done” in 2003
 - Finish remedial actions underway
 - Prevent contact with waste left in place
 - Monitor waste in place to see if anything escapes the remedial action.
 - Manage information about the sites so it can be passed down to future generations

LTS Implementation Plan

- Required by DOE by end of FY2003
- Needed to facilitate transfer of EM sites to the site landlord
- Draft DOE guidance issued in April 2001
 - Major revisions expected
- DOE-CH Pilot of guidance underway
 - ANL-E, ANL-W and BNL

CH Cleanups Provide Useful Target for LTS Pilot Study

- Near transition to LTS and differing environmental and regulatory settings
 - ANL-West – CERCLA cleanup “complete” with transition to NE
 - ANL-East – RCRA Corrective Action nearing completion with transition to SC
 - BNL – cleanup not as near to transition to SC as ANL sites but larger stakeholder interest
- Argonne National Laboratory had invested LDRD funds toward programmatic LTS issues that could be leveraged to support portions of the study

Key issues at all sites

- How to effectively implement LTS activities (timing, acceptance criteria, contingency planning, funding)
- How to accurately estimate potential costs of LTS activities
- Continuing public involvement as a critical element in all long-term planning
- Future information management

CH LTS Pilot Approach Has Local and National Focus

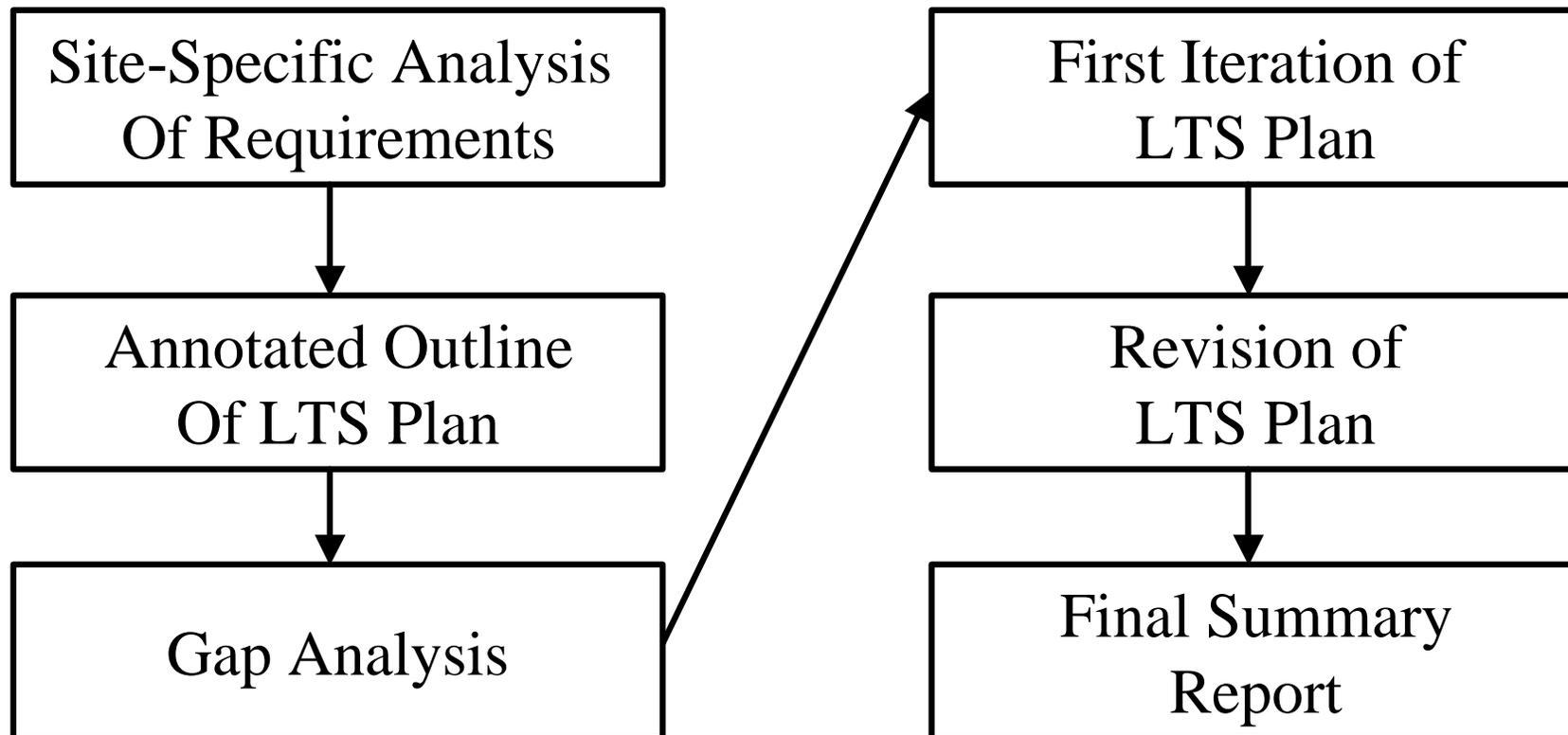
- Identify site-specific requirements for LTS
- Evaluate current status of sites in meeting requirements
- Note potential improvements
- Document the process used to perform the analyses

Products: Site-specific planning and “lessons learned” for national LTS program

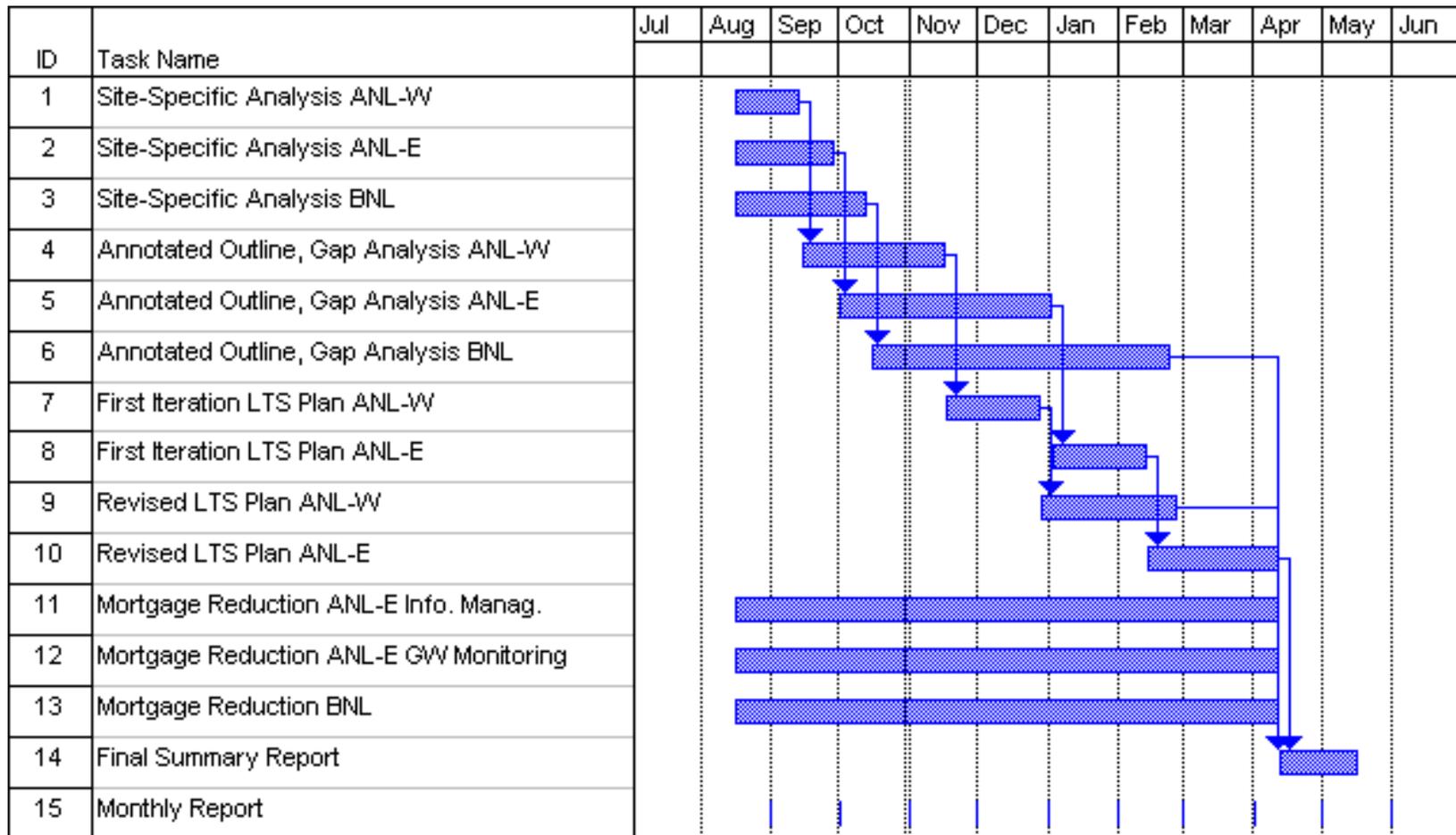
Products

- Site Specific Requirements Document
 - Early identification of issues that need to be addressed in the LTS Plan
- Annotated Outline and Gap Analysis
 - See what it will take to satisfy guidance
- Draft and Revised Draft LTS Implementation Plans
 - ANL-E and ANL-W only

CH LTS Pilot Implementation Plan Follows Approach



ANL Sites Do Full Implementation to Plan; BNL to Annotated Outline Only



Site Specific Requirements Document

- List of things to address in the LTS Plan
 - Information needed
 - Issues that need to be resolved
 - Plans that need to be in place before transfer
 - Agreements and commitments
- Independent check on completeness of DOE guidance

Elements of LTS Program

- O&M of ongoing remedial actions
 - Continued operation and monitoring
 - Periodic performance review
- Institutional controls
- Information management
- Environmental monitoring
- Contingency planning (failure recovery)
- Stakeholder involvement

Options for LTS Program Implementation

- Stand alone program
 - Current DOE model
 - Only way to go for EM sites
- Integrated program - Expand existing mechanisms to satisfy LTS requirements
 - Ensure that existing systems are adequate or upgrade exist systems to meet requirements
 - May be best for sites with ongoing mission

Progress to Date

■ ANL-E

- Requirements document complete
- Discussions with relevant internal stakeholders begun
- Annotated outline underway
- Mortgage reduction studies initiated (preliminary GW monitoring review and discussions with BNL on information management)

■ ANL-W

- Requirements being reviewed in context of ROD

BNL Progress

- BNL senior management brief 11/14
- BNL EM steering committee brief 11/19
- Site Specific Analysis complete by 12/6
- Mortgage reduction task initiated. 3 concepts in works

Status of HQ Initiatives

Next Steps

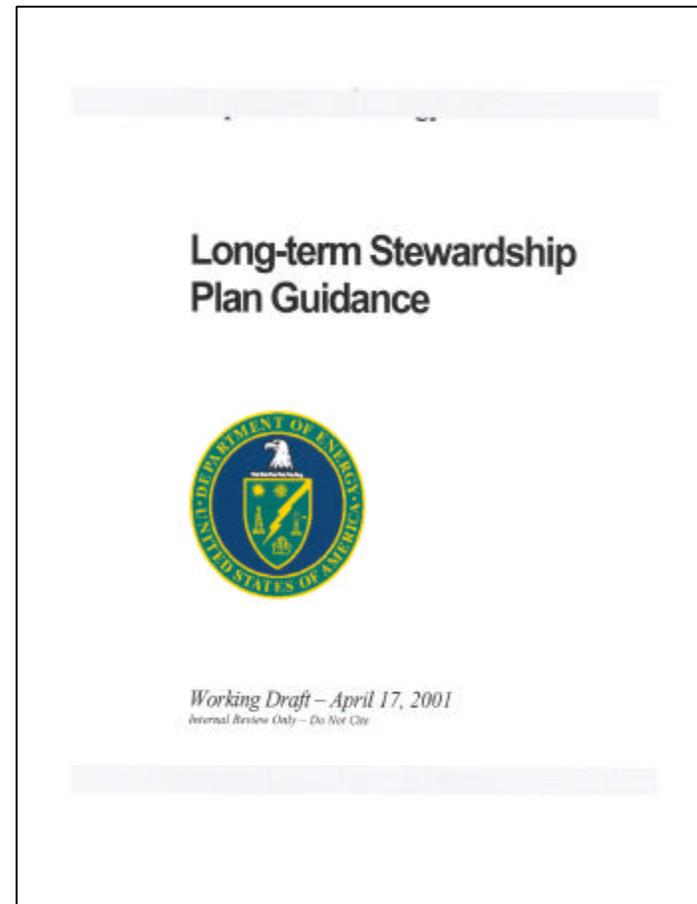
- Products out for review
- Continue meetings
- Increase synergies
- Expand involvement
- Complete task in Spring

BACKUPS

Pilot Study Will Refer To But Not Be Driven By Draft LTS Plan Guidance

Pilot Study implementation will:

- address the topics raised in draft guidance but not be constrained by it
- cross-check with guidance to identify gaps
- provide feedback on guidance for future revisions



Major BNL LTS Activities

- Groundwater extraction, treatment and monitoring
- Soil/sediment monitoring
- Access restrictions/other institutional controls
- Maintenance of capped landfills
- Surveillance & maintenance of decommissioned reactors
- Nothing final for Peconic River, BGRR, HFBR, BMRR

BNL Site Specific Analysis Work Session in October

- Develop list of information needed prior to transition LTS activities between EM and Landlord.
- Develop list of issues that need to be resolved prior to transition.
- Develop list of Plans & Policies that are required prior to transition.

BNL LTS Activities

Report to Congress – Jan 01

- DOE-EM will fund restoration activities through FY06 (GW systems operational, all soil cleanup complete, BGRR decommissioned)
- DOE-EM transitioned WM to Office of Science (SC) in 2000
- SC (landlord) has ongoing research mission at BNL, current planning assumptions state that landlord will be responsible for LTS and future land use issues.
- BNL will remain under control and ownership of Federal government; no land planned to be released or transferred to public.

LTS Responsibilities at ANL-E

- ERAP Project (ESH \Rightarrow PFS) - O&M and performance monitoring until 2003
 - After 2003 - TBD
- Environmental Monitoring Program (ESH \Rightarrow EQO)
- Institutional controls - PFS
- Information management - PFS & EQO

Factors Related to LTS Planning

- Nature and magnitude of residual contamination - What is left?
- Failure Analysis - What may go wrong?
- Risk Analysis - What are the consequences?
- Probability - What is most likely to happen?
- Uncertainty - How sure are we about this?
- Public perception - What do our neighbors worry about?

Implementation Plan Contents

- Summary of site history, conditions, nature and extent of residual contamination
- Restatement of actions taken to close site
- Monitoring and surveillance activities
 - Site wide and unit-specific
- Contingency planning
- Cost and schedule
- Roles and responsibilities

Information Needed

- List of sites to be transferred
 - History
 - Residual contamination
 - Ongoing requirements
 - Residual risk
- Summary of likely future remedial requirements
 - Brings some key issues to the front

Issues That Must be Resolved

- Scope of LTS program
 - Current closed sites and future remedial actions
- Criteria for transfer - When is a site "done"?
- Transfer timing - One unit at a time or the whole program at once?
- Final end state - When is it finished?
- Management approach - Stand alone or integrated program?

Required Plans

- LTS Baseline (scope, cost and schedule)
 - O&M Plan(s)
 - Environmental Monitoring Plan(s)
 - Final close-out plan
- Performance Assessment Plan
- Information Management Plan
- Public Involvement Plan
- Contingency Plan

Responsibilities and Commitments

- Overall commitment to protect human health and the environment as long as necessary
- Who pays for what?
- EM's role before, during and after transfer
- Landlord's role during and after transfer
- Understanding about future remedial actions

Mortgage Reduction Pilots are Planned for ANL-East and BNL

■ ANL-E

- 317 Site Groundwater Monitoring System – how to incorporate “optimally” into broader site system
- 317 Information Management – prioritization, future proofing, accessibility, & long-term costs

■ BNL

- DQO process
- LTS/EMS Integration
 - LTS as part of EMS
 - Review cycle synergies
 - Quicker closeout
 - Prioritize legacy issues
 - Consolidate environmental issues
- Information Management



Mortgage Reduction Opportunities

- Look for ways to reduce long-term costs for specific sites
 - Brings in Science and Technology end of EM
 - Optimization of groundwater monitoring
 - Sensors
 - Automated data collection and reduction
 - Risk-based prioritization
 - Information management

Annotated Outline

- See how well the current guidance addresses these issues
- See what it will take to satisfy the requirements for each site
- Identify gaps in information, planning, organizational structure, etc.
- Identify which organizational structure works best at each site

Draft and Revised Draft Plans

- First attempt at resolving issues and addressing specific LTS needs
- Describes how requirements will be met
- Describes specific roles and responsibilities
- Includes LTS Baseline information and other plans
- Outlines transfer process

Stewardship Endpoints

- Cap maintenance
 - 800, 317, ENE - 15 years min.
 - Groundwater collection systems
 - Until groundwater quality objectives are met
- Phytoremediation
 - Until soil remediation objectives and groundwater remediation objectives are met
 - Likely to be 15-20 years
- 317 Vaults and CP-5 - in perpetuity
 - DOE sets requirements

Long -Term Stewardship After ERAP

- Landlord (Office of Science) will be responsible after FY2003
- LTS will be "Projectized"
 - Technical Planning Document required
 - Project Baseline due in FY2002
 - Money to fund project transferred to landlord
 - Self supporting project
 - Requires regular performance reporting

Long Term Stewardship and EO 13148

- Units are major Environmental Aspects with significant impact
- Key part of the Environmental Management element of the program
- Information management system part of overall communication system for environmental issues
- Key element of Monitoring and Measurement element of ISO 14001

Future Enhancements

- Optimization of monitoring programs
 - Continual improvement
- Better ways to collect monitoring data
 - Sensors, automated data collection
- Better ways to communicate information
 - Internet-based reporting
 - Information access and visualization tools

What is Long Term Stewardship?

“the physical controls, institutions, information and other mechanisms needed to ensure protection of people and environment at sites where DOE has completed or plans to complete ‘cleanup’ (e.g. landfill closures, remedial actions, removal actions, and facility stabilization). This concept of LTS includes, *inter alia*, land use controls, monitoring, maintenance, and information management.”

Ensure goal of continued public health and environmental protection is maintained once remediation activities are complete.

Articulating government commitment to public regarding LTS

- Centralize/Integrate LTS efforts
- Maintain adequate funding for LTS
- Manage relevant information
- Be proactive in terms of responding to changing conditions

Potential Exposure Pathways

- Groundwater consumption (not anticipated but theoretically possible in the future)
- Soil contact (no surface contamination)
- Inhalation (no data, few receptors)
- Soil ingestion (no surface contamination)
- Receptors currently limited to occasional industrial workers
 - Future receptors unknown

Sites Requiring LTS at ANL-E

- Sites with ongoing operations (closed with waste in place)
 - Landfills - 319, ENE, A²R², 318, 800, Ravines
 - 317 French Drain soil and groundwater
- Site closed by removal of waste
 - Sites "clean-closed" to industrial standards
 - Contaminated facilities after D&D
 - CP-5 and other nuclear facilities
- Active contaminated facilities after closure

Key Functions of Long-Term Stewardship Program

- 1 Inspection and Maintenance
- 2 Monitoring
 - Performance monitoring data
 - Compliance monitoring
 - Environmental monitoring
- 3 Institutional Controls
- 4 Information Management

Waste Site Inspection and Maintenance

- Sites Closed by Capping (800, 319, ENE and CP-5 Areas)
 - Periodic Inspections
 - Erosion damage repair
 - Vegetative cover maintenance
 - Access controls - fence upkeep and signage
 - Monitor membrane performance (319 only)



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Waste Site Inspection and Maintenance (Cont.)

■ Phytoremediation in 317 Area

- Routine inspections and monitoring
- Monitor tree health and growth
- Replace dead trees
- Periodic performance assessment
 - Plant sampling, off gas sampling, sap flow measurement, root growth monitoring, soil and groundwater sampling
- Quarterly reporting to IEPA

9.1.2000

Waste Site Inspection and Maintenance (Cont.)

■ Groundwater Collection Systems (317 and 319 Areas)

- Periodic assessment of performance
- Quarterly reporting to IEPA
- Equipment maintenance and replacement
- Power costs



Monitoring



■ Media sampled for several programs

- Groundwater sampling (317/319/ENE, 800, CP-5, Site-wide for SER)
- Surface water sampling (319, NPDES, 800, Site)
- Wastewater sampling (NPDES, Site)
- Air monitoring (317, Site)

■ Information reported in several ways

- Site Environmental Report
- Project Quarterly Progress Reports
- 800 Landfill Quarterly report
- NPDES Discharge Monitoring Report

Institutional Control

■ Whatever it takes to keep people away

- Fencing
- Signs
- Physical barriers
- Deed restrictions
- Digging permit restrictions
- Project ESH reviews
- Groundwater use restrictions



Information Management

- Prepare and distribute written reports
- Retain official records for future
- Public involvement
 - Make information available to public
 - ANL-E Open House, ANL Web page
- Incorporate institutional knowledge into organizational plans
 - Institutional plans
 - Strategic plans