

General

**Department of Energy**  
Albuquerque Operations Office  
P. O. Box 5400  
Albuquerque, New Mexico 87185-5400

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Mr. Mark Weidler  
Secretary  
New Mexico Environment Department  
P.O. Box 26110  
Santa Fe, NM 87502

NM ENVIRONMENT DEPARTMENT  
OFFICE OF THE SECRETARY

Dear Mr. Weidler:

In a continued effort to obtain public input into the development of the Department of Energy (DOE), Albuquerque Operations Office (AL) Environmental Management (EM) Program, AL is now issuing the "Accelerating Cleanup: Paths to Closure, Albuquerque Operations Office" Draft (AL Paths to Closure) for your review and comment. This Draft includes our response to stakeholder comments which were received on the "Accelerating Clean-up: Focus on 2006 AL Discussion Draft."

The AL Paths to Closure addresses all EM mission activities at the following sites: the Lovelace Respiratory Research Institute, formerly the Inhalation Toxicology Research Institute, and the South Valley Superfund site, both in New Mexico; the Grand Junction Office in Colorado; the Monticello Superfund site in Utah; the Maxey Flats Superfund site in Kentucky; sites throughout the country associated with the Uranium Mill Tailings Remedial Action Project; the Kansas City Plant in Missouri; the Pantex Plant in Texas; the recently closed Pinellas Plant in Florida; Sandia National Laboratories in California and New Mexico; and the Los Alamos National Laboratory in New Mexico.

Most AL sites have ongoing mission activities funded by programs other than EM, including national security, nuclear material stewardship, and basic research. These mission activities will continue indefinitely. By contrast, AL is striving to complete most EM mission activities by the end of Fiscal Year (FY) 2006. These EM mission activities are primarily in the areas of environmental restoration and waste management and include cleanup of surface contamination and cleanup or containment of groundwater contamination, final disposition of all wastes currently in storage, and transfer of funding responsibility for routine waste operations to the site landlord programs. Other EM activities such as long-term surveillance and maintenance and groundwater monitoring are expected to continue for an extended period at many AL sites.

A major difference between this AL Paths to Closure and the earlier AL Discussion Draft is the use of only one funding case instead of analysis of separate high and low funding cases. A significant addition to the AL Paths to Closure is waste disposition maps which illustrate how various waste types will be managed. Also, decreases in overall funding and changes in project-specific assumptions have changed the program completion schedules at some sites.



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During the review period beginning March 2, 1998, and ending May 1, 1998, we encourage you to engage in discussions with our various Area Office contacts (identified within the document). In concert with our efforts, DOE/HQ will be issuing the Accelerating Cleanup: Paths to Closure, National Draft, which presents the overall national EM perspective. The National Draft will be available on Internet site <http://www.em.doe.gov>, March 2, 1998. Distribution will begin March 5, 1998.

Comments on the two respective draft documents can be forwarded as follows:

The address for National Paths to Closure is:

U.S. Department of Energy  
Mr. Gene Schmitt  
P.O. Box 44820  
Washington, D.C. 20026-4820  
E-mail address: FocusON2006@EM.DOE.GOV (not case sensitive)

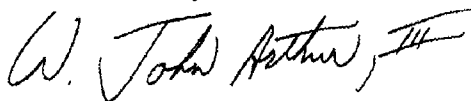
Comments on the overall AL Paths to Closure should be provided directly to:

U.S. Department of Energy  
Albuquerque Operations Office  
Mr. Richard Nevarez  
P.O. Box 5400  
Albuquerque, NM 87185-5400  
E-mail address: rnevarez@doeal.gov

Site specific contacts at the Area Offices can be located in the AL Paths to Closure.

Thank you for your continued interest and involvement. If you are interested in discussing specifics of the AL Paths to Closure or need any additional information, please contact Richard Nevarez at (505) 845-5804. We look forward to receiving your comments and exchanging information and concerns as we continue this process.

Sincerely,

A handwritten signature in black ink, appearing to read "W. John Arthur III", with a stylized flourish at the end.

W. John Arthur III  
Assistant Manager for Office of  
Environment/Project Management

Enclosure

cc w/enclosure:  
B. Twining, OOM  
D. Geary, OPA



U.S. Department of Energy

# **Accelerating Cleanup:**

## **Paths to Closure**

**Albuquerque Operations Office**

DRAFT

February 1998



*This draft document, "Accelerating Cleanup: Paths to Closure, Albuquerque Operations Office" (hereinafter referred to as AL Paths to Closure), was previously referred to as the Draft Albuquerque 2006 Plan. The Environmental Management program decided to change the name of the draft "strategy" and the document describing it in response to a series of stakeholder concerns, including the practicality of achieving cleanup by 2006. Also, EM was concerned that calling the document a "Plan" could be misconstrued to be a proposal by DOE or a decision-making document. The change in name, however, does not diminish the 2006 vision. To that end, "AL Paths to Closure" retains a focus on 2006, which serves as a point in time around which objectives and goals are established.*

*This draft reflects work scope expected to be achieved for a FY 1999 planned funding target of \$289 million, and a \$290 million funding target from FY 2000 through FY 2008. Since the initial stages of this planning (updating of the project baseline summaries), the funding target for FY 1999 was reduced to \$276 million. This change has not been incorporated into the AL Paths to Closure, and therefore, it is expected that some of the activities identified for completion in FY 1999 and out will not be completed as currently identified.*

## **FUTURE STAKEHOLDER PARTICIPATION**

The Accelerating Cleanup: Paths to Closure, National Draft (hereinafter referred to as National Paths to Closure) and the Accelerating Cleanup: Paths to Closure, Albuquerque Operations Office Draft (hereinafter referred to as AL Paths to Closure) are expected to be submitted to Congress in February 1998. The Drafts will be made available to the public for a 60-day comment period. The public comment period will begin on February 27, 1998 and will conclude on April 28, 1998. AL personnel will continue to hold open meetings, and conduct briefings to address concerns of specific groups to help our stakeholders understand the information. These processes will ensure the involvement of a broad cross section of stakeholder groups.

Initial 2006 Plans, scheduled to be released to Congress and the public in early summer 1998, will provide a discussion of the comments received and how they have been incorporated. After the review period for the AL Paths to Closure Draft, AL will work with stakeholders to address issues and comments before the development and release of EM's Initial 2006 Plan.

Requests for additional copies of the National Paths to Closure should be directed to the Center of Environmental Management Information at (800) 736-3282. Comments focused on issues related to the national document or comments concerning cross-site or policy issues such as waste should be submitted directly to:

U.S. Department of Energy  
Mr. Gene Schmitt  
P.O. Box 44820  
Washington, D.C. 20026-4820  
E-mail address: FocusOn2006@em.doe.gov

The National Paths to Closure, AL Paths to Closure and the supporting data (project baseline summaries, waste and material disposition maps) are available at EM's website at [www.em.doe.gov](http://www.em.doe.gov). Comments on the AL Paths to Closure should be provided directly to:

U.S. Department of Energy  
Albuquerque Operations Office  
Mr. Richard Nevarez  
PO Box 5400  
Albuquerque, NM 87185-5400  
Phone: (505) 845-5804  
E-mail address: Rnevarez@doeal.gov

To enable stakeholders, Tribal Nations, or regulators to pursue site specific discussions, comments or informational exchanges, you should use the site specific Points of Contact listed on the following page.

## ALBUQUERQUE OPERATIONS AND AREA OFFICES POINTS OF CONTACT

ADDRESS	PHONE	FAX
<b>Albuquerque Operations Office</b>		
P.O. Box 5400 Albuquerque, New Mexico 87185		
Rich Nevarez	505-845-5665	505-845-6286
Tracy Loughhead	505-845-5977	505-845-6206
<b>Amarillo Area Office</b>		
Highway 60 at FM 2373 Amarillo, Texas 79177		
Tom Walton	806-477-3120	806-477-6641
<b>Grand Junction Office</b>		
2597 B 3/4 Road Grand Junction, Colorado 81503		
Audrey Berry	970-248-7727	970-248-6023
<b>Kansas City Area Office</b>		
2000 East 95th Street Kansas City, Missouri 64141		
David Hampton	816-997-7005	816-997-5059
<b>Kirtland Area Office</b>		
P.O. Box 5400 Albuquerque, New Mexico 87185		
Al Stotts	505-845-6094	505-845-6206
<b>Los Alamos Area Office</b>		
528 35th Street Los Alamos, New Mexico 87544		
Linda Anderman	505-665-5025	505-665-1718

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# ACCELERATING CLEANUP: PATHS TO CLOSURE, ALBUQUERQUE OPERATIONS OFFICE

## I. EXECUTIVE SUMMARY

### A. INTRODUCTION

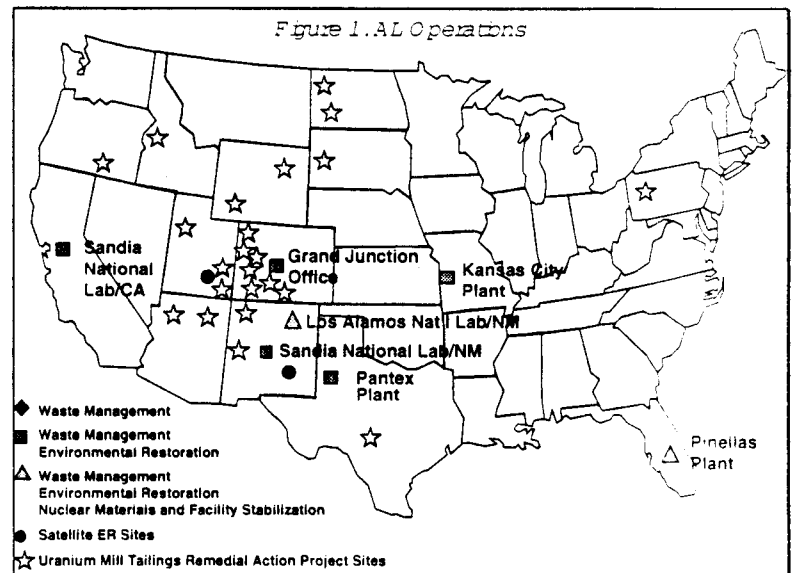
The U.S. Department of Energy's (DOE) Albuquerque Operations Office (AL) in conjunction with Amarillo Area Office, Kansas City Area Office, Kirtland Area Office, Los Alamos Area Office, and Grand Junction Office oversee DOE Office of Environmental Management (EM) program work at multiple DOE sites around the country.

The "Accelerating Cleanup: Paths to Closure, Albuquerque Operations Office" (AL Paths to Closure) is not a budget document. Rather, it is a strategic planning document that will be used to guide budget formulation. It is expected that this Draft will be updated annually, based on supporting data submitted by the various AL Area offices and site contractors. As such, this AL Paths to Closure Draft represents a snapshot in time, and changes will be incorporated as planning assumptions or funding allocations become refined.

### ***Overview of Albuquerque Operations Office Sites***

AL is responsible for EM program activities shown in Figure 1, these include:

- Three production plants  
Active sites: Kansas City Plant, Missouri; Pantex Plant, Texas  
Closed site: Pinellas Plant, Florida
- Three national laboratories  
Sandia National Laboratory, California  
Sandia National Laboratory, New Mexico  
Los Alamos National Laboratory, New Mexico
- Lovelace Respiratory Research Institute (formerly the Inhalation Toxicology Research Institute), New Mexico
- South Valley Superfund site, New Mexico
- Grand Junction Office, Colorado
- Monticello Superfund sites, Utah
- Maxey Flats Superfund site, Kentucky
- Uranium Mill Tailings Remedial Action Project, locations across the United States
- Long-Term Surveillance and Maintenance Program, locations across the United States
- Uranium Lease Management Program, locations across the United States.





AL Paths to Closure addresses all environmental restoration and waste management programs at the sites listed above. However, at KCP, operational waste management activities involving newly generated waste are funded by Defense Programs beginning in FY 1998 and, therefore, are not addressed here. AL Paths to Closure incorporates responses to comments on EM's "Accelerating Cleanup: Focus on 2006 Discussion Draft" (National Discussion Draft). The AL Paths to Closure also incorporates those comments received on the "Accelerating Cleanup: Focus on 2006 - Albuquerque Operations Office Summary" (AL Summary), which was AL's site level Discussion Draft.

Detailed information on the EM activities at the various AL sites can be found in the project-specific Project Baseline Summaries (PBS). Attachment 1 lists the twenty PBS included in the AL Paths to Closure. Each PBS contains project-specific narrative descriptions and other information such as annual work scope projections and associated costs.

The PBS data have been updated since the issuance of the National Discussion Draft in June 1997 and reflect the cost and schedule estimates available in December 1997.

This AL Paths to Closure Draft provides Site Project Summaries (Section II), which contain more detail on individual EM projects.

### ***Ongoing AL Missions***

The primary missions of AL are to:

- maintain a safe, reliable nuclear weapons stockpile;
- manage nuclear materials awaiting permanent disposition;
- achieve a restored environment; and
- support these missions with a strong science and technology base.

These AL missions result in the generation of non-hazardous, hazardous, radioactive, and other waste that must be managed in a safe and environmentally-sound manner. To accomplish this, AL sites also provide effective management systems for treatment, storage, and disposal of waste generated by site mission activities.

Most AL sites have ongoing mission activities funded by programs other than EM, including national weapons programs, nuclear material stewardship, and basic research. These mission activities will continue indefinitely. In contrast, AL is striving to complete most EM-funded mission activities by the end of Fiscal Year (FY) 2006.

The AL EM-funded mission activities are primarily in the areas of environmental restoration, waste management, technology development, national transportation management and nuclear material stabilization. These areas include cleanup of surface contamination, containment and cleanup of groundwater contamination, decontamination and decommissioning (D&D), final disposition of all wastes currently in storage, and transfer of funding responsibility for routine waste operations to the site landlord programs. Other EM activities such as long-term surveillance and maintenance, and groundwater monitoring are expected to continue at many AL sites.

### **EM Program Policies**

AL's policy is to complete environmental management activities in full compliance with applicable regulations or compliance orders. Site contamination will be cleaned up to meet established criteria. All legacy waste (that is, waste produced by past nuclear weapons production activities) and newly generated waste will be treated, stored, and disposed in accordance with state and federal regulations. Environmental restoration and waste management activities are evaluated to identify associated environment, safety, and health risks. Where necessary, mitigation measures are taken to reduce risks to workers, the public, and the environment.

One AL operating site is being completely closed under this draft. In September 1997, an AL-led DOE transition team completed facility cleanup, deactivation, final shutdown, and transfer of control of the Pinellas Plant to the Pinellas County Industry Council. This site transfer represents the first closure and resale of a DOE weapons facility for commercial/community use. DOE is easing worker transition resulting from this facility closure by meeting its employee benefits liabilities. As EM activities conclude at other AL sites, worker transition will likely be eased by retraining activities and opportunities to support other ongoing site missions.

### **Planning Assumptions**

AL Paths to Closure is based on several general assumptions to assure consistency across the DOE Complex and among AL sites. The following assumptions serve as the basis for developing the site-specific PBS, which form the basis of this plan.

#### **DOE Headquarters Assumptions:**

- The annual EM funding target for AL is based upon a \$289 million allocation in FY 1999 and an annual \$290 million allocation for FY 2000 through FY 2006.
- Funds will be available for long-term surveillance and monitoring, and final closure activities after project "completion."
- DOE non-EM programs will continue to generate waste from ongoing operations even as the EM waste management mission is completed. Management and financial responsibility for new waste generated outside the EM program will be assumed by the site landlords in FY 1999.
- No additional facilities from other DOE programs will be included for safe shutdown or remediation in the EM program.
- Funding levels for technology development and deployment in Paths to Closure will be provided by DOE Headquarters.
- The Waste Isolation Pilot Plant will open in FY 1998 and AL will be able to begin shipping transuranic waste for disposal.
- All decisions on EM projects will incorporate the appropriate National Environmental Policy Act (NEPA) documentation. AL waste management planning will be consistent with the DOE Final Waste Management Programmatic Environmental Impact Statement preferred alternatives.

**AL Specific Assumptions:**

- Responsibility for funding all surveillance and monitoring costs for completed environmental restoration projects will be transferred to the installation landlord after FY 2006, except for sites included in the EM LTSM Program. (Funding data are shown in AL Paths to Closure because final agreement on transition of responsibility for this activity has not yet been reached.)
- Waste Management Operations for SNL, Pantex and LANL will be transitioned in FY 1999. That transition was completed for KCP in FY 1998. LANL Transuranic Waste (TRU), MLLW Legacy, and LRRRI will remain with EM.
- Regulatory agencies will have sufficient resources to act in a timely manner so that there will not be significant adverse impacts on scheduled actions.
- All known potential release sites for which AL is responsible have been identified and included in the environmental restoration scope. (This excludes active permitted sites such as firing sites. These sites may not be remediated by EM and may be the responsibility of the landlord.)
- Ongoing characterization of release sites will not reveal remediation issues that will result in significant increase in scope.
- Methods and processes for reducing waste volume, including avoiding generating waste when applicable, are incorporated.
- Costs for waste treatment, storage, and disposal are incorporated into the costs for the remediation and decommissioning activities that generate the wastes.
- Additional regulatory requirements will not increase project scope.

Additional assumptions relating to individual projects are identified in the Site Project Summaries (Section II).

A major DOE Headquarters' assumption for this draft is that no additional facilities will be accepted in the EM program. This assumption, however, could change and is pending completion of a DOE Headquarters' review. Since most AL sites have ongoing non-EM missions, any future facility decommissioning and dismantlement or closures will be the responsibility of the site landlord program. Additional facilities could not be accepted by AL without impacting the lifecycle costs and closure dates for current projects unless these additional facilities were fully funded. The level of impact on this draft cannot be estimated without knowing the scope of the additional work and the level of funding provided by the DOE program currently responsible for these additional facilities.

**Changes from the AL Summary**

A major difference between this draft and the earlier Plan, the AL Summary, is that this draft contains an analysis of only one funding case with and without enhancements rather than separate high and low funding cases. Other major changes are the inclusion of waste disposition maps, which illustrate how various waste types will be managed, and critical closure path graphs, which illustrate critical sequencing of EM activities leading to completion of EM involvement.

Decreases in overall funding and changes in project-specific assumptions have adversely impacted the AL EM program completion schedules at some sites provided in the AL Summary. In addition, this document uses a funding target of \$290 million from FY 1999 through FY 2006, which is \$11 million lower than the AL Summary.

Most significantly, the LANL environmental restoration project completion date has slipped three years to 2008 and the completion of LANL workoff of legacy transuranic waste has been extended from FY 2005 to 2015, with the D&D of TRU facilities to be completed in FY 2017. The TRU waste workoff change is driven by the assumption that existing technology would be used for managing high-wattage and high-gas-generation transuranic waste. The AL Summary assumed technology breakthroughs would allow simplified management and disposal of these waste streams. Lack of technical progress in this area and reductions in funding for technology development makes this assumption insupportable at this time.

### ***Lifecycle Cost and Budget Process***

In response to projections of declining funding, AL realized that EM work scope would have to be accomplished with fewer dollars. In 1995, AL chartered two independent reviews to find ways to maximize the "purchasing power" of EM funds. Through these reviews, AL was able to identify several EM program enhancement opportunities, which are discussed further in the Executive Summary, Part D. Scope, Cost and Schedule. The end result is that AL's enhancement initiatives have become an integral part of its EM planning process and the remaining work scope will be completed for much less and in a shorter timeframe than originally estimated. The project lifecycle costs and closure dates in AL Paths to Closure reflect these enhancements. The total escalated lifecycle cost (assumed an 2.7% annual escalation rate) for AL's EM program is estimated to be \$20 billion from FY 1997 through FY 2070. In constant FY 1998 dollars this would equate to \$8.5 billion. This total contains costs for ongoing waste management and LTSM activities that will be transitioned to site landlord programs. Part D of Executive Summary and the Site Project Summaries (Section II) contain project-specific cost summaries.

The PBS developed as part of the Paths to Closure planning process are the building blocks for EM's Integrated Planning, Accountability, and Budgeting System. Work scope data collected in the PBS feed the budget formulation process. AL submitted a limited PBS data update in August 1997 that identified planned work scope to support the formulation of AL's FY 1999 EM budget. The PBS submitted on January 15, 1998 for this draft will form the basis for AL's FY 1999 budget and the FY 2000 budget formulation.

## **B. END STATE, FUTURE USE, AND STEWARDSHIP**

The site-wide end state refers to the planned ultimate status of each parcel of land, facility, material, or waste for which the EM program is accountable as an entity until EM has completed its responsibilities and has either transferred it to another entity (not within EM) or dismantled or disposed of it.

### ***Relationship between EM End State and Ongoing Landlord Programs***

Achievement of the EM end state will not have any significant impact on future land use and stewardship at SNL, LANL, KCP, and the Pantex Plant. These sites have ongoing missions funded by programs other than EM that will continue indefinitely. Defense Programs is the landlord of the facilities at these sites. Future land and facility use decisions are primarily under the purview of Defense Programs and, therefore, not within the scope of the AL Paths to Closure Draft. For AL, only facilities managed by GJO have an EM landlord.

For the purposes of this draft, AL assumes a site's EM projects are complete when:

- deactivation and decommissioning of all facilities currently in the EM program have been completed, excluding any long-term surveillance and monitoring;
- all release sites have been remediated in accordance with agreed-upon remediation standards;
- groundwater contamination has been contained, or long-term treatment or monitoring is in place;
- nuclear materials and nuclear fuel have been stabilized or placed in safe long-term storage;
- legacy waste has been disposed of in an approved manner; and
- funding and management responsibility for newly generated waste has transitioned to the site landlord.

Most of the currently planned EM projects at AL sites will be completed by the end of FY 2006. This includes completion of active site remediations, except at LANL which extends to 2008; and disposal of legacy waste currently in storage, except LANL transuranic waste which will not be complete until 2015, with the D&D of TRU facilities ending in 2017.

AL's planned end states at completion are compliance based and can be achieved with currently available technology and, therefore, are not likely to be modified as new technologies become available. While economics is likely to impact schedules, AL does not expect economic feasibility issues to significantly impact planned end states. Unanticipated new regulatory requirements have the greatest potential to change the end states at AL sites by changes to planned remediation levels.

As stated above, the landlord programs at non-EM sites will have responsibility for determining future use and final end state at the completion of EM funded activities. Facilities being cleaned up or decommissioned under EM programs will revert to landlord control upon completion and control of active waste management facilities will be transitioned to the generator or landlord program. So, while EM activities will terminate, these facilities will continue to operate with the final end state to be determined by the landlord program.

### ***Actions Remaining to Achieve EM End State***

Remaining environmental restoration work consists of completing assessments and necessary remediations of solid waste management units and potential release sites. As part of this process, if final standards have not been agreed to by regulators, the sites will define methods to achieve this end state.

Disposal of the legacy waste currently in storage at LANL is the largest waste management task remaining. Responsibility for management of newly generated waste from ongoing site operations at SNL, LANL, and Pantex will be transitioned from EM in FY 1999. This transition also includes the legacy waste at Pantex and SNL.

### ***Future Use Plans and Long-Term Stewardship***

Most AL sites have ongoing non-EM missions that will continue after the EM end state has been achieved. As a result, future site use is under the control of the landlord program. DOE will maintain stewardship at these sites and overall land use will likely continue as is for the foreseeable future. Only two facilities for which AL is responsible will undergo significant changes in land use: the Pinellas Plant in Florida and the GJO site in Colorado. The Pinellas Plant has already been closed and is no longer an AL facility. DOE sold the

facility to the Pinellas County Industry Council in 1995 and completed transfer of facility control in 1997. While DOE no longer has control of future use of this facility, current plans are for commercial and community use. Future use options for the GJO site, including possible transition to private use upon completion of site remediation activities, are being evaluated.

GJO is assumed to have long-term stewardship of many AL and other DOE sites under the LTSM Program. Sites in this program include uranium mill tailings disposal sites with long-term care licensing requirements and sites with long-term groundwater monitoring requirements such as UMTRA Groundwater Project sites and the Pinellas Plant.

At non-EM sites, long-term stewardship is the responsibility of the site landlord and, therefore, beyond the scope of AL Paths to Closure. However, most AL sites have identified costs for long-term surveillance and monitoring activities for sites/facilities that will eventually be transitioned to the landlord programs.

At LANL, a small fraction (about 4,300 acres) of existing lands may be transferred to Los Alamos County for future economic development. Although much of these lands may be released for unrestricted use, some lands may only be available for restricted uses. The scope of this draft has not been finalized to determine the end state of some of the contaminated areas.

### **C. STRATEGIES AND PRIORITIZATION**

AL is working to complete the following EM activities as part of its overall 2006 vision:

- treat and dispose of all legacy low level waste and legacy mixed low level waste;
- transition legacy waste management operations at SNL and Pantex to site landlords in FY 1999;
- transition ongoing waste management operations at SNL, LANL and Pantex to site landlords in FY 1999; and
- complete all identified active surface remediation by end of FY 2006, except LANL.

Program efficiencies can represent significant savings to DOE and show accelerated workoff of legacy waste in storage and increased number of completed remediations. AL has already incorporated efficiencies into its 2006 planning assumptions based on initiatives begun in 1995. AL will make every effort to continue identifying and implementing programmatic efficiencies while executing this draft and will pursue a strategy to enhance performance and pull legacy waste workoff and site remediation scope forward.

#### ***Prioritization***

With multiple sites, each of which has hundreds or thousands of EM activities, a means of prioritizing the EM work has been essential. The general prioritization criteria used by AL's EM team are listed below in order of importance.

1. Assuring health and safety of the public and environment and regulatory compliance activities.
2. Compliant management of new wastes that come from sites' mission-related work such as ongoing research and development, weapons programs, and energy research. Completion of near-term projects that support site closure.
3. Environmental restoration activities, disposal of wastes that are currently in long-term storage, and other programs that have been assigned to AL, but are not part of our core EM mission.

Projects, or activities within projects, rated low in priority would be elevated to the top of the list if increased health and safety or compliance risks are identified in the course of assessments. The Integrated Priority List in Attachment 2 shows AL's prioritization of individual EM projects/subprojects for FY 1999.

### ***Critical Closure Path Analysis***

For the Paths to Closure planning process, AL's EM program is managed as 20 individual environmental restoration and waste management projects with each project having its own PBS (see Attachment 1). Because these projects are not all co-located at one individual site, their schedules are independent of each other. Because of this independence, the critical path for the entire AL EM program is simply the project with the latest completion date. The project on the critical path for the environmental restoration program is the LANL Environmental Restoration Project, which is scheduled to end in 2008. The LANL Legacy Waste Management Project, which is scheduled to complete workoff of legacy transuranic waste in 2015, and D&D of TRU Facilities (WCRRP and RAMROD) by 2017, is on critical path for all waste management projects. Figure 2 shows the estimated completion date for major AL EM Management activities.

Critical closure path analysis does not really apply to newly generated waste management activities that will be transitioned to landlord program because these are ongoing operations that will continue indefinitely, and therefore are not shown in Figure 2.

The remaining projects support other EM activities and will continue as long as there is a need and separate funding continues. Critical closure path analyses for individual projects are contained in Section II. AL Site Project Summaries.

### ***Waste Disposition***

During development of this document, AL sites made a concerted effort to determine disposition paths for EM wastes. Sites identified major waste streams and estimated volumes for environmental restoration waste, legacy waste, and newly generated waste. Where applicable, planned waste treatment/processing options for each waste stream were also identified. Finally probable disposal options for these waste streams were determined. Generally for newly generated and legacy wastes:

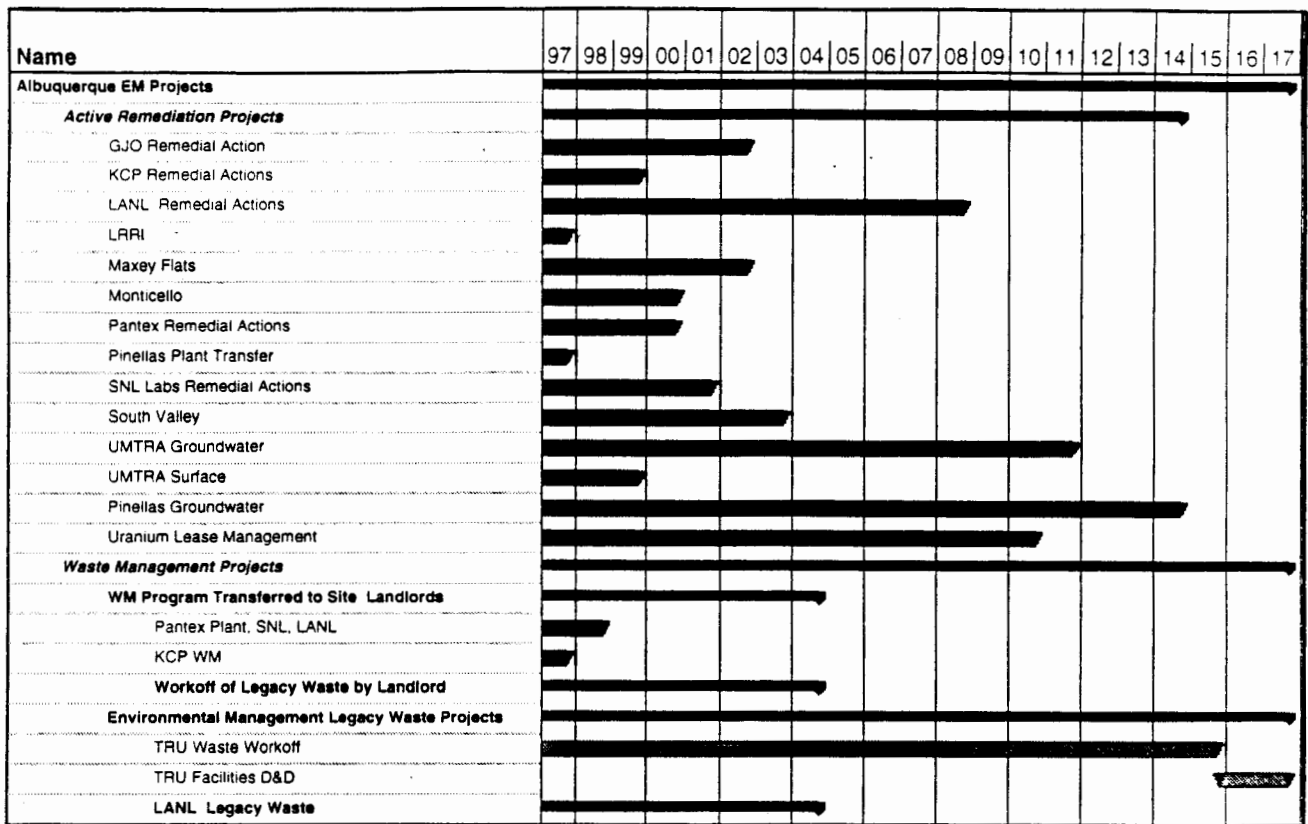
- LANL will be the only AL facility disposing of low level waste onsite, other sites will use either DOE or commercial offsite disposal facilities;
- all AL mixed low level waste will be disposed offsite, planning to use either commercial facilities or other DOE sites, hazardous waste are also planned to be treated and disposed by commercial facilities;
- all AL transuranic waste will be disposed of at the Waste Isolation Pilot Plant, although SNL transuranic waste may first be shipped to LANL for characterization and processing.

For most AL sites, contaminated media from environmental restoration activities will be dispositioned in a variety of ways, including onsite disposal cells, in situ disposal, and offsite disposal at other DOE sites or commercial facilities. The detailed results of this effort are depicted on the attached waste disposition maps (Attachment 3).

*Figure 2. AL Environmental Management Critical Closure Path Analysis*

### ***Mortgage Reduction Opportunities***

The objective of mortgage reduction is to identify opportunities that reduce the lifecycle



costs of AL's EM program through a reduction in fixed costs.

Most mortgage reduction for waste management programs is tied to legacy waste workoff and freeing up of storage facilities. Challenges associated with handling and disposing of high-wattage transuranic waste have doubled the lifecycle costs of the LANL legacy transuranic waste project.

For environmental restoration activities at non-EM sites, few opportunities exist since mortgage reduction really applies to mission-direct activities whose primary focus is waste treatment, nuclear material stabilization, and D&D.

The DOE privatization program has the highest mortgage reduction potential for major construction projects with large up-front capital costs. Since AL does not have any remaining EM projects that fit this profile, few mortgage reduction opportunities stemming from privatization initiatives are available.

### **EM Contracting Approach**

Most AL sites have Defense Programs landlords and Defense Programs cost-plus-fee prime contracts. Only GJO is an EM landlord site. AL's contracting strategy includes increasing the percentage of competitively-let future contracts and using the management commitments at Area Offices and contractor levels as performance-based objectives, which will be part of both federal and contractor evaluations.

AL has vigorously pursued opportunities to change contracting mechanisms for EM projects. In FY 1996, two management and operating contracts were eliminated at AL sites. AL is successfully using task-order contracts and basic ordering agreements to



provide the flexibility needed for performing EM work at a competitive price. AL increased competitive procurements to 68 percent of all contracting actions and 63 percent of the value of awards in FY 1997.

Some specific examples of recent changes to AL's contracting approach include:

- AL replaced the LRRRI contract with a cooperative agreement and the GJO contract with two smaller, task-order contracts. Both contracting mechanisms provide many of the advantages of fixed-price contracts with strong ties between execution of defined tasks and costs.
- AL has negotiated changes to performance measures within existing SNL, KCP, Pantex Plant, and LANL contracts to focus on EM program results rather than activities.
- LANL awarded three task ordering agreements for environmental restoration projects in early FY 1998. Under these agreements, tasks will be awarded on a firm-fixed-price basis whenever feasible and appropriate.
- AL technology development program support is now provided through a time-and-materials task order contract allowing support to be tied to specific tasks with discrete budgets.

### ***Technology Development and Deployment***

As another EM funded program at AL, the AL Site Technology Coordination Group (STCG) is instrumental in the development and deployment of technologies at the AL complex. These initiatives may also benefit other DOE programs. While AL's Science and Technology Program will involve a wide range of strategic areas, AL anticipates concentrating on D&D, waste management and pollution prevention technologies over the next 5 to 10 years, and environmental restoration technologies over the next 1 to 3 years. In FY 1997, AL identified 34 technology development needs to address environmental restoration and waste management problems at five AL sites. These needs fall into the following national EM focus areas: Decontamination and Final Disposition; Mixed Waste, and Subsurface Contaminants. Additionally, AL technologies have been matched to various needs across the DOE complex, and potential future deployments at AL sites are estimated to provide cost savings ranging from \$159 million to \$471 million. Table 1 shows the technology needs and potential deployments by AL site, which were defined by the planning process.

Table 1. AL Technology Development Needs and Deployments

	GJO	KCP	LANL	Pantex	SNL
<b>Technology Needs</b>	3	2	13	8	8
<b>Technology Deployments</b>	4	1	29	5	14

The AL STCG is working in conjunction with the National Technology Deployment Initiative Program and stakeholders to facilitate the rapid deployment of available technologies. Three FY 1998 projects have been selected for deployment:

- decontamination and volume reduction system at LANL,
- permeable, reactive treatment wall for radionuclides and metals at the UMTRA Groundwater Project site in Durango, Colorado,
- alternative landfill cover system on the SNL Mixed Waste Landfill.

Future development and deployment of technologies to handle and dispose of high-wattage and high-gas-generating transuranic waste could significantly accelerate the schedule and reduce lifecycle costs of the LANL legacy transuranic waste project. Near-term deployment of new technologies to manage these wastes has the potential to reduce the lifecycle costs of this project by up to \$300 million.

As part of an overall EM effort and in response to stakeholder comments, it was suggested that the DOE provide a Technology Deployment Management Plan, the outline is included as Attachment 4. The Technology Deployment Management Draft will be completed in June 1998.

#### **D. SCOPE, COST, AND SCHEDULE**

At sites with ongoing missions, site operations will continue and will require waste operations support that will last beyond the scope of the Paths to Closure Draft. Funding and management responsibility for waste operations is expected to transition to the site generator/landlord by the end of FY 1999 for all AL sites, except for LANL legacy waste workoff which will remain in the EM program. For planning purposes, this draft identifies annual scope for all current EM waste management activities even after EM transitions these programs to the site generator/landlord programs at SNL, LANL, and Pantex. Both the work scope and funding requirements for ongoing newly generated waste management operations are depicted in the PBS as continuing indefinitely.

AL has included newly generated waste from ongoing site missions through FY 2070. For FY 1998 through FY 2000, AL sites are estimated to produce 17,568 cubic meters of low level waste, 227 cubic meters of mixed low level waste, and 585 cubic meters of transuranic waste. At the beginning of FY 1998, the scope of the AL legacy waste workoff program included approximately 8,758 cubic meters of transuranic waste, 876 cubic meters of low level waste, and 774 cubic meters of mixed low level waste in storage at AL sites awaiting final disposition. The FY 1998 scope of the environmental restoration program included approximately 830 potential release sites at AL facilities remaining to be completed.

The total escalated lifecycle cost of the AL EM program is estimated to be \$20 billion from FY 1997 through FY 2070. The estimated cost for FY 1997 through 2006 is approximately \$2.9 billion. Figure 3 shows the annualized cost schedule profile for this ten-year period. Most of the environmental restoration and legacy waste management work is scheduled to be completed by 2006 with the exception of work at LANL. LANL site remediations will be complete in 2008, workoff of legacy transuranic waste at LANL in 2015, and the D&D of TRU facilities, in FY 2017. This lifecycle cost estimate also includes funding for ongoing

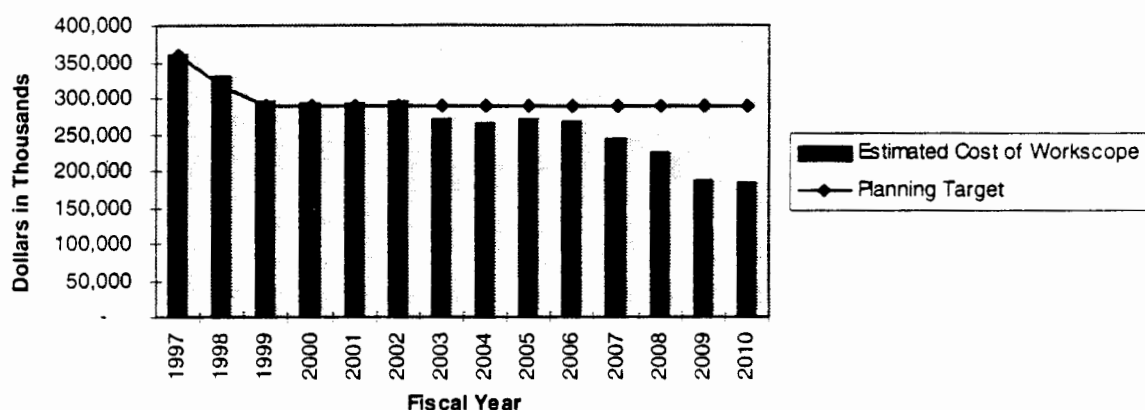
waste management operations, LTSM, and groundwater monitoring activities after EM transitions these programs to the site generator/landlord programs.

Figure 4 shows the percentage of escalated costs portioned by major programs for the period FY 1997 through FY 2006. With \$1.5 billion in estimated costs, LANL's three environmental restoration and waste management projects account for approximately 50 percent of AL's EM program costs during this time period. Project-specific annualized cost schedule profiles for this ten-year period are in Site Project Summaries (Section II).

### Cost and Schedule Methodology

Costs and schedules for AL waste management and environmental restoration activities covered in this draft are based on mature, well-established baselines. AL sites estimate technical scope, costs and schedules to develop baselines for their own projects. These site-specific baselines then undergo independent review by AL.

Figure 3. Total AL EM Escalated Cost Fiscal Year 1997 - 2010



	1997	1998	1999	2000	2001	2002	2003
<b>Total Escalated Cost</b>	358,887	330,076	293,967	291,266	291,100	294,541	270,070
<b>Planning Target</b>	360,623	315,146	289,000	290,000	290,000	290,000	290,000
	2004	2005	2006	2007	2008	2009	2010
<b>Total Escalated Cost</b>	265,844	271,261	266,330	242,004	224,409	185,418	184,776
<b>Planning Target</b>	290,000	290,000	290,000	290,000	290,000	290,000	290,000

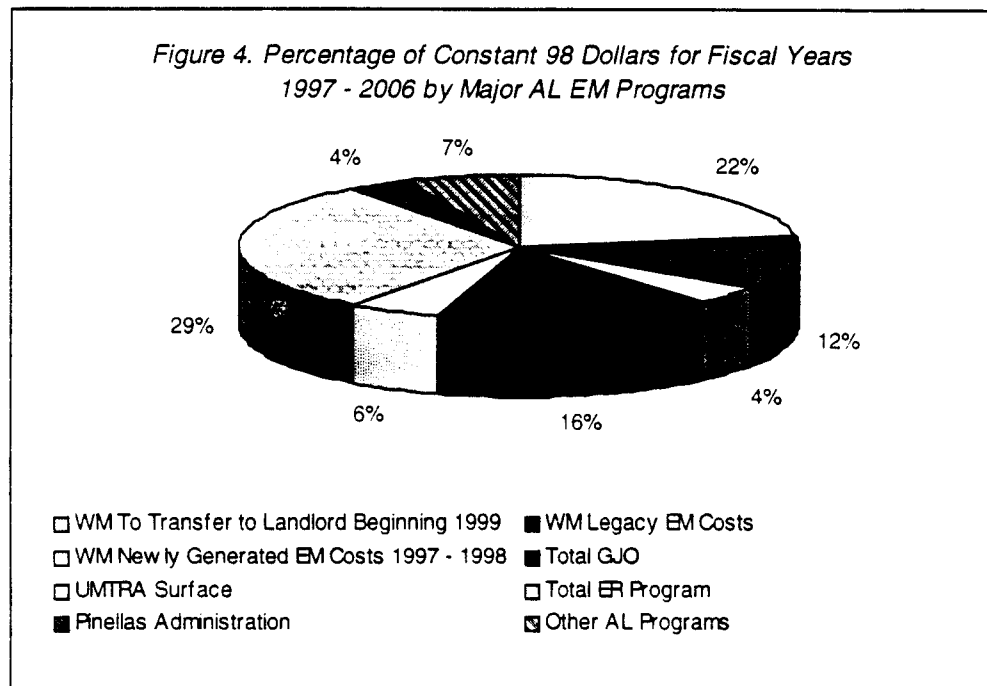
Project lifecycle baselines are developed using traditional project management. The project work breakdown structure is used to develop schedules and estimates based on the scope of work documented in the task scope descriptions. Schedules and estimates are

developed at the activity level by project controls personnel working closely with the DOE and contractor project managers.

The DOE project and support staff work closely with the contractors regarding project direction and DOE annually reviews and approves the contractors' proposed project baselines. This DOE review includes an analysis of scope, labor, and other direct charges which is presented by the contractor to a DOE team, which usually includes contracting officers, contracting officers' representatives, and DOE Headquarters representatives. The costs and schedule are then reviewed by various members of the Area Office staff and forwarded to AL where a subsequent review takes place. Each Area Office and program has a formal AL-approved procedure in place documenting the baseline change control process.

### **Enhanced Performance Initiatives**

The enhanced performance targets are goals that have been established in an effort to reduce costs while continuing to protect the safety and health of workers, the public, and the environment. AL is committed to conducting work in a safe and reliable manner without compromising established safety, health, and environmental standards. AL sites have aggressively pursued enhanced performance for their waste management and environmental restoration programs for many years.



In 1994, as a result of an EM independent study of environmental management activities, AL evaluated its installations and determined that performance at the LANL, SNL, and the Pantex Plant needed significant improvement. In response, all three facilities provided Facility Action Plans to AL to demonstrate their commitment to making needed improvements in their environmental restoration projects. Performance enhancements included increasing the use of commercial industry resources, reducing program management and technical support costs, performing cost effective assessment and

remediation strategies, utilizing a streamlined approach to the regulatory process, and using documented performance goals as contract requirements. As a result, facility baselines were prepared that showed significant improvement in terms of cost and schedule. All baselines and proposals to change the baseline have since been evaluated against the objectives established during the development of the Facility Action Plans.

AL has reached agreement with DOE Headquarters, regulators and other stakeholders on several new approaches that allowed site remediations to proceed on accelerated schedules. Over the past four years, environmental restoration schedules have been compressed to result in a nearly \$3 billion savings in lifecycle cost estimates. At the end of FY 1995, AL had identified over 2,500 sites (not including approximately 5,350 UMTRA Project sites) that required assessment and/or remediation. The percentage of site closures achieved increased from 46 percent in 1995 (pending regulatory approval) to 69 percent by the end of FY 1997, even though the total number of sites requiring restoration activities increased by 6 percent.

There has also been a dedicated effort to reduce the schedule and cost for completing waste management missions. AL has redefined its treatment, storage, and disposal strategy for managing waste at several sites. Total treatment costs for legacy mixed waste currently in storage have been reduced from \$400 million to below \$20 million while the schedule for treating and disposing of these wastes has been accelerated significantly. Program management costs have been reduced from 53 percent of the total waste management budget in FY 1996 to an average of 32 percent in FY 1997. Other waste management savings have been achieved by canceling or reducing the scope of capital construction, approximately \$250 million, and using commercial treatment and disposal facilities where possible. AL is investing these savings into legacy waste treatment, storage and disposal.

AL enhanced performance initiatives identified EM Program cost savings/avoidances totaling over \$56 million in FY 1997. Examples of specific enhanced performance initiatives that have already been implemented or planned into project baselines include:

- UMTRA Surface Project's award-winning Cost Reduction/Productivity Improvement Program has been credited with saving over \$75 million in environmental restoration costs through the project's 18-year life, including \$1.44 million in FY 1997;
- Pantex Plant waste management personnel requirements have been reduced by one-third since FY 1995;
- LANL avoided costs of \$2.25 million in FY 1997 by recharacterizing 235 cubic meters of legacy mixed low level waste and disposing of it as low level waste;
- SNL New Mexico reduced waste management program management costs by over \$600,000 between FY 1996 and FY 1997;
- Acceleration of the Pinellas Plant shutdown schedule by three years saved almost \$30 million;
- Contractor work force at GJO has been reduced by 30 percent since the end of FY 1996 resulting in a cost avoidance of approximately \$18 million in FY 1997;
- Increased efficiencies of \$3.6 million were realized upon transfer of the Pinellas Plant groundwater remediation project to GJO;
- UMTRA Groundwater Project costs were reduced by \$200,000 in FY 1997 due to streamlining the process for completing key decision documents at two sites and expediting site characterization at another site;
- Use of mobile waste characterization systems at LANL eliminated the need for a \$70 million capital facility.

The AL PBS already include previously realized and planned enhanced performance initiatives. AL will continue to identify and implement programmatic efficiencies while executing its EM Programs. AL will also work closely with regulators and other stakeholders to obtain buy-in for the use of innovative solutions to enhance performance of its EM Program.

#### **E. REGULATORY COMPLIANCE**

AL places a high priority on compliance with environmental laws, regulations, compliance agreements, etc. AL is also committed to ensuring the safety and health of workers and reducing risks to the public and the environment. Implementation of AL Paths to Closure will result in full regulatory compliance with all applicable requirements, with a possible exception at the Monticello site, and will result in reduction of risk.

Funding restrictions in FY 1998 and FY 1999 place several Monticello project compliance milestones at risk. However, DOE is attempting to renegotiate these milestones with regulators. (The Monticello Site Summary contains further details on this compliance issue.) Executive Order 12088 requires that AL request enough funding to be in compliance with all applicable laws, statutes, enforceable agreements, and orders. In response to AL's FY 1999 funding allocation and a shortfall in FY 1998 funding, AL has requested additional funds from DOE Headquarters to meet AL Paths to Closure objectives, including compliance issues, that may arise from FY 1998 and FY 1999 budget reductions.

Full compliance of the EM Program activities covered by this draft with all environment, safety, and health regulations is attainable without enhanced program performance. However, schedules in compliance agreements for completion of some activities may be at risk due to funding cuts. In the event that increased funding is not forthcoming, AL will continue to look for ways to be more efficient and reduce costs whenever possible to ensure that sufficient funds are available to maintain regulatory compliance.

#### ***Enhanced Performance Targets***

The enhanced performance targets are goals that have been established through a dialogue between DOE/AL and Headquarters in a mutual effort to reduce costs in response to the current federal fiscal climate, while continuing to protect the safety and health of workers, the public, and the environment. It is unacceptable to meet these goals by relaxing regulatory compliance, creating adverse working conditions, or performing work to lower standards. AL is committed to conducting work in a safe and reliable manner, and Secretary Peña has made it clear that protection of safety, health and the environment are absolute standards which can not be compromised. The enhanced performance targets are not to be met at the cost of diminished attention to safety, health or environmental quality. Enhanced performance does not mean that sites will be given the latitude to cut corners. To the contrary, the current rigorous standards will continue to be applied to sites.

#### **F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION**

To support the Office of Environmental Management's goal to create a national consensus on DOE's EM Program, AL has made considerable effort to involve stakeholders in the planning process and continues to invite stakeholder involvement.

### ***Previous Stakeholder Participation***

In 1996, AL and its Area Offices held meetings concerning the EM Ten-Year Plan, the precursor to the National Discussion Draft and the AL Summary, with state regulators, state Agreement-In-Principle personnel, tribal governors, citizens' advisory boards, local congressional offices, and other stakeholders. AL also provided DOE points of contact to resolved issues. AL used the stakeholder feedback on the Ten-Year Plan to develop the National Discussion Draft and AL Summary. Subsequently, AL has taken several additional steps to improve stakeholder involvement including: increasing detail, establishing separate meetings with tribal representatives, establishing more communication at the site level, and working more aggressively with regulators to refine key regulatory assumptions.

### ***Summary of National Discussion Draft and AL Summary***

As part of the National Discussion Draft process, AL prepared: the "Accelerating Cleanup: Focus on 2006 Discussion Draft Albuquerque Operations Office (AL Summary)," which contained more detailed information on the EM activities at AL sites and was prepared specifically for AL stakeholders. The National Discussion Draft and the AL Summary were issued in June 1997. The Plans were distributed to our stakeholder mailing list and public reading rooms. The Plans were also made available on DOE's website. The comment period on these documents ended in September 1997.

During this comment period, AL held public meetings in several communities near AL facilities to elicit input on the National Discussion Draft and AL Summary. In August 1997, the DOE Assistant Secretary for Environmental Management along with Operations Office and Kirtland Area Office and Amarillo Area Office management, met with key stakeholders to discuss issues regarding EM activities proposed in these Plans and the FY 1999 budget formulation process. Participants included representatives from the Environmental Protection Agency, New Mexico Environment Department, several pueblo governors and tribal nations, special interest environmental groups, and four citizens' advisory boards.

Comments on the National Discussion Draft and AL Summary were received from a number of state and federal regulatory agencies, tribal governments, environmental groups, citizens' advisory boards, community and local government leaders, private industry, and the general public.

Through September 30, 1997, approximately 86 comments were received on the AL Summary: 58 from the public and community interest groups, 26 from federal and state regulators, and two from tribal governments. Stakeholder comments were primarily concerned with: 1) continued missions and funding levels for ongoing projects and sustained funded necessary to complete the Paths to Closure Draft; 2) future land uses for remediated or cleaned-up sites; 3) groundwater quality at remediated sites; and 4) continued public involvement in the technical decision-making process.

AL also received 60 comments related to endorsement of the Radioactive Source Recovery Program. This national program is funded through DOE Headquarters and administered by LANL and is not part of the AL EM Program.

### ***Comment Disposition Process***

The AL OEPM compiled all comments. AL Summary comments were issued to cognizant AL divisions and Area Offices for resolution. All National Discussion Draft comments received by AL, including comments related to the Radioactive Source Recovery Program, were submitted to DOE Headquarters for resolution. AL made every effort to respond to

comments received after the official public comment period ended and to resolve issues raised by stakeholders.

AL Paths to Closure addresses comments received on the AL Summary. Comments and resolutions were incorporated into the PBS and this Plan.

DOE Headquarters has prepared a comment response document that summarizes how public comments on the National Discussion Draft. The document is entitled "Preliminary Responses to Comments on Accelerating Cleanup: Focus on 2006, National Discussion Draft" are addressed in the National Paths to Closure.



## **II. AL SITE PROJECT SUMMARIES**

### **SITE SUMMARIES**

Amarillo Area Office/Pantex Plant  
Grand Junction Office/All Other Projects  
Grand Junction Office/Maxey Flats Site  
Grand Junction Office/Monticello Sites  
Grand Junction Office/Pinellas Plant  
Kansas City Area Office/Kansas City Plant  
Kirtland Area Office/Sandia National Laboratories  
Los Alamos Area Office/Los Alamos National Laboratory  
Uranium Mill Tailings Remedial Action Projects  
Lovelace Respiratory Research Institute  
South Valley Superfund Site  
Other AL Projects

## **AMARILLO AREA OFFICE/PANTEX PLANT SUMMARY**

### **A. OVERVIEW**

The Pantex Plant is a DOE Defense Programs nuclear weapons facility located in the Texas Panhandle near Amarillo, Texas. The AL Amarillo Area Office oversees operations of the Pantex Plant for DOE. The Pantex Plant's EM Program has two components: Waste Management (WM) Program and Environmental Restoration (ER) Project.

There were two specific changes between this draft and the AL Summary: (1) ongoing mission-related WM activities and the legacy waste activities are now combined under one Project Baseline Summary, and (2) an additional waste stream (non-regulated waste) was included due to a change in definition of sanitary waste.

Escalated lifecycle costs for the WM Program, which will continue to support the Pantex Plant's ongoing mission after transition of responsibility to the site landlord, are estimated to be \$651 million for FY 1997 through FY 2070. Escalated lifecycle costs for the ER Project are estimated to be \$93 million for FY 1997 through project completion in FY 2015. The baselines from which these estimates were developed include enhanced performance initiatives planned prior to FY 1997.

#### **1. WM Program**

The Pantex Plant mission results in the generation of non-hazardous waste, hazardous waste, low level waste (LLW), mixed low level waste (MLLW), and State of Texas Class 1 waste that must be managed in a timely and compliant manner. The WM Program provides a safe and compliant management system for all generated waste within available funding and with no loss of production due to waste management concerns. The program encompasses all aspects of waste management including treatment, storage, and disposal of waste. Included in the WM Program is the pollution prevention program, which is aimed at eliminating the generation of waste.

The Pantex Plant's WM Program is expected to last beyond the scope of the Paths to Closure Draft, as the plant mission is expected to continue. The program is expected to transition to Defense Programs in FY 1999. All transition activities will be handled in accordance with established DOE transition policies and plans.

#### **2. ER Project**

The ER Project is responsible for remediation activities regarding soil and groundwater contamination resulting from the production and testing of explosives components for nuclear weapons. ER activities are conducted in compliance with a Resource Conservation and Recovery Act (RCRA) permit issued by the Texas Natural Resource Conservation Commission (TNRCC). The objective of the Pantex ER Project is to have all release sites remediated or in remediation by the end of FY 2000.

The Pantex Plant's currently identified 249 release sites within 144 solid waste management units (SWMU) and areas of concern (AOC) are grouped into 15 SWMU/AOC groupings for investigation and remediation activities. ER Project plans assume that no further action (NFA) designations under the Texas Risk Reduction Standards Guidance are anticipated for the majority of the release sites, and corrective measures construction will be used to remediate the remaining release sites where treatability studies, interim corrective measures (ICM), and/or accelerated cleanups (AC) are unable to achieve closure. The project also assumes that treatability studies being performed will verify the

technologies being tested and offer viable, effective approaches to groundwater remediation.

## **B. END STATE, FUTURE USE AND STEWARDSHIP**

As site landlord, DOE Defense Programs has stewardship of all Pantex Plant facilities and will determine their future use after EM Program end states are achieved.

### **1. WM Program**

All legacy waste will be disposed of by the end of FY 2004. WM operations will continue as long as the Pantex Plant mission continues. The WM Program will continue to handle all newly generated waste at the Pantex Plant as a service to waste generators indefinitely. Two EM facilities will be transitioned back to the landlord.

### **2. ER Project**

All currently identified release sites will be remediated to achieve closure designation in accordance with the cleanup levels contained in the Texas Risk Reduction Standards Guidance for soils and groundwater. It is anticipated that the groundwater pump and treat operations will continue to FY 2015 to effectively treat the groundwater contamination plume; however, the long-term efficiency and capability of the groundwater extraction and treatment system to capture the contaminant plume is uncertain, and additional time could be required to fully achieve groundwater remediation objectives. The assumed date for the project end state will be evaluated periodically, as additional operational effectiveness information becomes available, and the completion date will be adjusted as required. Further, regulatory requirements for landfills cover maintenance, groundwater monitoring and treatment operations will be negotiated periodically.

## **C. STRATEGIES AND PRIORITIZATION**

### **1. WM Program**

The WM Program is expected to continue as long as the current Pantex Plant mission continues. While legacy waste is disposed of, newly generated waste will continue to be disposed of as it is generated. Wastes will not be stored longer than necessary to assure efficient, cost-effective management. The Pantex Plant will continue to identify ways to reduce the amount of waste generated and recycle generated waste.

The WM Program critical path activities (Table PX1) include transition of WM operations to the landlord and workoff of the legacy waste inventory. Current plans are for legacy and newly generated LLW to be disposed of at an offsite DOE facility. All MLLW will be treated, either onsite or offsite, and eventually disposed of offsite at commercial facilities. LLW from ER activities that is handled by the WM Program is expected to be disposed of offsite at commercial facilities or the Nevada Test Site. (See the Pantex WM Baseline Disposition Map in Attachment 3.)

The WM Program is consolidating operations at the Pantex Plant. This consolidation will allow operations to move from older facilities into newer more efficient operating facilities and ensure the safe and compliant management of all waste types. Included in this are the construction of the Hazardous Waste Treatment and Processing Facility and a concrete pad with two hazardous storage buildings. The WM Program began operating the new RCRA Hazardous Waste Staging Facility in FY 1997.

## 2. ER Project

The overall technical approach for remediating the currently identified release sites employs the RCRA approach for release site closure. A key element is to coordinate all ER activity closely with regulatory agencies and other stakeholders. Based upon RCRA preliminary assessments, potential release sites were identified for further evaluation. A number of these release sites were deferred because they were still active facilities. RCRA Facility Investigations (RFI) were performed to characterize the extent of contamination for each remaining identified potential release site. Additional sites were closed because the RFI reports indicated that the level of contamination, if any, was low enough to warrant closure in accordance with state risk reduction guidance. The remaining release sites are being closed using ICMs, such as "hot spot" soil removal and full corrective measures construction where ICMs are unable to achieve closure under state risk reduction guidance.

Most of the contaminated media managed by the ER Project will remain onsite: either placed in an onsite landfill or stabilized in place. Small amounts (less than 5 percent) will be sent to offsite commercial facilities for final disposition. (See the Pantex ER Baseline Disposition Map.)

To achieve the goals established by the Clean Texas 2000 initiative, all release sites must be either remediated or in long-term remediation with all construction of remediation systems completed by the end of FY 2000. This, in turn, drives the project end state completion date, which is estimated at approximately 15 years after completion of the groundwater treatment system. As a result, the critical path activities (Table PX1) for the Clean Texas 2000 initiative include the site assessments and the corrective measures activities for 3 sites, and groundwater. In addition, LTSM for groundwater is included on the critical path for achieving the project end state by FY 2015.

Table PX1. Pantex Plant Critical Path Activities

Activity	Scheduled Start Date	Scheduled Completion Date
<b>ER Project</b>		
Site assessments	October 1, 1997	September 30, 1999
Corrective measures activities	October 1, 1997	September 30, 2000
Turnover ER Project to landlord		September 30, 2002
Perform groundwater LTSM	October 1, 1999	September 30, 2015
<b>WM Project</b>		
Transition WM Program to landlord		October 1, 1998
Workoff legacy MLLW	October 1, 1997	September 30, 2000
Workoff legacy LLW	October 1, 1997	September 30, 2004

All Pantex Plant EM-funded activities associated with the WM Program and ER Project are subcontracted at the first- and second-tier levels under cost-plus-award-fee contracts.

## D. SCOPE, COST AND SCHEDULE

### 1. WM Program

The WM Program at Pantex Plant is expected to last beyond the scope of the Paths to Closure Draft, as the plant mission is expected to continue. All legacy LLW that is currently onsite will be treated and disposed by the end of FY 2004. All legacy MLLW in inventory will be treated and disposed by the end of FY 2000. Pantex currently has identified commercial disposal outlets for all MLLW in storage. The WM Program will transfer to Defense Programs in FY 1999.

The Pantex WM Program has been extremely successful in reducing the amount of waste generated and in the recycling of generated waste. The WM operating budget has gone from \$13.9 million in FY 1993 to a projected \$13.4 million in FY 1998, a reduction of 23 percent. The program man-power requirements have been reduced by 35 percent from FY 1995 to FY 1998. The program has also absorbed an increased overhead of over \$1.6 million from FY 1997 to FY 1998 with a decrease in funds. In FY 1996, a major scrub of the WM baseline resulted in the identification of \$550,000 of funds that were used to fund other EM work scope. A value engineering study was done in the early stages of the design of the Hazardous Waste Treatment and Processing Facility resulting in a reduction of the overall cost of the facility from approximately \$19 million to \$6 million. In FY 1997, an employee suggestion for the reuse of beryllium components resulted in a cost avoidance to the Pantex Plant in waste disposal of \$189,000.

### 2. ER Project

RFIs have been completed for all SWMU groupings, and the Draft Final RFI Reports have been submitted to the TNRCC for review and comment. Remediation activities include treatability studies, ICMs, and ACs to reduce contamination of soils and groundwater sufficiently to achieve a NFA designation under the Texas Risk Reduction Standards Guidance. Three release sites will require the full RCRA corrective measures process (corrective measures study, corrective measures implementation program plan, corrective measures design, and corrective measures construction). Where appropriate, long-term surveillance and maintenance will be employed to ensure long-term remediation objectives are achieved. Through FY 1997, 222 of 249 identified release sites have been closed (including those sites administratively-closed based on their status as active sites, duplications, or RCRA facility assessment recommendations). Those remaining remediations are shown in Table PX2. Additionally, significant progress has been achieved in characterizing groundwater contamination and performing treatability studies. The treatability studies are aimed at verifying the technologies being tested offer viable, effective approaches to groundwater remediation.

The ER Project baseline includes enhanced performance initiatives developed and implemented prior to FY 1997. These include use of new technologies or techniques (dual phased groundwater/vadose zone treatment system installed in FY 1996), streamlined process (risk-based release site closures using ICMs and ACs), and pollution prevention (minimizing remediation waste generation through use of "hot spot" removals, in-situ treatment/remediation, risk-based release site closures).

*Table PX2. Remaining Cleanups by Fiscal Year*

Fiscal Year	Number of Cleanups to be Completed
1998	24
1999	0
2000	3

The net result of the enhanced performance initiatives was accelerating the ER Project by over two years and reducing total project costs by \$67 million over previous baseline estimates.

Costs and schedules for Pantex Plant WM and ER activities (Table PX3) are based on mature, well-established baselines, which are validated annually by AL. Estimated costs for FY 1997 through FY 2006 are shown below.

*Table PX3. Pantex Plant EM Escalated Cost for FY 1997 - 2006 (\$000)*

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>WM</b>	13,351	13,515	14,197	13,862	11,412	9,865	9,948	9,347	9,324	7,998
<b>ER</b>	9,924	9,872	12,618	16,311	13,940	2,120	6,183	1,878	1,929	1,980

## **E. REGULATORY COMPLIANCE**

The Pantex Plant mission results in the generation of a variety of waste types that must be managed in a timely and compliant manner. The WM Program provides a safe and compliant management system for all generated waste within available funding and with no loss of production due to waste management concerns. The program includes a strong technical oversight program to ensure compliance with regulations.

The Pantex Plant ER Project is responsible for cleanup activities regarding soil and groundwater contamination resulting from the production and testing of explosives components for nuclear weapons. ER activities are conducted in compliance with a RCRA permit issued by the TNRCC even though the Pantex Plant was placed on the National Priorities List (NPL) in May 1994 by the EPA. The DOE is currently negotiating a tri-party Federal Facility Agreement with the EPA and the TNRCC. The objective of the ER Project is to have all release sites remediated or in remediation by the end of FY 2000 and in compliance with all applicable regulations and agreements.

## **F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION**

A key element in the successful implementation of the WM Program and ER Project is to coordinate all activity closely with regulatory agencies and other stakeholders. This is accomplished through frequent meetings with the regulatory community and presentations to the public. By soliciting input from the stakeholders, EM activities are able to progress effectively with stakeholder support. This approach helps maintain a flexible, working relationship with regulators and other stakeholders.

Throughout the planning process, the DOE has held routine meetings with the Pantex Plant Citizens' Advisory Board. Twelve of the comments received on the AL Summary were specific to the Pantex Plant EM Program. Response to these comments were prepared and shared with stakeholders. No response action plans were required.

## **GRAND JUNCTION OFFICE/ALL OTHER PROJECTS SUMMARY**

### **A. OVERVIEW**

AL's Grand Junction Office (GJO) supports DOE EM Programs, other DOE sites, and federal and state agencies in environmental restoration and waste management activities and is the only field facility in the DOE complex devoted primarily to the management of large, complex environmental restoration projects nationwide. GJO has a mission to apply its project management, engineering, and scientific capabilities to provide cost-effective, quality, and timely support systems and services for environmental restoration, decontamination and dismantlement, long-term surveillance and maintenance, and geoscience programs.

In addition to activities summarized elsewhere in this document, GJO also has responsibility for planning and performing the following EM projects: GJO Remedial Action Project (GJORAP); GJO Facility Management Project; Long-Term Surveillance and Maintenance (LTSM) Program; Uranium Lease Management (ULM) Program; and GJO Waste Management/Minimization Project

Escalated lifecycle costs for all of these EM activities are estimated to be \$4 billion from FY 1997 through FY 2070. There have been significant increases to past cost estimates that are attributable to additional scope in the LTSM Program, escalating the LTSM costs for out-years, and additional Facility Management and Waste Management/Minimization activities to support the LTSM Program. There are no anticipated enhancements for these projects.

#### **1. GJORAP**

The GJO is located on a 57-acre site southwest of Grand Junction, Colorado. Facilities on the site were used to conduct research on milling uranium ore and to concentrate uranium. GJO was also responsible for purchasing and testing large quantities of uranium ore and concentrate. All facility buildings and land have some potential for radiological contamination from these past activities. The purpose of GJORAP is to eliminate the potential hazards of long-term exposure to low level radioactive contamination associated with past uranium ore processing activities by decontaminating the GJO site, including soil, groundwater, surface water, and buildings. The primary goal is to release most of the site buildings and lands for unrestricted use.

#### **2. Facility Management**

The Facility Management Project provides the daily operations necessary for a safe, secure, and environmentally-sound workplace at the GJO. This level-of-effort support ensures the success of the GJO mission.

#### **3. LTSM Program**

The LTSM Program provides custody, surveillance, environmental monitoring, maintenance, site security, annual reporting, and emergency response for Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I and II disposal sites, Nuclear Waste Policy Act Section 151 sites, DOE decontamination and decommissioning sites, Formerly Utilized Sites Remedial Action Program disposal sites, and other remote sites. The program will also perform long-term groundwater monitoring at various DOE sites.

The GJO will begin operating the Cheney Disposal Cell south of Grand Junction in FY 1998 as part of the Long-Term Radon Management (LTRM) Project, a subtask of the LTSM Program.

#### **4. ULM Program**

Under the ULM Program, the GJO manages 25,000 acres of land in southwestern Colorado and southeastern Utah that is divided into 43 uranium lease tracts. Active lease tracts may have ongoing mining and exploration operations. Inactive lease tracts are no longer eligible to be mined but may need to be reclaimed before they can be restored to the public domain. DOE is responsible for reclaiming 17 lease tracts for which there is no leaseholder.

Reclamation activities have been completed at the five lease tracts in Utah and a "Request to Relinquish Lands" was filed with the Bureau of Land Management (BLM) Utah State office in September 1996 and is currently under review. Eleven lease tracts in Colorado have also been reclaimed and a "Request to Relinquish Lands" for these lease tracts submitted to the BLM Colorado State office. Four other lease tracts are being reclaimed by their former leaseholders and are in various stages of the reclamation process.

#### **5. Waste Management/Minimization**

GJO activities such as site decontamination and decommissioning, laboratory analyses, and office operations generated a variety of wastes including hazardous, low level radioactive, mixed low level, solid, and nonhazardous wastes. The Waste Management/Minimization Project goals are to minimize the volume and toxicity of waste produced at the site and to ensure that wastes are managed in compliance with applicable federal, state, and local laws and regulations. This project ensures the protection of site employees, the public, and the environment.

### **B. END STATE, FUTURE USE AND STEWARDSHIP**

#### **1. GJORAP**

All buildings on the site will have been either remediated, demolished or approved by DOE for reuse under Supplemental Limits as part of the remediation process under GJORAP. All radiological and hazardous wastes resulting from DOE operations will be removed. Operation of the Sample Plant in Building 7 will continue via Supplemental Limits as part of the support to the Building 20 laboratory. Neither the analytical laboratory nor the sample plant will be demolished or relocated, both buildings will be approved for use under Supplemental Limits. After all GJO lands and buildings are remediated, most of the remaining land and buildings may be transitioned to private or other use. GJO is currently in the process of evaluating possible end use alternatives for the site.

Monitoring of groundwater on the site will continue, as part of the LTSM Program. Administrative control of the groundwater will remain in place until contaminants in groundwater fall below regulated concentrations. Upon concurrence by regulators, groundwater monitoring and institutional controls will be completed.

#### **2. Facility Management**

DOE will implement a future-use plan for the GJO site, which may include remaining at the site and using less of the area and facility. The DOE may decide to turn over the landlord



responsibility of the entire site to another entity and lease back a fraction of the site. Requirements for this project will end when DOE relinquishes ownership of the GJO site.

### **3. LTSM Program**

LTSM Plans specify the end state conditions for disposal sites in the LTSM Program. Program activities will ensure that these conditions are maintained. Monitoring of natural flushing of groundwater at the GJO site and the UMTRCA Title I processing sites will continue under the LTSM Program. When contaminants in groundwater samples fall below regulated concentrations, groundwater monitoring and institutional controls will be completed.

Under the LTRM Project, GJO will manage operations at the Cheney Disposal Cell for approximately 25 years. After operations cease, GJO will close the disposal cell and license it under Nuclear Regulatory Commission (NRC) UMTRCA Title I site regulations.

The duration of surveillance and maintenance activities at particular sites varies from decades to as many as 1,000 years, depending on the requirements established for each site.

### **4. ULM Program**

The end state for this program is the remediation of all lease tracts to meet regulatory requirements and the ultimate restoration of the lease tracts to the public domain under BLM's administrative control.

### **5. Waste Management/Minimization**

Requirements for this project will end when GJO is no longer a waste generator and all site-generated wastes have been disposed of in a compliant manner.

## **C. STRATEGIES AND PRIORITIZATION**

### **1. GJORAP**

The GJO site is slated to be decontaminated and decommissioned. Buildings will either be decontaminated and made available for other users, demolished, or submitted for use by others under Supplemental Limits. Land will remain vacant for other uses as buildings are removed. Radiological contamination will be removed from the site to acceptable limits. Environmental monitoring, health and safety oversight, and project management will be provided. Verification surveys will be performed and closeout reports will be written. Natural flushing will be used to cleanse the aquifer. Subsurface and groundwater monitoring will be required for approximately 80 years.

### **2. Facility Management**

Facility management support will continue to provide operations and services in support of the GJO's assigned DOE mission.

### **3. LTSM Program**

Inspections of UMTRCA Title I and II disposal sites and the Monticello repository will be conducted in accordance with LTSM Plans. This program will perform the activities necessary to delete the Monticello millsite from the EPA's National Priorities List. The

LTSM Program will also implement the final land-use restrictions that will be specified in the Monticello LTSM Plan.

At sites where groundwater compliance monitoring is performed, GJO will prepare required demonstrations to regulators once contaminant concentration fall below regulatory limits. Groundwater monitoring will cease upon receipt of concurrence from regulators.

#### **4. ULM Program**

The ULM Program provides for the administration of 15 active lease tracts, the annual inspection of all 43 lease tracts, and the oversight of reclamation activities on 28 inactive lease tracts.

If the 15 active leases in the ULM Program are not relinquished by their respective leaseholders before the end of the current 10-year term and if DOE does not extend the leases beyond the current 10-year term, the reclamation of these lease tracts will be initiated in FY 2006 through FY 2007 and is expected to take two years to complete. At that time, the leases will be eligible for restoration to the public domain under the BLM's administrative control. If DOE extends the current leases, the final end state will be adjusted outward to accommodate the lease extensions.

Annual environmental and safety inspections of all lease tracts are conducted to identify adverse conditions that need to be addressed and to ensure compliance with DOE orders, Federal and State regulations, and lease stipulations. Project personnel mitigate or arrange for the mitigation of all safety and/or environmental hazards identified during the annual inspections.

Former leaseholders are required to reclaim all undesirable environmental conditions resulting from their operations. DOE is responsible for reclaiming similar conditions that exist on numerous lease tracts for which no leaseholder is liable. At these sites, reclamation efforts will involve cleanup in and around the mine sites using conventional equipment. Following the cleanup, the mines will be closed, thereby reducing the possibility of unauthorized or accidental entry and injury. DOE coordinates its activities with the BLM and, upon successful completion, submits requests to the BLM state offices to relinquish the lands associated with the reclaimed lease tracts and restore them to the public domain.

#### **5. Waste Management/Minimization**

The objective of this project is to minimize the volume and toxicity of all types of waste and ensure that wastes, unavoidably generated, are managed in compliance with DOE requirements and all applicable federal, state, and local environmental laws and regulations. Wastes that cannot be prevented will be recycled wherever practical. What remains shall be stored and managed appropriately onsite, and treated on site, if possible, or shipped for offsite treatment or disposal in full compliance with all applicable regulations, permits, and agreements. Monitoring will be performed for groundwater, air, and sewage effluent quality; groundwater and air quality will be modeled to assess trends and project future conditions. Environmental and waste samples will be analyzed as necessary to achieve compliance with federal regulations.

Table GJO1 shows the schedule for critical closure path activities for GJORAP that must be completed for project closure by FY 2002, and for ULM program completion by FY 2010. A critical closure path does not apply for the Facility Management and Waste Management/Minimization Project because they are level-of-effort projects. The LTSM Program will be required for hundreds of years, until contamination levels decrease to

within acceptable limits; therefore, critical closure path methodology does not apply. Closure of the ULM Program is contingent upon leases ending and not being extended. The current leases will expire in FY 2006 and FY 2007, and the leaseholders will initiate reclamation activities. DOE has the authority to extend the present leases beyond the current ten-year term.

Table GJO1. Critical Closure Path Activities

Activity	Scheduled Start Date	Scheduled Completion Date
<b>GJORAP</b>		
Obtain Supplemental Limits on Buildings 7 and 20	October 1999	October 2000
Investigate/remediate buried utilities	October 2001	September 2001
<b>ULM Program</b>		
Leases expire or are extended	September 2005	March 2006
All lease tracts are reclaimed	April 2006	March 2009
All lands restored to public domain	April 2006	September 2010

Over 90 percent of the waste included in this summary's scope is contaminated groundwater, which will be left in place and remediated through natural flushing. Most of the remaining waste is contaminated soil, rubble/debris, and sludges/residues, which will be disposed of in the Cheney Disposal Cell. (See the Grand Junction ER Baseline Disposition Map in Attachment 3.)

Mortgage reduction opportunities exist in GJORAP, if forward financing is provided. Increased funding up-front in all of these projects would decrease the amount of overall project support and overhead costs that would be incurred by the projects.

At the end of FY 1996, the GJO transitioned from an Integrated Management and Operating contract to two small business performance-based support service contracts operating under task orders. Annually, the GJO conducts a review of the contractors proposed task plan for the upcoming fiscal year. This DOE review includes a bottoms-up analysis of scope, labor, and other direct charges which is presented by the project manager to a team comprised of contracting officers, contracting officers' representatives, and management. Once task orders are approved, the two contractors are responsible for administration of contracts with remedial action subcontractors. DOE, not the contractor, is responsible for outside party contracting, such as contracts with stakeholders, agreements for independent verification, etc. The percentage of GJO's overall EM budget expended on different contract types averages: cost plus award fee (71 percent), fixed firm price (15 percent), and other types of contracts (14 percent).

#### D. SCOPE, COST AND SCHEDULE

GJO has captured the scope and costs for all the projects described here in one Project Baseline Summary. After 2014, this PBS includes costs associated with the LTSM Program, and any remaining facility management and waste management/minimization support activities. Approximately 75 percent of the funding used to support the ULM Program's administrative functions will be reimbursed to the federal government through the leaseholders' annual royalties. Table GJO2 shows the annual cost breakdown for FY 1997 through FY 2006.

Table GJO2. Escalated Cost for GJO All Other Projects for  
FY 1997 through FY 2006 (\$000)

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>Cost</b>	12953	14100	11026	11150	16550	20496	17900	19900	22200	21200

Annually, the GJO conducts a review of the contractors proposed task plan for the upcoming fiscal year. This DOE review includes a bottoms-up analysis of scope, labor, and other direct charges which is presented by the project manager to a DOE team comprised of contracting officers, contracting officers' representatives, and management. During the development of the Paths to Closure Draft, the DOE project and support staff work closely with the contractors regarding project direction. The planning document is then reviewed by various members of the DOE staff and forwarded to AL where a subsequent review takes place.

During the FY 1998 task order negotiation process, GJO went through a major restructuring effort to lower the costs of overhead functions. GJO is well positioned to accelerate projects and reduce overall project lifecycle costs if additional funding becomes available.

### 1. GJORAP

The exterior land areas at the site have been remediated and work is ongoing to decontaminate and to conduct release surveys on the buildings at the site. To date, nine buildings have been demolished and three buildings have been decontaminated. The objective is to release the GJO buildings and the site for unrestricted use by FY 2002, except for buildings in which radiological materials will continue to be used or stored. A small quantity of radiological material is used in some survey instruments and laboratories to support environmental restoration programs. The buildings where these materials are stored and used will not be released until all radiological materials are permanently removed, the buildings are surveyed, and any necessary remediation is completed.

The annual cost baseline assumes that the project will be complete prior to the end of FY 2002, except for the continued groundwater monitoring which will be funded under the LTSM Program.

## **2. Facility Management**

GJO will continue to provide level-of-effort facility management services in support of the site mission. Specific operations include maintenance and renovations, excess equipment disposition, hazardous material transportation, building assessments, engineering and planning, base operating services, test pit maintenance, safeguards and security, property management, landlord services for other agencies, and environmental, health, and safety functions.

## **3. LTSM Program**

The LTSM Program is currently the custodian for 11 disposal sites that require long-term activities to meet DOE, NRC, EPA, or other environmental regulations and could be assigned custody of an additional 35 sites by FY 2006. Current projections indicate that at least 50 and possibly over 100 sites will eventually be transferred to LTSM.

LTSM activities include: (1) inspecting sites annually or more frequently, if required; (2) maintaining security systems and establishing liaisons with local authorities for notification of security breaches; (3) maintaining sites and restoring degraded as-built features as needed; (4) monitoring air, soil, surface water, and groundwater, as necessary; (5) responding to emergencies in the event of a site security breach or a natural disaster; (6) providing additional designs and performing construction, as needed, due to site failure or new regulatory requirements; (7) maintaining permanent site record files and providing reports annually within DOE and to outside agencies; and (8) responding to public requests for information.

Under the LTRM Project, the Cheney Disposal Cell will be opened once a year for about 4 weeks to accept contaminated material associated with uranium processing sites and associated vicinity properties with permanent placement every 3 years. Decontamination of transportation equipment; surveillance, maintenance and security of the facility; and environmental monitoring will continue as part of the operations and requirements.

The cost baseline for LTSM is based on two key assumptions: (1) the NRC will license all UMTRCA Title I sites by FY 1998 and (2) other sites will be transferred to GJO in a timely manner so that by FY 2006, over 46 sites will have been placed in GJO custody. The LTRM portion of the project cost baseline assumes that: (1) the Cheney Disposal Cell will remain open for four weeks each year until FY 2023, (2) the site will receive an average of 2000 cubic yards of material each year, and (3) emplacement and compaction of material in the disposal cell will occur every third year.

## **4. ULM Program**

The ULM Program provides technical and administrative support for 43 lease tracts in Colorado and Utah, and includes: (1) review, evaluation, and approval of leaseholders' environmental plans; (2) evaluation of lease-ore weighing, sampling, and assaying measurements to ensure accurate calculation and timely collection of royalties; (3) monitoring of surface-disturbing lease activities for compliance with applicable environmental requirements; (4) annual inspection of lease tracts; (5) mitigation of potential safety hazards; (6) reclamation of environmental disturbances of sites where the disturbances are not the result of the leaseholders' activities; and (7) ultimate restoration of lease tract lands to the public domain under BLM's administrative control.

Currently, reclamation activities are scheduled for six lease tracts in FY 1998, seven lease tracts in FY 1999, two lease tracts in FY 2000, and two lease tracts in FY 2002. Following

reclamation, these lease tracts will be restored to the public domain under BLM's administrative control; this process typically takes 1 to 2 years. The ULM Program is expected to end in FY 2010.

ULM Program cost baseline data was developed in February 1995. Subsequent to its development, lease tract reclamation activities have been defined in greater detail and spread over a five-year period (FY 1998 through FY 2002). Consequently, new baseline cost estimates will be developed to accurately portray the current work scope/schedules.

### **5. Waste Management/Minimization**

Waste management services include routinely inspecting waste storage areas, maintaining accurate waste inventories, and submitting reports to regulatory agencies. As needed, wastes are shipped to offsite DOE disposal sites or to appropriately licensed and/or permitted treatment, storage, and disposal facilities. Source reduction and recycling programs emphasize substituting materials to reduce toxicity and recycling wastes whenever practical.

### **E. Regulatory Compliance**

Compliance is deemed a very high priority at GJO. Funding is managed to remain in full compliance with regulations, non-compliance issues are funded with secondary priority. There is no difference in compliance attainability presently between the baseline and enhanced baseline.

### **F. Stakeholder Involvement and Comment Disposition**

Stakeholder participation to date has included:

- GJO issued AL and GJO Discussion Drafts to key stakeholders in July 1997 notifying stakeholders of public comment period.
- GJO held a meeting with Grand Junction community ad hoc committee members to discuss Focus on Paths to Closure Drafts.
- GJO held public meetings in Grand Junction in July 1997 and in Monticello, Utah, in August to discuss National, AL, and GJO Discussion Drafts.
- GJO received and responded to public comments related to GJO projects and activities.
- The GJO will continue to involve stakeholders and interested publics in the refinement and implementation of the Focus on 2006 effort, including review of the Paths to Closure Draft and supporting documentation.

## GRAND JUNCTION OFFICE/MAXEY FLATS SITE SUMMARY

### A. OVERVIEW

AL's Grand Junction Office (GJO) has responsibility overseeing DOE involvement for the Maxey Flats Field Management Project. The purpose of this project is to fulfill DOE's responsibilities as a potentially responsible party for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial action activities at the Maxey Flats Disposal Site in Fleming County, Kentucky.

Maxey Flats is a low level radioactive waste disposal site that EPA placed on the National Priorities List in 1986. The purpose of the remedial action is to reduce unacceptable risk to human health and the environment as required by a Consent Order and CERCLA Record of Decision. DOE's role in this project is limited to providing the DOE share of project funding and minor oversight responsibility to ensure that the funding is used properly. The Maxey Flats Steering Committee has overall responsibility for management of this project.

Escalated lifecycle costs for the Maxey Flats Field Management Project are estimated to be almost \$12.8 million. The requested budget will be used to meet DOE's financial obligations under the Consent Order. No enhancements are anticipated for this project.

### B. END STATE, FUTURE USE AND STEWARDSHIP

The end state for the project is placement of the interim cap and completion of all initial closure construction support activities. At that time, DOE will have fulfilled its responsibilities. DOE does not have an ownership stake in the site and will not have a role in determining its future use or long-term stewardship.

### C. STRATEGIES AND PRIORITIZATION

The selected remedy in the CERCLA Record of Decision is termed natural stabilization. The remedy includes the following basic components: leachate pumping and solidification with onsite disposal of the solidified waste; demolition of onsite structures and regrading of the site; placement of an interim cap over approximately 50 acres of the site; improved erosion and runoff controls; allowance for a time period (up to 100 years) for the disposal trenches to subside and stabilize; placement of the final closure cap; and site maintenance and monitoring activities in perpetuity.

DOE's annual obligated payments are the critical closure path activities for this project (Table MF1). These payments are required until EPA notifies DOE work is complete. This will fulfill DOE's requirement as a potentially responsible party and closure will be achieved.

*Table MF1. Critical Closure Path Activities for the  
Maxey Flats Field Management Project*

Activity	Scheduled Start Date	Scheduled Completion Date
Make obligated annual payment	September 1998	September 2002
EPA work complete notification		September 2002

The GJO/All Other Projects summary discusses GJO's contracting approach.

#### D. SCOPE, COST AND SCHEDULE

The scope includes all required CERCLA activities through completion of the initial remedial action phase and initial site closure, which is projected for FY 2002. One remaining remediation will be completed in FY 2000. Remedial design efforts are ongoing for the extraction, solidification, and subsequent reburial of contaminated materials. Onsite remedial construction activities are under way on those aspects of the design efforts that have been completed.

The cost baseline for the Maxey Flats Project is based on the FY 1998 budget formulation process. The estimates are based on the Consent Order defined schedule, scope, and distribution of financial responsibilities. The DOE financial liability is approximately 40 percent of the total liability. The balance of the liability is shared by a combination of Federal and non-Federal potentially responsible parties. The costs identified for this project are those required for DOE to fulfill its responsibilities as a potentially responsible party (Table MF2). Because of this developed cost baseline, GJO does not conduct the reviews of the contractors' proposed task plan. DOE is only required to make predetermined annual payments.

*Table MF2. Escalated Cost for the Maxey Flats Field Management Project (\$000)*

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
<b>Cost</b>	28	8000	1200	1200	1200	1200

#### E. REGULATORY COMPLIANCE

Compliance is deemed a very high priority at GJO. Funding is managed to remain in full compliance with regulations, non-compliance issues are funded with secondary priority. DOE is obligated to make annual payments in accordance to be in compliance with the Consent Order.

#### F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION

GJO has developed and implemented a strategy for involving stakeholders in the planning process which is discussed in detail in the GJO/All Other Projects summary. There are no unresolved comments relating to the Maxey Flats Project.



## **GRAND JUNCTION OFFICE/MONTICELLO SITES SUMMARY**

### **A. OVERVIEW**

AL's Grand Junction Office (GJO) has responsibility for planning and performing remediation activities for the Monticello environmental restoration project. The Monticello project involves remediation of a former uranium/vanadium ore processing mill, which is located south of Monticello, Utah; remediation of vicinity and peripheral properties in and near Monticello; and the assessment and remediation of surface water and groundwater contamination beneath and downgradient from the millsite. The EPA placed the millsite and vicinity properties on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) because of significant risk to human health and the environment associated with the tailings, tailings-contaminated soils, and surface water and groundwater contaminated by tailings.

A Federal Facility Agreement among DOE, EPA, and the State of Utah establishes DOE as the responsible party for remedial action and EPA as the lead agency with ultimate responsibility and authority. EPA shares its decision-making authority with the State of Utah. The project, whose purpose is to minimize risks to the public and the environment from exposure to the mill tailings and the radon gas they produce, is being performed in accordance with a CERCLA Record of Decision.

The escalated lifecycle cost for the Monticello project is estimated at \$128 million for FY 1997 through project completion in FY 2002. All possible approaches to accelerate removal of tailings from the Monticello millsite are being pursued, and GJO is well-positioned to further accelerate the Monticello project if sufficient funding is made available.

### **B. END STATE, FUTURE USE AND STEWARDSHIP**

The end state for the Monticello millsite, peripheral properties, and vicinity properties is remediation to standards established in the Record of Decision, except for properties where supplemental standards are applied. For potential or approved supplemental standards properties, the risk to human health from the remaining contamination is evaluated and a determination is made for specific land-use scenarios with restrictions on surface use.

With the possible exception of groundwater remediation, all surface remedial activities will be completed and the end state reached by FY 2001 at which time the site is expected to be available for beneficial public use. GJO may continue groundwater restoration activities past FY 2006 under the EM Long-Term Surveillance and Maintenance (LTSM) Program. The Monticello millsite will not be deleted from the National Priorities List until the surface water and groundwater meet the cleanup criteria.

DOE, EPA, and the State of Utah are determining the final land-use restrictions that will be incorporated into the Monticello LTSM Plan. For the millsite and downgradient peripheral properties, groundwater use restrictions will be necessary until the water quality reaches acceptable levels.

### **C. STRATEGIES AND PRIORITIZATION**

The selected remedy is excavation of the tailings and contaminated material and placement in a permanent repository on DOE-owned property 1.5 miles south of the millsite. Excavation will be accomplished using standard construction equipment. An independent verification contractor will certify the removal of contaminants by performing

document reviews and field measurements. The tailings are being hauled on a dedicated haul road from the millsite to the repository. A cover will be placed over the tailings to control radon emissions, infiltration of precipitation, and erosion..

The remedy for surface and ground water contamination has not yet been selected. An interim remedial action is being considered for implementation in FY 1998. Final remedial alternatives are being evaluated and will be proposed in FY 1999. Alternatives for restoration of ground water and surface water quality include pump and treat, passive restoration, cutoff trenches, or chemical barriers. Other innovative technologies will be considered during the selection process.

All contaminated media, including any groundwater treatment residues, are planned to be disposed of onsite in the DOE repository. (See the Monticello ER Baseline Disposition Map in Attachment 3.)

Table MONT1 shows the schedule for critical closure path activities. There are three critical activities leading to the deletion of the millsite from the NPL. The tailings removal and peripheral property remediation are necessary prior to closure of the repository. Selection of a groundwater restoration remedy and completion of the vicinity properties must be completed prior to their deletion from the NPL.

*Table MONT1. Monticello Project Critical Closure Path Activities*

<b>Activity</b>	<b>Scheduled Start Date</b>	<b>Scheduled Completion Date</b>
Millsite tailings removal	June 1997	November 1999
Repository cover construction	April 2000	October 2000
Peripheral property remediation	May 1993	November 1999
Montezuma Creek remediation	June 1998	November 1998
Select groundwater restoration remedy	August 1997	November 1999
Complete deletion of vicinity properties	March 1997	August 2000

Mortgage reduction opportunities exist in the Monticello project if forward financing is provided. Increased up-front funding would decrease the amount of overall project support and overhead costs.

GJO primarily uses task plans under two performance-based support service contracts operating as the contracting mechanism to perform Monticello remediation work. The GJO/All Other Projects summary discusses GJO's contracting approach in more detail.

#### **D. SCOPE, COST AND SCHEDULE**

The Monticello millsite and vicinity properties are divided into operable units. For the millsite subproject, Operable Unit I consists of the 110-acre millsite, including the tailings impoundment areas and storage areas for tailings removed from the peripheral properties and the vicinity properties; Operable Unit II comprises the private and DOE-owned properties adjacent to the millsite that are contaminated by windblown or stream-deposited tailings; and Operable Unit III consists of groundwater, surface water, and stream-deposited contaminants in Montezuma Creek Canyon. The operable units in the vicinity properties subproject were developed to address properties added at different times and properties that have different remediation goals.

Surface remediation involves excavating approximately 1.6 million cubic meters of tailings and contaminated soils and sediments and subsequent placement in a permanent repository. Groundwater restoration will employ pump-and-treat technology to remediate an estimated 370,000 cubic meters of contaminated groundwater.

Monticello costs are based on a lifecycle, in-house baseline. The baseline for the Monticello surface and groundwater is based on the assumptions that remediation of sediments in Upper and Lower Montezuma Creek Canyon will be required and active remediation of ground water will be required. Monticello costs include contingencies that are defined by out-of-scope work that has a likelihood of developing. Those remaining remediations are shown in Table MONT2.

The estimates also include contingencies for "in-scope" work for uncertainties in defined scope. Table MONT3 shows annual costs to complete surface remedial action completion in FY 2001 and additional project closure costs occurring in FY 2002. Costs for groundwater restoration, which will be performed under the LTSM Program, are included in the GJO/ All Other Projects summary.

*Table MONT2. Remaining Cleanups by Fiscal Year*

Fiscal Year	Number of Cleanups to be Completed
1998	6
1999	1
2000	5
2001	4

*Table MONT3. Escalated Cost for the Monticello Project for FY 1997 - 2002 (\$000)*

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
<b>Cost</b>	26,413	24,291	34,328	22,000	15,000	11,500

Project lifecycle costs have increased in recent years due to funding constraints extending project completion, thereby increasing program management and support costs. The addition of contingencies for project growth and potential claims with the remediation subcontractor also contributed to this increase.

The GJO/All Other Projects summary discusses GJO's cost and schedule methodology for EM projects in more detail.

## **E. REGULATORY COMPLIANCE**

Compliance is deemed a very high priority at GJO. Funding is managed to remain in full compliance with regulations, non-compliance issues are funded with secondary priority. However, at the present funding level compliance on the Monticello project is at risk. Because of funding restrictions in FY 1998 and FY 1999, the completion of the Projects has been delayed a year. This delay has resulted in missing one stipulated penalty milestone and putting three others at risk of being missed. In addition, there may be delays in implementing an Interim Remedial Action for restoration of surface and ground water quality in FY 1998. Negotiations are currently underway to attempt to renegotiate the missed and at-risk milestones so stipulated penalties will not be assessed.

## **F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION**

GJO has developed and implemented a stakeholder strategy which includes review and discussion with the Monticello, Utah, Site-Specific Advisory Board. To foster stakeholder involvement in the planning process, GJO issued AL and GJO Discussion Drafts to key stakeholders in July 1997 and held a meeting with community ad hoc committee members and public meetings in Grand Junction and Monticello to discuss the National, AL, and GJO

Discussion Drafts. GJO prepared formal responses to all stakeholder comments received during the comments period.

Bimonthly Monticello Site-Specific Advisory Board meetings will be held throughout FY 1998 to discuss status and schedule of the planning effort. Also, the Utah Department of Environmental Quality, and Environmental Protection Agency (EPA) will be regularly updated on project status and schedule.

## **GRAND JUNCTION OFFICE/PINELLAS PLANT SUMMARY**

### **A. OVERVIEW**

The Pinellas Plant is a former Defense Programs weapons production facility located near St. Petersburg, Florida. In 1997 the DOE achieved safe transition of the facility from defense production to a community resource for economic development. The remaining Pinellas Plant EM mission is two-fold: completion of final contract closeout/transition activities, and remediation of contaminated groundwater at the site. AL has responsibility for managing administrative closeout activities resulting from DOE's shutdown of the Pinellas Plant. AL's Grand Junction Office (GJO) has responsibility for conducting the remaining environmental restoration activities at the site, primarily groundwater remediation. This project also includes Pinellas Plant liability under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for offsite waste disposal at a non-DOE site list on the EPA's National Priorities List.

The escalated lifecycle cost associated with facility closeout, primarily employee benefit obligations, is estimated to be \$400 million from FY 1997 through FY 2070. Planned lifecycle cost for groundwater remediation has been recently reduced to \$41 million, which resulted from increased efficiencies. This project is well positioned to achieve further enhancements if additional funding becomes available.

### **B. END STATE, FUTURE USE AND STEWARDSHIP**

The DOE completed transfer of facility control to the Pinellas County Industrial Council for commercial/community use in 1997. Since this activity is complete and the facility is no longer under DOE control, future use maps were not prepared.

All contract closeout activities associated with the transition, other than annual employee benefit liability, will be complete in FY 1998. Ongoing liability for annual employee benefit payments will continue indefinitely, unless a lump-sum buyout occurs.

When site groundwater can meet the State of Florida's "industrial with unrestricted access" land-use classification, DOE's environmental restoration responsibilities will be completed. Cleanup levels for this classification are drinking water maximum concentration levels for the Clean Water Act and those of the State of Florida. It is estimated that final activity will be completed in FY 2014.

### **C. STRATEGIES AND PRIORITIZATION**

Groundwater cleanup of volatile organic compounds will involve conventional pump-and-treat technology, dual-phase vapor/water extraction, in-situ air sparging, and possibly bioremediation. Two innovative technology demonstrations will be evaluated also. If the designated groundwater cleanup levels cannot be met, it may be possible to apply for alternative cleanup levels because of "technical impracticality", but this will have to be demonstrated.

The arsenic-contaminated soil found at one site will require conventional excavation and removal methods. The DOE is currently negotiating a consent agreement for the cleanup of the 4.5-Acre site, which regulated by the State Contamination Site Cleanup Program. The remaining sites are regulated as solid waste management units under Resource Conservation and Recovery Act (RCRA).

Most of the groundwater treated by active remediation methods will eventually be disposed of via clean discharged through publicly owned treatment works. The remainder, about 6000 cubic meters (less than 1 percent), will go to an offsite commercial disposal facility. (See the Pinellas ER Baseline Disposition Map in Attachment 3.)

Cleanup of the contaminated groundwater at the Pinellas Plant is on the critical closure path for this project. This activity started in October 1997. Groundwater cleanup for all areas except the Northeast site and Building 100 and Drum Storage area will be complete by FY 2006. Work at the remaining sites is scheduled to continued through FY 2014.

Mortgage reduction opportunities exist in the groundwater remediation project if additional funds are made available. Increased up-front funding for this project would decrease the amount of overall project support and overhead costs that would be incurred.

The GJO/All Other Projects summary discusses GJO's overall contracting approach.

#### D. SCOPE, COST AND SCHEDULE

Contract closeout activities include: 1) necessary staff required to complete final close-out; 2) closure of all outside service contracts, financial system, and completion of all other final transition work; 3) possible continued liaison support for economic development and environmental remediation activities; 4) final disposition of remaining records; 5) administrative closeout of a RCRA-permitted waste management facility; and 6) administration of DOE liabilities associated with employee benefit obligations.

GJO will perform active remediation of over 3 million cubic meters of contaminated groundwater at five site areas. Another 0.5 million cubic meters will be remediated in situ. In addition, the arsenic-contaminated soil will be excavated and removed from one site. The project also includes Pinellas Plant liability under CERCLA for offsite waste disposal at a non-DOE National Priorities List site. Those remaining remediation will be completed as shown in Table PP1.

Table PP1. Remaining Cleanups by Fiscal Year

Fiscal Year	Number of Cleanups to be Completed
2000	1
2001	1
2002	1

Based on the recent transfer of the environmental restoration project to GJO, future adjustments will likely be made to the established baseline. GJO's cost-baseline review methodology is described in the GJO/Other Projects summary.

Table PP2 shows the annualized cost schedule for the transition closeout and groundwater remediation from FY 1997 through FY 2006.

Table PP2. Pinellas Plant EM Escalated Cost for FY 1997 - 2006 (\$000)

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>Closeout</b>	62,445	5,509	514	3,816	4,400	9,064	3,461	3,250	3,446	3,539
<b>Groundwater</b>	383	2,900	3,334	2,800	2,600	2,000	2,000	2,000	2,100	2,100

**E. REGULATORY COMPLIANCE**

Compliance is deemed a very high priority and funding is managed to remain in full compliance with regulations; non-compliance issues are funded with secondary priority.

**F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION**

GJO has developed and implemented a strategy for involving stakeholders in the Paths to Closure planning process which is discussed in detail in the GJO/ All Other Projects summary. There are no unresolved comments relating to the Pinellas Plant project.

## **KANSAS CITY AREA OFFICE/KANSAS CITY PLANT SUMMARY**

### **A. OVERVIEW**

AL's Kansas City Area Office oversees operations at the DOE's Kansas City Plant (KCP), which is located 12 miles south of downtown Kansas City, Missouri. KCP is a Defense Programs landlord site and its primary mission is manufacturing of nonnuclear components for nuclear weapons. The site's EM mission focuses on cleaning up in soil and groundwater contamination resulting from various spills and leaks from production activities have resulted.

The purpose of the KCP environmental restoration project is to evaluate potentially contaminated areas and to clean up areas found to be a threat to human health and the environment. All soil contamination is beneath the surface. Primary soil and groundwater contaminants are organic compounds; there is no radiological contamination. The project is driven by an Administrative Order on Consent agreement between the Environmental Protection Agency (EPA) and the DOE.

Compliance for the KCP environmental restoration project includes meeting the Resource Conservation and Recovery Act (RCRA) Corrective Action requirements of the consent order described above and other applicable environment, safety, and health laws and regulations. The project uses a risk-based approach to minimize risks to workers, the public, and the environment.

The current schedules reflect an effort to complete all active remediations by September 1999 leaving only groundwater treatment and monitoring for FY 2000 and beyond. The workforce has been continuously been transferred to other KCP programs or reduced as the environmental restoration workload has declined.

KCP initiated only two changes between the Discussion Draft and the Paths to Closure Draft: \$4 million was removed from the project due to a reduction in scope, and labor and material burden rates were increased from FY 1999 on. The escalated lifecycle cost for this project is estimated to be \$236 million from FY 1997 to 2070, which assumes groundwater treatment and monitoring are required throughout this period.

### **B. END STATE, FUTURE USE AND STEWARDSHIP**

The end state for the KCP environmental restoration project is completion of the RCRA Corrective Action Program for all sites. Soil contamination will be contained or removed, and cleanup levels determined for each individual project based on the nature of the contaminant and proximity of the contamination to receptors. All releases to the environment will be cleaned up in accordance with agreed upon cleanup standards and groundwater contamination will be contained, and long-term treatment or monitoring will be in place.

Soil remediation is scheduled to be completed by October 1998. Groundwater treatment and monitoring will continue until three consecutive years of not exceeding maximum contamination levels can be demonstrated or an alternative can be agreed to by the regulators. DOE and EPA have not yet agreed upon cleanup levels for groundwater.

The future use of the Federal Complex is not expected to change significantly. While DOE is planning to return some real estate to the General Services Administration in the next few years, the use of the property is not expected to change. A future use meeting was held in 1995 in which the attendees agreed the site should continue to be used for office space, warehousing, and light manufacturing regardless of ownership or occupancy.



Defense Programs is expected to provided the long-term stewardship role at KCP. However, Headquarter policy has not been established for LTSM. Included in this role are operation and maintenance of the groundwater treatment and monitoring systems.

### C. STRATEGIES AND PRIORITIZATION

The KCP cleanup approach has been to excavate high concentrations of contamination above the water table, pump and treat groundwater to provide containment, and review/demonstrate new technologies in an effort to find a technology that will cost effectively remediate the site. Contaminants are believed to be in dense non-aqueous phase liquid form, thus making cleanup extremely difficult, time consuming and expensive for the site's clayey-silt soils.

KCP expects to complete all planned remediations by September 1999, and begin "steady state" in FY 2000. "Steady state" includes containing groundwater contamination on the Federal Complex, monitoring, and maintaining treatment and monitoring equipment. This status is expected to remain well beyond 2006.

Excavated soils and groundwater treatment residues contaminated with hazardous materials will be disposed of at offsite commercial facilities. (See Kansas City ER Baseline Disposition Map in Attachment 3.)

Critical closure path activities (see Table KCP1) include construction and evaluation of an iron treatment wall, completion of the facility investigation and corrective measures study at the final site, remediation of the last two planned sites, and completion of optimization studies to determine where to place new treatment wells if they are needed.

*Table KCP1. KCP Critical Closure Path Activities*

Activity	Scheduled Start Date	Scheduled Completion Date
Iron treatment wall study	October 1, 1997	October 7, 1999
95th Terrace corrective measures	October 1, 1997	June 4, 1999
Tanks remediation	November 10, 1997	June 10, 1999
TCE still remediation	December 2, 1997	May 27, 1998
Treatment well optimization studies	January 1, 1998	September 29, 1999

Most KCP environmental restoration contracts are firm, fixed-price contracts. One contract is a time and materials type contract, which is roughly 20% of the total environmental restoration contract dollars. The KCP adheres to the federal procurement laws which mandate solicitation and competitive bidding of potential suppliers for services of \$2500 or more.

### D. SCOPE, COST AND SCHEDULE

The consent agreement covers 42 sites, of which 38 have either been cleaned up or proposed for closure under institutional controls. Remaining scope includes five remediations in FY 1998, completion of one assessment in FY 1998, and continued groundwater treatment and monitoring. Completing KCP cleanup activities will involve: a) treating approximately 14 million gallons of contaminated groundwater annually, b) removing and landfilling approximately 980 cubic meters of RCRA-regulated soil and debris, and c) installing an iron trench system to passively treat groundwater with iron filings.

The current schedules reflect an effort to complete all remediations by September 1999, leaving only groundwater treatment and monitoring. Final cleanup will not occur for some time, if at all, due to the absence of technology to remediate groundwater. KCP plans to transition groundwater treatment and monitoring activities and costs back to the Defense Programs.

Table KCP2 shows estimated annual costs from FY 1997 through FY 2006.

*Table KCP2. KCP EM Escalated Cost for FY 1997 - 2006 (\$000)*

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>Cost</b>	2,738	4,922	1,996	1,087	1,116	1,146	1,177	1,209	1,241	1,275

#### **E. REGULATORY COMPLIANCE**

Compliance with the RCRA Consent Order and other applicable requirements is expected. There are no unrealistic schedules to meet or impossible tasks to accomplish. Enhanced performance (or lack thereof) will not affect compliance.

#### **F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION**

KCP stakeholders received the February and June versions of the Discussion Draft. The Missouri Department of Natural Resources had several comments on the February version. Topics addressed included: scheduled transfer of regulatory authority, clarification regarding cleanup levels, evaluation of treatment technologies, DOE/Missouri Agreement in Principle, and transitioning responsibility for treatment, monitoring and reporting. DOE agreed with the comments and explained that Defense Programs would receive responsibility upon project transition.

## KIRTLAND AREA OFFICE/SANDIA NATIONAL LABORATORIES SUMMARY

### A. OVERVIEW

The AL Kirtland Area Office oversees the Sandia National Laboratories (SNL) for DOE. SNL sites, which are located in New Mexico, California, Nevada (Tonopah Test Range), and Hawaii (Kauai Test Facility), are Defense Programs landlord facilities. The SNL EM program is managed as two separate projects: the Environmental Restoration (ER) Project and the Waste Management (WM) Project.

There are no significant differences in the SNL EM Program between the AL Summary and this AL Paths to Closure Draft.

Since SNL has an ongoing non-EM mission, WM operations are expected to continue indefinitely. The lifecycle cost for the WM Project is \$1.35 billion for FY 1997 through FY 2070. The ER Project lifecycle cost is estimated to be \$103 million for FY 1997 through FY 2031. All potential enhancements have been accounted for in the baseline cost estimates. However without the planned enhancements, the WM Project might have had much difficulty achieving legacy waste workoff on schedule. There do remain a few MLLW treatability groups for which there are no clear treatment and disposal pathways, but these issues are being addressed through the Complex-Wide EM Integration initiative as well as with commercial vendors.

The SNL ER and WM Projects' scope, cost and schedule baselines are developed using annual budget targets provided by AL. These baselines provide a basis for planning work so that it is done with maximum efficiency and expediency while achieving acceptable risk. Should resources be reduced, some work schedules will slip, increasing the total project cost due to escalation and longer maintenance of the project's support and management infrastructure.

#### 1. ER Project

The mission of the SNL ER Project is to complete all necessary corrective actions (assessment and remediation) at potential release sites in the most expeditious and cost-effective manner, while minimizing worker, public health and environmental risks, satisfying public concern, and complying with all applicable federal, state, and local laws. All of the designated solid waste management units and additional areas of concern will be remediated or placed under management controls adequate to ensure agreement of the federal and state regulatory authorities that, based on risk to humans or the environment, no further action is warranted.

#### 2. WM Project

The mission of the SNL WM Project is to encourage waste minimization and to manage the treatment, storage, and disposal of hazardous waste, low level waste (LLW), mixed low level waste (MLLW), and transuranic (TRU) waste generated by mission-related activities in ways that comply with federal and state laws and regulations and that reduce risks to the public, workers, and the environment. Three primary WM services are provided: (1) management of laboratory waste produced by ongoing mission-related activities; (2) work-off of legacy waste, and (3) site-specific information services for DOE.

To achieve the goal of disposing of all historical waste, SNL WM is assuming the following: management and disposition responsibilities of stored TRU waste will be transferred to LANL; and treatment and disposal options will be identified to allow disposition of all historical waste and the cost-effective disposition of all newly generated waste within permit and regulatory time limits.

## **B. END STATE, FUTURE USE AND STEWARDSHIP**

SNL assumes its non-EM mission will continue relatively unchanged for the foreseeable future. Future land uses for SNL New Mexico, which is located on Kirtland Air Force Base in Albuquerque, have been agreed to by the Air Force, DOE, the Forest Service, and interested stakeholders.

### **1. ER Project**

There is currently no plan to release SNL property after remediation activities end in FY 2001. Instead, sites that are remediated will become available for future mission needs or ongoing operations. Consequently, there will be few perceptible end state differences from the public's viewpoint with regard to future land use.

Future land use designations are used to establish acceptable, risk-based remediation criteria. The land use agreements include provisions for future changes. If a less restrictive use is proposed, it will be adopted only after reassessment of risk to human health and the environment. Additional risk reduction measures may be imposed if deemed appropriate for the new use.

Three SNL ER sites that are currently planned to be closed in-place will have long-term surveillance and maintenance measures including vadose-zone and groundwater monitoring, and cap maintenance. These measures are planned to span 30 years after corrective action completion, out to the year 2031.

### **2. WM Project**

By FY 2006, SNL's WM Project will be characterized by the disposition of all historical wastes, including excess materials in inventory; the cost-efficient disposition of all newly generated waste within permit and regulatory time limits; the closure (or planned closure) of excess waste management facilities; and compliance with DOE regulatory and program-structure requirements. SNL anticipates transfer of WM responsibilities from EM to Defense Programs in FY 1999.

Post FY 2006 scope will encompass the activities necessary to safely and compliantly manage waste generated by ongoing mission-related laboratory activities. These activities include permitting, facilities and operations management, generator interface, program management, and the timely treatment, storage, and disposal of newly generated waste.

## C. STRATEGIES AND PRIORITIZATION

### 1. ER Project

The SNL ER Project, in coordination with the regulatory authority and the public, has adopted an accelerated remedial action approach that for most sites combines the assessment and remediation functions and results in a one-pass closure activity. A working group consisting of members of the public, the citizens advisory board, regulators, DOE and SNL developed a site priority ranking list. This list was used to distribute funding for remediation in conjunction with the HSWA prioritization. Those remaining remediations will be completed as shown in Table SNL 1.

*Table SNL 1. Remaining Cleanups by Fiscal Year*

Fiscal Year	Number of Cleanups to be Completed
1998	16
1999	26
2000	4
2001	2

There are several sites that are still in active use and are presently exempt from full remedial action (until they become inactive). These sites have been investigated for uncontrolled offsite releases, but they will probably not be closed before the ER Project is concluded. Current plans are to turn closure responsibility over to the operating organizations and have them listed separate on the module of the SNL RCRA operating permit.

The high-level critical path to project closure depends on two primary expectations: 1) funding at the requested level for each year; and 2) reasonable, risk-based decisions by the regulatory authority. If funding is reduced or the regulatory authority is highly conservative (that is, requiring significant additional work) with regard to granting No Further Action approvals, the SNL ER Project baseline estimates will not hold. Table SNL2 shows the major milestones and activities on the SNL ER high-level critical path.

*Table SNL2. SNL Critical Closure Path Activities*

Activity	Scheduled Start Date	Scheduled Completion Date
<b>ER Project</b>		
Remedial action phase work	October 1, 1997	March 23, 2001
Project closeout activities	March 26, 2001	August 31, 2001
HSWA permit modification approval		October 3, 2001
Long-Term Surveillance & Maintenance	October 1, 2001	September 30, 2031
<b>WM Project</b>		
Transition WM operations to landlord		October 1, 1998
Complete MLLW waste treatment	October 1, 1997	May 2002
Workoff legacy LLW & MLLW waste	October 1, 1997	September 30, 2004

Those wastes that are handed off to WM will typically be sent offsite for treatment and ultimate disposal. Hazardous waste going to the Corrective Action Management Unit (CAMU) will be treated and contained onsite. Residual contamination in the Chemical Waste and Mixed Waste Landfills and waste placed in the CAMU containment cell will be capped and managed in place with long-term monitoring. Approximately 80 percent of ER contaminated media, mostly soils contaminated with hazardous materials, will remain onsite. (See SNL ER Baseline Disposition Map in Attachment 3.)

The SNL ER Project uses fixed-price, task-order and cost-plus contracting for various services/projects, and time-and-material contracting for staff support. SNL ER is presently developing a staff transition plan that will be used to guide the transition process and minimize employee and contractor impacts as the project reached completion.

In 1994, with the adoption of fast-track field approaches and other programmatic efficiency measures, it was concluded that there were very few critical technology needs to achieve successful ER Project closure. Consequently, the ER Project has relied almost entirely on proven and accepted methods and technologies. Exceptions have occurred, such as a recently developed arid region landfill cap design which is being planned for deployment at the Chemical and Mixed Waste Landfills and on the CAMU disposal cell. The cap design must still be approved by the regulatory authority prior to use. The ER Project has and continues to review its technology needs and to stay current with new developments. However, given the remaining scope of work and time to completion, it is unlikely that SNL ER will be a significant customer for deployment of new technologies still under development.

## **2. WM Project**

Achieving SNL's Paths to Closure WM goal of disposing of all historical waste by the end of FY 2006 involves characterizing and disposing of currently inventoried LLW; treating and disposing of MLLW covered by the Compliance Order issued by the State of New Mexico; shipping TRU waste to LANL; and characterizing, treating as necessary, and dispositioning materials in inventory. The SNL WM Project is incorporating the DOE Waste Management Programmatic Environmental Impact Statement alternatives into its baseline and outyear strategic planning. SNL currently plans to have almost all new generated and legacy LLW be disposed of at an offsite DOE facility; while almost 90 percent of MLLW will be disposed of at commercial facilities. (See SNL LLW, MLLW, and TRU Baseline Disposition Map in Attachment 3.)

All SNL WM activities are scheduled to be transitioned to the site landlord in FY 1999. Additional high-level critical closure path activities for the WM Project are listed in Table SNL1.

SNL WM relies on SNL Procurement to provide guidance in determining the most effective contracting strategy for each procurement. The WM Project is conducted as a subset of the SNL cost-plus-fee operating and maintenance contract. SNL WM has three basic contract types: cost-plus-award-fee, cost-plus-fixed-fee, and time-and-materials. SNL will be utilizing the Defense Reutilization Marketing Office to manage wastes at the Kauai Test Facility.

SNL's WM technology needs include:

- A treatment technology that can treat MLLW containing oil with heavy metal contamination absorbed on clay or diatomaceous earth.
- A thermal treatment for small-volume MLLW streams that, in some cases, needs to be followed by stabilization of the resulting residue.
- Technologies and equipment for in-process and onsite treatment of small quantities of unique wastes that can not be treated offsite cost effectively.

## **D. SCOPE, COST AND SCHEDULE**

### **1. ER Project**

Of the original 228 potential release sites in the SNL ER Project, only a few dozen remain to be closed. Over the past year a few additional sites have been identified, some sites were also segregated from the original 228, so the total site number being discussed with the regulators is 250. Many of the remaining SNL ER sites are associated with explosives test areas, dump and debris sites and septic systems. While several of these sites are large, most are not technically difficult to remediate. The Classified Waste Landfill, Chemical Waste Landfill and Mixed Waste Landfill are three of the most complex sites and all three remain to be completed. All sites are scheduled to be closed by the end of FY 2001. After that time, only regulatory closeout and long-term surveillance and maintenance activities will remain.

Through the implementation of numerous process efficiencies, such as the one-pass approach, and the acceptance of increased programmatic risk (i.e., more optimistic scope assumptions), the SNL ER baseline cost and schedule estimates have been reduced significantly since 1994. The total estimated cost was reduced by almost half, and the schedule shortened by 13 years. Costs are developed using a bottoms up estimating process for each individual task. Where applicable standard construction pricing was used for baseline development.

### **2. WM Project**

Key WM work scope activities, in order of priority, include the following: (1) treatment, storage, and disposal of regulated, non-radioactive waste; (2) compliance with the site treatment plan for MLLW; (3) collection, treatment, and storage of ongoing MLLW; (4) collection and storage of LLW; (5) disposal of newly generated LLW from large volume generators; (6) MLLW disposal; (7) disposal of newly generated LLW from low volume generators; (8) management of TRU waste; (9) non-routine activities; (10) DOE-directed activities not tied to site mission; (11) disposal of historical LLW; and (12) new facility planning.

SNL is working with other DOE sites to develop solutions for complex WM problems. SNL WM has worked with DOE's Rocky Flats site to assess the need for thermal desorption technology to treat problem mixed wastes. SNL WM is using the DOE Waste Experimental Reduction Facility (WERF) incinerator at Idaho and considering other DOE incinerators to treat waste rather than using commercial facilities. SNL is aggressively pursuing waste minimization and pollution prevention. In FY 1997 SNL California exceeded the 50 percent pollution prevention reduction goal set by DOE. SNL also received a national pollution prevention award for a tritium research laboratory conversion to a chemical and radiation detection laboratory, saving over \$100 million.

The SNL WM Project has made improvements that have greatly enhanced the planning, management, and operations aspects of the project. As a result of these improvements, WM management costs have been reduced by 27 percent since FY 1996.

The baselines for the SNL ER and WM Projects are developed using traditional scheduling and estimating methods. Table SNL3 shows the cost schedule for the SNL EM program for FY 1997 through FY 2006.

Table SNL3. SNL EM Cost Schedule for FY 1997 - 2006 (\$000)

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>WM</b>	15,981	18,570	18,977	20,428	21,289	21,940	19,000	19,000	19,000	19,000
<b>ER</b>	19,619	29,432	27,683	19,773	3,251	67	60	62	108	110

### E. REGULATORY COMPLIANCE

The SNL ER Project is regulated under a Hazardous and Solid Waste Amendments (HSWA) module of the Resource Conservation and Recovery Act that identifies the regulated waste sites and provides both criteria and guidance for their assessment and remediation. In addition, the HSWA module provides a schedule for when the various activities must be completed. The SNL ER Project is in full compliance with the provisions of the HSWA module and is ahead of schedule for many milestones.

The SNL WM Project places a high priority on compliance with environmental laws, regulations, agreements, standards, nuclear safety rules, and other applicable requirements. SNL WM will comply with the site treatment plan for MLLW. The planned WM end state will leave SNL in a position to be in compliance for all waste types. However, if SNL is not able to use DOE resources such as the WERF to treat waste, SNL will not be able to reach the WM Project end state by 2006.

### F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION

SNL and the Kirtland Area Office have involved the public, other local stakeholders, and the New Mexico Oversight Bureau and Environment Department in important ER and WM Projects decisions.

There has been considerable positive involvement with the local stakeholders through the quarterly meetings and through the Sandia Citizens' Advisory Board over the past couple of years. All stakeholders, including the local tribes, are encouraged to participate in reviews and important decision making processes associated with the SNL ER and WM Projects. The Citizens' Advisory Board has been very involved at monthly meetings and on subcommittees formed to study and advise on special topics such as land use, CAMU, and the Paths to Closure Draft. The local tribes have been less active in regular participation opportunities, but they are kept informed via mailings of meeting notices, newsletters, and associated information.

The stakeholder comments on the AL Summary that related to the SNL ER Project primarily addressed the need for DOE to maintain adequate resources to meet the FY 2001 completion date the main comment on WM project was to assure funding to support transition, from EM to DP. There were also a few comments provided regarding the need to define an alternative to WIPP. DOE and SNL are working closely with stakeholders to disposition their comments satisfactorily.



## LOS ALAMOS AREA OFFICE/LOS ALAMOS NATIONAL LABORATORY SUMMARY

### A. OVERVIEW

The Los Alamos National Laboratory (LANL), which is located in Los Alamos County in north-central New Mexico, is a DOE Defense Programs landlord facility. The AL Paths to Closure Draft assumes that Defense Programs will remain the landlord and will remain responsible for all associated landlord costs. AL's Los Alamos Area Office manages operations at LANL and has responsibility for overseeing the three elements of LANL's EM Program: Environmental Restoration (ER) Project, Waste Management (WM) Program, and Nuclear Materials and Facility Stabilization (NMFS) Program.

In addition to DOE Headquarters and AL planning assumptions, there are several key LANL-specific assumptions:

- the ER Project will incorporate risk-based decision making to determine the need for corrective action;
- natural resource injury and cumulative impacts can be evaluated and mitigated within the scope of this plan;
- the strategy to optimize characterization and remediation of the canyons will be acceptable to stakeholders, particularly the regulators and the neighboring pueblos;
- groundwater remediation will not be necessary at LANL,
- major sites such as the southern most canyons and many smaller material disposal areas will not require implementing the full corrective measures process;
- the large material disposal areas and other canyons will require implementing the full corrective measures process, and approximately 10 percent may require excavation, treatment and disposal of contaminated materials;
- new waste generation will increase as DOE assigns LANL new defense mission activities under the Stockpile Stewardship and Management Program, and
- existing technologies will be used to handle and ship high-wattage, high-gas-generating TRU waste to WIPP.

There are several significant differences between this draft and the Discussion Draft: 1) the original three Project Baseline Summaries that comprised the LANL ER Project have been combined into one PBS, 2) the LANL ER Project completion has been extended beyond the goal of 2006 due to funding constraints and the end state is not expected to be reached until 2008, and 3) the LANL legacy TRU waste workoff has been extended until 2015 because of funding constraints and changes in underlying assumptions.

The total escalated lifecycle costs for LANL's EM Program are currently planned to be:

- \$132 million for the NMFS Program from FY 1997 through FY 2006,
- \$1.07 billion for the ER Project from FY 1997 through FY 2070, this includes LTSM, and
- \$11.31 billion for the WM Program from FY 1997 through FY 2070 (\$738 million for the legacy waste workoff project and \$10.58 billion for management of newly generated waste).

Verifiable enhancements have already been built into project baselines. As additional enhancement opportunities are identified and the potential cost savings verified, they will be incorporated into the projects baselines too. LANL will continue to seek out and implement more efficient ways of conducting its EM Program and achieving the goals of

successful project completion, of getting to an end state earlier rather than later, of meeting the requirements of the regulators, and of maintaining a healthful and safe environment for workers and the public.

### **1. ER Project**

The purpose of LANL's ER Project is to protect human health and the environment from hazards posed by inactive and surplus DOE facilities and contaminated lands by remediating sites and facilities in the most cost efficient and responsible manner possible in order to provide for future beneficial use. The sites being addressed by the ER Project generally pose low risks of adverse impact to the public, workers, or the environment. The primary drivers for completion of the ER Project are the LANL Resource Conservation and Recovery Act (RCRA) permit for corrective action and the concerns that some stakeholders have about the potential for residual contamination in the environment to have adverse effects in the future.

### **2. WM Program**

The LANL WM Program is divided into two major projects: newly generated waste management and legacy waste management. The LANL newly generated waste project provides waste management services to support the LANL mission. This waste is treated, stored and disposed by the WM Program. Waste types generated at LANL that are managed by the WM Program include transuranic (TRU) waste, mixed transuranic waste, low level radioactive waste (LLW, both solid and liquid), mixed low level waste (MLLW), hazardous/chemical waste, biological waste, and medical waste. The LANL legacy waste project treats, stores and disposes of all legacy TRU waste (including mixed TRU) and legacy MLLW. LANL waste will be managed in compliance with all applicable federal and state requirements.

### **3. NMFS Program**

The LANL NMFS Program provides Complex-wide support to DOE for nuclear materials stabilization. LANL is providing the stabilization programs at other sites with the technical basis for risk-based prioritization, stabilization standards, stabilization processes, packaging for storage pending disposition, and surveillance during the storage period. LANL is also performing a core technology program to improve our understanding of underlying material interactions, and assuring that technical capabilities are available in the future to deal with any unforeseen problems with nuclear materials in storage.

## **B. END STATE, FUTURE USE AND STEWARDSHIP**

### **1. ER Project**

The LANL ER Project will have the need for continued operation at the end of FY 2006. The work remaining will include the remediation of 4-6 material disposal areas, decommissioning efforts at several facilities, and completion of the assessment and remediation of the canyons.

Work at some complex sites will be completed in FY 2008. A few smaller sites will also not be completed until FY 2008 since this work is being deferred so that complex sites can be started earlier. Surveillance and monitoring of sites with remaining contamination will be in accordance with plans approved by the administrative authority. Surveillance and maintenance for hazardous waste sites may extend for only 30 years, but would extend indefinitely for most radiologically contaminated sites.

The majority of lands and facilities addressed under the project will be used to achieve the future LANL mission. Therefore, the primary end point ER activities will achieve levels of remediation that allow industrial type activities to continue in a safe manner. Where lands have already been released or are scheduled to be released, the primary end point will achieve levels that allow unrestricted use of the property. For those lands where it is impossible to remediate for unrestricted use, they could be available for restricted uses after remediation and implementation of LTSM.

## **2. WM Program**

There is no projected end-state for the management of newly generated waste in support of ongoing LANL mission requirements. Newly generated TRU waste will be certified and shipped to WIPP as it is generated starting in FY 2002. Non-defense TRU waste will be stored and disposed after DOE develops a capability for non-defense TRU waste disposal. Disposal of solid LLW and treatment of liquid LLW will continue. MLLW will be shipped for treatment and disposal within one year of generation after FY 1999. Management of hazardous waste will continue. Upstream treatment and waste minimization practices to reduce and stabilize hazardous wastes will be continually incorporated as part of waste management practices.

The upstream treatment projects for legacy TRU waste will be completed in FY 2006. All legacy TRU waste, including remote-handled TRU waste, will be retrieved, characterized, treated, certified, placed in TRUPACTs and shipped to WIPP by the end of FY 2015. All legacy MLLW will be appropriately disposed by the end of FY 2004. The TRU facility decommissioning and decontamination will be completed by the end of FY 2017.

## **3. NMFS Program**

Stabilization technology development, technology transfer, and implementation support activities begin to ramp down in FY 2002, provided that the sites successfully meet Defense Nuclear Facilities Safety Board 94-1 milestones. The end state is reached when EM nuclear materials have been stabilized and converted to a form that meets disposal criteria or long-term storage criteria and inventories have been shipped to a disposal site or fissile materials disposition facility. Ongoing efforts will include shelf-life studies, surveillance, core technology, and EM Nuclear Materials Stewardship activities. The program will end when EM no longer has custody of nuclear materials.

# **C. STRATEGIES AND PRIORITIZATION**

## **1. ER Project**

The LANL ER Project's approach to implementing the corrective action process uses a modified version of the DOE's streamlined approach. This approach incorporates elements of data quality objectives, risk assessment, and EPA's Superfund Accelerated Cleanup Model to facilitate the rapid cleanup of potential release sites. Both the technical approach and decision logic are tied to the EPA's regulations and guidance. For any given site, the ultimate objective of the approach is to reach a point at which no further action is necessary, other than the appropriate LTSM. Site-specific land use assumptions and exposure scenarios are considered in establishing preliminary remediation goals and media cleanup standards, as well as in risk assessments, to estimate the reduction of risk that could be realized by a potential corrective action. Target risk and dose levels are set following EPA and DOE guidance.

The ER Project expects to either have no action on or will cap in place about 85 percent of the approximately 300,000 cubic meters of contaminated media currently estimated to be in place at LANL. The remaining waste will be transferred to the WM Program for final disposition with the majority of it likely to be disposed of onsite as LLW. (See the LANL ER Baseline Disposition Map in Attachment 3.)

## **2. WM Program**

LANL will manage newly generated waste as follows:

- LANL is the first DOE site certified to ship TRU waste to WIPP. Characterization, certification, and shipment of defense TRU waste to WIPP will continue in support of ongoing LANL mission requirements. Non-defense TRU waste will be stored and disposed after DOE develops a capability for non-defense TRU waste disposal.
- Disposal of solid LLW and treatment of liquid LLW will continue in support of ongoing mission requirements.
- Management of hazardous waste will continue in support of ongoing LANL mission requirements.
- Upstream treatment and waste minimization practices to reduce and stabilize wastes will be continually incorporated as part of waste management practices.

Legacy and newly generated TRU waste will be shipped to WIPP for disposal. MLLW will be shipped to offsite treatment and disposal facilities that are permitted to receive mixed waste. These may be either commercial facilities that have both a RCRA permit and radioactive material license, or RCRA-permitted DOE treatment and disposal facilities. After treatment, about two-thirds of the waste will be disposed of at an offsite DOE facility; the remainder will likely go to commercial disposal facilities. (See the LANL LLW, MLLW, and TRU Baseline Disposition Maps in Attachment 3.)

## **3. NMFS Program**

LANL will develop plutonium stabilization technology and provide technical support to other sites with EM nuclear materials through the use of the LANL TA-55 plutonium facility and staff, along with technical resources from throughout the DOE Complex.

LANL is a Defense Programs landlord site with most site operations performed under cost-plus-award-fee prime contracts. However, AL has vigorously pursued opportunities to change contracting mechanisms for LANL EM projects. Recent changes to AL's contracting approach at LANL include negotiating changes to performance measures within existing LANL contracts to focus on EM Program results rather than activities. In addition, LANL awarded three task ordering agreements for ER projects in early FY 1998. Under these agreements, LANL will award tasks on a firm-fixed-price basis whenever feasible and appropriate.

Table LANL1 shows major activities on the critical path for closure of the LANL EM Program.

## D. SCOPE, COST AND SCHEDULE

### 1. ER Project

The scope of the LANL ER Project encompasses RCRA corrective actions, corrective actions under DOE Orders, decommissioning, RCRA closures, and the associated project wide technical support, program and information management. LANL has identified 2120 potential release sites. These sites are on private property, county property, Forest Service land, and National Park Service land, as well as DOE property. As of September 1997, 1370 of these sites had been identified as requiring no further action based on human health concerns. Those remaining remediation will be completed as shown in Table LANL1. These sites will be reviewed in the future for ecological water quality, and air quality impacts, which are expected to be minimal. Although this draft contains resources for ongoing surveillance and maintenance beyond 2008, it is anticipated that responsibility for these activities will be turned over to the site landlord at that time.

Table LANL1 . Remaining Cleanups by Fiscal Year

Fiscal Year	Number of Cleanups Completed
1998	24
1999	20
2000	94
2001	93
2002	101
2003	76
2004	79
2005	57
2006	86
2007	76
2008	18

The ER Project's lifecycle cost estimate in the original 1995 baseline exceeded \$3 billion. Through implementation of the efficiency enhancements and refined cost estimating based on increased knowledge, the project brought this lifecycle estimate down to just over \$1 billion in the current baseline.

Table LANL2. LANL Critical Closure Path Activities

Activity	Scheduled Start Date	Scheduled Completion Date
<b>ER Project</b>		
Complete corrective measures	October 1, 1997	September 30, 2008
Complete canyons	October 1, 1997	October 18, 2005
Complete decommissioning	October 1, 1997	October 11, 2007
Complete material disposal areas	October 1, 1997	December 5, 2007
<b>WM Program</b>		
Transition WM operations to landlord	October 1, 1997	October 1, 1998
Ship new TRU waste to WIPP	October 1, 1998	ongoing
Dispose legacy MLLW offsite	October 1, 1997	September 30, 2004
Ship legacy TRU waste to WIPP	October 1, 2002	September 30, 2015
<b>NMFS Program</b>		
Continuation of research and development until stabilization implementation completed	October 1, 1997	September 30, 2006
Continuation of core technology support during storage period	October 1, 1997	September 30, 2006

## **2. WM Program**

New and ongoing LANL Programs and projects generate waste at 33 technical areas, and this waste is treated, stored and disposed by the WM Program. The newly generated waste project will:

- Characterize 1756 cubic meters of TRU waste to meet requirements for certification and shipment to the WIPP through FY 2006.
- Receive and dispose of 4000 - 7000 cubic meters of solid LLW annually.
- Collect and treat 20,000 cubic meters of liquid LLW annually.
- Manage 900 metric tons annually through FY 1999, 1100 metric tons annually from FY 2000 to FY 2003, and 1200 metric tons annually after FY 2004 of hazardous, chemical, PCB and some administratively-controlled wastes.
- Manage approximately 293 cubic meters of MLLW through FY 2006.
- Implement upstream treatment projects to reduce generation TRU waste, MLLW, LLW, and hazardous/chemical waste.

The legacy waste project will:

- Retrieve 4640 cubic meters of TRU waste from earth-covered storage.
- Treat legacy TRU waste, including size reduction and repackaging, to reduce the total volume by as much as 2000 cubic meters
- Certify 8572 cubic meters of TRU waste and ship it to WIPP by the end of FY 2015.
- Store, characterize, treat and dispose of an estimated 637 cubic meters of MLLW by the end of FY 2004.

Projections of new waste volumes that will be managed are approximate and greatly depend on which programs are assigned to LANL as well as actions taken to minimize the waste.

## **3. NMFS PROGRAM**

A research committee was chartered to: 1) assess the program as outlined in the implementation plan, 2) formulate a research and development plan to address the technological and core program needs, and 3) prepare task statements defining the research and development work required to accomplish program objectives. LANL research and development activities are structured to implement the research and development plan. The plan is updated annually.

The reduction in the baseline costs after FY 2002 reflect the assumption that sites will have met their Defense Nuclear Facilities Safety Board 94-1 milestones and the effort will focus on the ongoing aspects of the program.

The estimated escalated cost for FY 1997 through FY 2006 for all of the LANL EM projects is shown below:

Table LANL3. LANL EM Projects Escalated Cost for FY 1997 - 2006 (\$000)

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>WM new</b>	26331	26683	45657	54255	64193	56160	52001	53232	56081	57282
<b>WM legacy</b>	24247	28127	17126	23839	27977	42937	45400	49955	50071	48085
<b>ER</b>	50154	57972	48924	68134	74134	78132	76978	70000	70000	70000
<b>NMFS</b>	0	14400	13010	13010	14510	17010	15010	15010	15010	15010

## E. REGULATORY COMPLIANCE

The WM Program manages all wastes in compliance with applicable regulatory requirements, including state and federal regulations under the RCRA and other legislation, permits, compliance agreements and orders, the National Environmental Policy Act, and DOE nuclear safety requirements. A Site-Wide Environmental Impact Statement is being prepared for LANL, and projects for waste management will be addressed by this document.

The primary drivers for completion of the ER Project are; LANL's permit for corrective action under the Hazardous and Solid Waste Amendments to the RCRA, RCRA Closure and UST, DOE Orders relating to radiation protection and health and safety, among others, and the concerns that some stakeholders have about the potential for residual contamination in the environment to have adverse effects in the future.

Since the New Mexico Environment Department has become the administrative authority over the project, they have questioned many of the assumptions that have gone into our baselines. They have raised uncertainties about such assumptions as using caps as presumptive remedies for large disposal areas, risk-based decision making, site screening processes, methodologies for determining extent of contamination, and the use of industrial/institutional control exposure scenarios.

## F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION

A key element in the successful implementation of LANL EM projects close coordination of all activity with regulatory agencies, local and tribal governments, the public, and other stakeholders. This is accomplished through frequent meetings with the regulatory community and presentations to the public. By soliciting input from the stakeholders, LANL EM projects are able to progress effectively with stakeholder support.

Throughout the planning process, the DOE has held routine meetings with the LANL Citizens' Advisory Board. Responses to LANL-specific comments received on the AL Summary were prepared and shared with stakeholders. No response action plans were required.



## URANIUM MILL TAILINGS REMEDIAL ACTION PROJECTS SUMMARY

### A. OVERVIEW

The Uranium Mill Tailings Radiation Control Act (UMTRCA) directs DOE to perform remedial action to stabilize and control uranium mill tailings from inactive processing sites and associated vicinity properties where tailings were used in the foundations of inhabited or commercial buildings or where tailings blew into open land surrounding the mill sites. The UMTRCA designated 24 inactive mill sites located in 10 states and on 4 Native American tribal lands for remediation. The State of North Dakota has asked that its two sites be dropped from the program, and DOE is in the process of delisting these sites. To fulfill its responsibilities under the UMTRCA, DOE has instituted the Uranium Mill Tailings Remedial Action (UMTRA) Surface and Groundwater Projects to ensure protection of human health and the environment from uranium mill tailings and related contamination at the designated sites.

Lifecycle costs for the UMTRA Groundwater Project are estimated at \$189 million from FY 1997 through FY 2011.

#### 1. *UMTRA Surface Project*

The purpose of the UMTRA Surface Project is to clean up contamination of soils and buildings at these properties and dispose of residual radioactive materials in accordance with Environmental Protection Agency (EPA) cleanup and disposal standards. The AL Environmental Restoration Division is responsible for the UMTRA Surface Project.

Total costs for the remainder of the UMTRA Surface Project, which ends in FY 1999, are \$149 million. Long-term care costs for disposal sites licensed under this project will be incurred by the Long-Term Surveillance and Maintenance Program (LTSM) and are included in the GJO/Other Projects summary.

#### 2. *UMTRA Groundwater Project*

The purpose of the UMTRA Groundwater Project is to conduct compliance activities at the 22 former processing sites to bring groundwater contaminant levels into compliance with EPA groundwater standards. AL's Grand Junction Office (GJO) is responsible for the UMTRA Groundwater Project.

### B. END STATE, FUTURE USE AND STEWARDSHIP

Descriptions of end states, future use, and stewardship of the processing sites, the disposal sites, and vicinity properties are contained the site completion reports, LTSM plans, and other project documents.

#### 1. *UMTRA Surface Project*

The UMTRA Surface Project is forecast to be complete in 1999 and is forecast to complete all remedial action constructions in 1998 except for the Grand Junction disposal cell, Cheney. The scope for continued operation of the Cheney disposal cell and final closure and licensing will be transferred to GJO under the LTSM Program in April 1998. There will be 18 disposal cells, not including Cheney, licensed by the Nuclear Regulatory Commission (NRC) that are transferred to the GJO under the LTSM Program. The final site is forecast to be licensed and transferred in FY 1999.



The UMTRA Surface Project end state will consist of 22 processing sites and over 5000 vicinity properties certified clean by the NRC. The other 2 processing sites will be deemed "No Action Sites" and will be removed from the UMTRCA site list. There will be 18 disposal cells licensed by the NRC that are transferred to the GJO under the LTSM Program. DOE will retain ownership of the disposal sites. Final disposition of other properties is determined on a site-specific basis.

## **2. UMTRA Groundwater Project**

Sites that have been determined to require no groundwater remediation will be removed from the UMTRA Groundwater Project. These are sites where groundwater contamination does not exceed maximum concentration limits or background, or sites where supplemental standards or alternate concentration limits have been applied. Sites utilizing passive groundwater remediation will be transferred to the LTSM Program for long-term monitoring. Sites requiring active groundwater remediation will be retained in the UMTRA Groundwater Project until FY 2011, at which time they will be transferred to the LTSM Program. Presently, three sites are proposed for active remediation; nine sites are proposed for passive remediation, and the remaining ten sites are proposed for no action.

Upon completion of active remediation and compliance monitoring, groundwater will meet EPA standards. Some natural flushing sites will have institutional controls and periodic compliance monitoring under the LTSM program until constituents are below EPA standards.

## **C. STRATEGIES AND PRIORITIZATION**

### **1. UMTRA Surface Project**

Tailings remediation at each UMTRA site includes a remedial action plan approved by the NRC with the participation of the affected state/tribe, an environmental assessment or environmental impact statement, design/engineering, construction, preclosing custodial care, and licensing by the NRC. DOE plans to revoke the designation of the Belfield and Bowman, North Dakota, processing sites in 1998. No remedial action will be performed at these sites. Site completion reports and LTSM plans are submitted to the NRC for concurrence and licensing. After the disposal sites are licensed, they are transferred to the GJO LTSM Program, which will carry out the long-term care requirements of the sites' LTSM plans.

The scope for final closure and licensing of the Cheney disposal cell will be transferred to the GJO's LTSM Program.

### **2. UMTRA Groundwater Project**

The selected remedies for each site has not yet been determined. However, for cost estimating and budget formulation, site-specific strategies have been assumed using present knowledge of the sites. The compliance strategy approaches are:

- No Groundwater Remediation: This alternative could be used at sites where groundwater contamination does not exceed maximum concentration limits or background levels or where supplemental standards can be applied.
- Natural Flushing (passive groundwater remediation): This alternative, which uses natural groundwater movement and geochemical processes to decrease contaminant concentrations, could be used at sites where compliance with EPA groundwater

standards could be achieved within 100 years and institutional controls could be implemented and maintained throughout the flushing period to ensure conditions that were protective of human health and the environment. Criteria for use of natural flushing require that the contaminated groundwater is not a current or potential drinking water source.

- **Active Groundwater Remediation:** This alternative, which uses remediation methods such as gradient manipulation to redirect groundwater flow, groundwater extraction and subsequent treatment, and in situ treatment methods, could be used at sites where such methods are required to meet groundwater standards.

Table UMTRA1 shows critical path activities for both UMTRA projects.

*Table UMTRA1. UMTRA Projects Critical Closure Path Activities*

<b>Activity</b>	<b>Scheduled Start Date</b>	<b>Scheduled Completion Date</b>
<b>Surface Project</b>		
Complete Naturita site remediation	ongoing	May 1998
Complete Maybell site remediation	ongoing	September 1998
Complete licensing of disposal sites	ongoing	September 1999
<b>Groundwater Project</b>		
Durango remedial action compliance strategy implementation.	November 2004	May 2007
Gunnison remedial action compliance strategy implementation.	August 2003	February 2007
Slick Rock remedial action compliance strategy implementation.	July 2004	July 2007
Naturita remedial action compliance strategy implementation.	November 2003	May 2007
Implementation of Tuba City and Monument Valley remedial actions	March 1999	January 2011

Each of the sites listed above, requiring compliance strategy implementations, are critical path for the UMTRA Groundwater Project. However, none of the sites are reliant on completion of any of the other sites.

Mortgage reduction opportunities exist in the UMTRA Groundwater Project, if forward financing is provided. Increased funding up front would decrease the amount of overall project support and overhead costs that would be incurred by the project.

The GJO/All Other Project Summary discusses GJO's overall contracting approach.

## **D. SCOPE, COST AND SCHEDULE**

### **1. UMTRA Surface Project**

Tailings remediation has been completed at 20 of the 22 designated processing sites. In addition, 99 percent of the vicinity properties within the communities or surrounding the processing sites with associated contamination have been remediated. The remaining two processing sites (Naturita and Maybell, both in Colorado) will be completed in 1998. At completion of the UMTRA Surface Project, a total of approximately 33 million cubic meters

of contaminated material will have been placed in disposal cells. Prelicensing custodial care activities will be conducted at six sites awaiting licensing by the NRC. Completion of disposal site licensing and project closeout activities will be accomplished in FY 1999. An example of a specific enhanced performance initiative that has already been implemented includes:

- UMTRA Surface Project's award-winning Cost Reduction/Productivity Improvement Program has been credited with saving over \$75 million in environmental restoration costs through the project's 18-year life, including \$1.44 million in FY 1997.

## 2. UMTRA Groundwater Project

Each UMTRA Groundwater Project site is being characterized to determine which alternative(s) to use to eliminate or reduce health and environmental risks. The project baseline assumes proposed strategies contained in the Site Observational Work Plans will be implemented. Remaining remediations are listed in Table UMTRA2. The Tuba City, Monument Valley and Shiprock sites are proposed for active remediation. The Rifle (2 sites), Grand Junction, Riverton, Naturita, Slick Rock (2 sites), Durango, and Gunnison sites are proposed for passive remediation. No further action is anticipated at the remaining ten sites: Ambrosia Lake, Spook, Lowman, Lakeview, Mexican Hat, Canonsburg, Falls City, Green River, Salt Lake City, and Maybell. Interim actions consisting of alternate water supplies have been initiated for some residences near the Riverton, Wyoming, millsite and the millsite west of Rifle, Colorado.

Based on current scope, schedule and budget targets, cost for FY 1997 through FY 2006 is estimated at \$127 million (Table UMTRA3). During the FY 1998 task order negotiation process, GJO went through a major restructuring effort to lower the costs of overhead functions. GJO is well positioned to accelerate projects and reduce overall project lifecycle costs if additional funding becomes available.

An example of specific enhanced performance initiatives that have already been implemented or planned into current project baselines is the \$200,000 reduction in UMTRA Groundwater Project costs in FY 1997 due to streamlining the process for completing Site Observational Work Plans and Environmental Assessments at two sites and expediting site characterization at the site.

GJO anticipates additional UMTRA Groundwater Project lifecycle cost avoidances associated with scaling back active remedial action strategies to take advantage of (1) phasing the strategies, (2) simplifying the operations to avoid long-term operational costs, (3) sharing costs with other stakeholders at one site, and (4) optimizing the operations to reuse the nitrates in the groundwater for fertilizer. GJO will continue to pursue enhanced performance opportunities. The GJO/All Other Projects Summary discusses GJO's cost baseline review methodology.

*Table UMTRA2. Remaining Cleanups by Fiscal Year*

Fiscal Year	Number of Cleanups to be Completed
1999	1
2000	2
2001	0
2002	0
2003	2
2004	3
2005	1
2006	1
2007	5
2008	5
2009	1
2011-2015	3

*Table UMTRA3. UMTRA Projects Escalated Cost for FY 1997 - 2006 (\$000)*

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
---------	---------	---------	---------	---------

<b>Surface Project</b>	72204	49160	27923	0	0
<b>Groundwater Project</b>	6132	5400	9582	13975	73808
	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>	<b>FY 2006</b>
<b>Groundwater Project</b>	16000	16000	16000	16000	13945

### E. REGULATORY COMPLIANCE

DOE has prepared an Environmental Assessment with Finding of No Significant Impact, in accordance with the National Environmental Policy Act for the proposed delisting of the Belfield and Bowman, North Dakota, processing sites from the UMTRCA.

UMTRA Surface and Groundwater Projects funding is managed to remain in full compliance with regulations, non-compliance issues are funded with secondary priority. There is no difference in compliance attainability presently between the baseline and enhanced baseline.

### F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION

The UMTRA Surface and Groundwater Projects have a long history of actively seeking out stakeholder input. Affected states and tribal nations are active partners with DOE in project decisions. DOE also involves the public by making key decision documents available in public reading rooms and holding open meetings in communities near UMTRA sites.

GJO activities to date to specifically involve stakeholders in the Paths to Closure planning process include: 1) issued AL and GJO Discussion Drafts to key stakeholders in July 1997 notifying stakeholders of public comment period, 2) held meeting with community ad hoc committee members, 3) held public meetings in Grand Junction, Colorado, in July 1997 and in Monticello, Utah, in August, and 4) responded to public comments related to GJO projects and activities. The GJO will continue to involve stakeholders and interested parties in the refinement and implementation of the Focus on 2006 effort.

## **LOVELACE RESPIRATORY RESEARCH INSTITUTE SUMMARY**

### **A. OVERVIEW**

The Lovelace Respiratory Research Institute (LRRI), is a private medical research institute in Albuquerque, New Mexico, that performs work for DOE under a cooperative agreement. The AL Office of Environment/Project Management has responsibility for overseeing EM activities at LRRI. This project covers the LRRI waste management program, which manages a variety of wastes generated from on-going DOE research activities. The LRRI environmental restoration program was developed to remediate nine sites which had contamination from past operations in support of DOE research on toxic inhalants. Although all the sites have been cleaned up, monitoring and surveillance of the sites are necessary to support closure and to monitor the reduction of nitrates in groundwater via natural attenuation.

The current DOE/LRRI Cooperative Agreement is for the period of FY 1997 through FY 2002 with an option to renew. Assuming the cooperative agreement continues to be renewed indefinitely, the escalated lifecycle cost for the LRRI Project from FY 1997 through 2070 is estimated to be \$34 million. AL does not anticipate that the LRRI Project will realize any future enhancements.

### **B. END STATE, FUTURE USE AND STEWARDSHIP**

LRRI will continue to manage hazardous, low level radioactive, mixed, transuranic, and non-hazardous biomedical wastes generated from on-going DOE research activities under the DOE/LRRI Cooperative Agreement for the period of FY 1997 through FY 2002. If the renewal option is exercised, the waste management program will continue.

The LRRI environmental restoration end state is a completely cleaned site with no surveillance and monitoring activities required.

### **C. STRATEGIES AND PRIORITIZATION**

The objective of the LRRI waste management program is to manage waste from DOE-funded activities in an efficient and environmentally sound manner. Onsite waste treatment will include compaction, solidification and simple neutralization. Wastes will be transferred to offsite DOE and commercial facilities for final disposition; no waste will be disposed onsite. (See LRRI WM Baseline Disposition Map in Attachment 3.)

Monitoring and surveillance of the nine remediated sites is required under current closure plans and will include monitoring of groundwater, soil and air. Monitoring of groundwater will be in accordance with a state-approved discharge plan and monitoring requirements. Nitrate contamination in groundwater at the LRRI site is slightly above the cleanup level set by the State of New Mexico. Natural attenuation of the nitrates is expected to reduce levels below the cleanup standard.

The waste management program is primarily a level-of-effort support activity and critical closure path analysis cannot be readily applied to it; groundwater monitoring is the critical environmental restoration activity. Funding from this project is provided through a cooperative agreement rather than a standard contracting vehicle.

#### D. SCOPE, COST AND SCHEDULE

The LRRRI waste management program manages relatively small quantities of hazardous, low level radioactive, mixed, transuranic, and non-hazardous biomedical wastes generated from on-going DOE research activities in an efficient and environmentally sound manner. LRRRI will continue to manage waste from DOE research as long as a DOE mission continues to exist under the cooperative agreement.

By the end of FY 1997, all surface contamination cleanup levels have been achieved and all contaminated soil shipped off site. Environmental restoration is completed with the exception of long-term surveillance and maintenance. Monitoring will last until cleanup levels have been achieved for a minimum of eight consecutive quarters.

Estimated cost for the LRRRI Project for FY 1997 through FY 2006 is \$5.8 million (Table LRRRI1).

*Table LRRRI1. LRRRI Project Escalated Cost for FY 1997 - 2006 (\$000)*

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>Cost</b>	1,670	748	556	510	510	510	510	510	510	510

#### E. REGULATORY COMPLIANCE

LRRRI waste will be managed in compliance with all applicable federal and state regulations. All release site closures at the LRRRI site are pending regulatory approval. The New Mexico Environment Department is the primary regulator for the groundwater monitoring activities.

#### F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION

The AL Paths to Closure Draft describes AL's stakeholder involvement and comment disposition process.

## **SOUTH VALLEY SUPERFUND SITE SUMMARY**

### **A. OVERVIEW**

The South Valley Superfund Site is located in the south valley of Albuquerque, New Mexico. The AL Environmental Restoration Division has DOE responsibility for this remediation project. Under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the DOE was identified as a potentially responsible party for soil and groundwater contamination at this privately owned site. DOE, along with the U.S. Air Force and General Electric (GE), entered into a settlement agreement to reimburse GE for environmental restoration services performed at the site in accordance with the CERCLA Record of Decision. Under the settlement agreement, DOE's liability is 43 percent of the cost for remediation.

GE is responsible for project management, planning and execution with approval by EPA. The EPA Region VI with input from the New Mexico Environment Department and the City of Albuquerque, is the prime regulator. DOE has maintained an active participation with GE in cleanup activities.

The DOE, in conjunction with the Air Force and the Department of Justice, are currently pursuing an administrative buyout from the settlement agreement. Negotiations to date have determined that the best course of action is to seek a short term buyout until 2003 (same time as an EPA 5-year review) with stipulations that negotiations will resume at that time to seek a permanent, long-term buyout. If negotiations fail, DOE will be responsible for all unpaid past costs as well as future costs.

In a separate action, the DOE, Air Force, and GE are working with the EPA to determine a reasonable amount for past EPA response costs. The current bill given to the three potentially responsible parties is \$7.8 million. DOE involvement is expected to end in FY 2010 with total escalated lifecycle costs for FY 1997 through FY 2010 estimated to be \$8.5 million.

Compared with the AL Summary, there are no significant differences in this draft with the exception of FY 1998 budget reductions, which will not impact the current mission. The project will not realize any enhancements at this point in time.

### **B. END STATE, FUTURE USE AND STEWARDSHIP**

Groundwater will be cleaned up to the most stringent drinking water standards from either the EPA or the New Mexico Environment Department regulations. Soil has already been cleaned up to EPA risk-based levels.

DOE does not have future use decisions at this site and does not own any land or facilities. Future use decisions and stewardship are the responsibility of GE and other land owners in the area.

### **C. STRATEGIES AND PRIORITIZATION**

The current strategy is to continue to operate groundwater remediation systems and monitor groundwater quality. Eventually, the shallow groundwater treatment system will dewater the shallow aquifer and the residual soils in the zone will be sampled. This sampling is expected to confirm the 1993 decision for No Further Action for soil-vapor extraction on solvent contaminated soils.

Discussions between affected parties will continue to reach the administrative buyout, which is expected early in FY 1998. Key cost estimates and other provisions have already been agreed upon, but some smaller issues remain unresolved. Negotiations with the EPA over past response costs will continue, including a proposed audit of EPA's accounting system for the South Valley site.

#### **D. SCOPE, COST AND SCHEDULE**

The remaining scope is operation and maintenance of installed groundwater remediation systems and monitoring and surveillance of system performance as well as site-wide groundwater quality.

The DOE does not maintain a baseline for this project. The DOE, however, has extensively participated in GE's development of a baseline and approves GE's cost estimates on a yearly basis according to the Settlement Agreement. In 1991, the DOE mandated that GE develop a baseline (which it had not until that point) or it would not approve the cost estimates. Since that time, GE has maintained a baseline. DOE's portion of the cost for this project for FY 1997 through 2006 is expected to be \$2.5 million (Table SV1).

*Table SV1. South Valley Project Escalated Cost for FY 1997 - 2006 (\$000)*

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>Cost</b>	379	1405	483	496	500	523	537	551	566	581

At this time, no enhanced performance (through technology application) is required, but options may be looked at in the future if current remediation systems do not achieve cleanup goals.

#### **E. REGULATORY COMPLIANCE**

Compliance is required with CERCLA and state regulations. All requirements of the two Records of Decision have been achieved as well as all applicable state regulations.

#### **F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION**

The South Valley project has followed the CERCLA process regarding the involvement of state regulators, the public, and other stakeholders. All stakeholder activities for this project are the responsibility of GE.

The AL Paths to Closure Draft Executive Summary describes AL's stakeholder involvement and comment disposition process. Two comments were received on the AL Summary that related to the South Valley Project. Both these comments dealt with the groundwater remediation effort which is GE's responsibility.



## OTHER AL PROJECTS SUMMARY

### A. OVERVIEW

The AL Office of Environment/Project Management has responsibility for several EM projects that are not covered in other summaries. These projects are covered by two Project Baseline Summaries: the New Mexico Agreement in Principle (NM AIP), and AL Miscellaneous Projects.

The escalated lifecycle cost for the AL Miscellaneous Projects for FY 1997 through FY 2006 is estimated at \$45 million. AL does not anticipate that these projects will realize any future enhancements.

#### 1. NM AIP

The provides funding through a DOE grant for the support of the New Mexico Environment Department's (NMED) oversight and monitoring of environmental management activities at DOE facilities in New Mexico. The primary objectives of the AIP are (1) to assess the DOE's compliance with existing laws including regulations, rules, and standards (2) to participate in prioritization of cleanup and compliance activities at DOE facilities (3) to develop and implement a vigorous program of independent monitoring and oversight and (4) to communicate with the public for the purpose of increasing public knowledge of environmental matters concerning facilities to include coordination with local tribal governments.

Assuming the AIP remains in place indefinitely, the escalated lifecycle cost for the NM AIP Project from FY 1997 through FY 2070 is estimated at \$100 million.

#### 2. Miscellaneous Projects

Within the AL EM program, there are various programs which are covered under a single Project Baseline Summary. These programs are presented individually below.

The Norfolk State University Center for Materials Research (NSU), the Waste Management Education and Research Consortium (WEREC), and the Historically Black Colleges and Universities/Minority Institutions Environmental Technology Consortium (ETC) are national programs established to develop and conduct programs in education and technology development and applications to solve the human resource needs and technology issues related to the management of nuclear, hazardous, mixed and solid wastes faced by government and industry.

The Innovative Treatment Remediation Demonstration (ITRD) Program is a national program to help accelerate the adoption and implementation of new and innovative remediation technologies. This program attempts to reduce many of the classic barriers to the use of new technologies by involving government, industry, and regulatory agencies in the assessment, implementation, and validation of innovative technologies. In this program, DOE facilities work cooperatively with EPA, industry, national laboratories, and state and federal regulatory agencies to establish remediation demonstrations using applicable innovative technologies at their sites. Selected innovative technologies are used to remediate small sites to generate the full-scale and real-world treatment performance and cost data needed to validate these technologies and gain acceptance by industry and regulatory agencies.

The Nuclear Criticality Predictability Program (NCP) has identified analytical methods, including modeling codes and processed nuclear data, as key elements. Criticality safety practice requires that transport computer codes, coupled with qualified nuclear data, be utilized to calculate system multiplication factors, establish margins of subcriticality, calculate subcritical measurements, and determine radiation fields for criticality alarms. The objectives of this project include: (1) maintenance of production analytical capability, (2) training and assistance in the use of the LARAMIE system, (3) code and data remediations to reduce analytical uncertainties, (4) validation of new methods and data, and (5) technical support to DOE in the planning and conduct of its NCP.

## **B. END STATE, FUTURE USE AND STEWARDSHIP**

### **1. NM AIP**

NMED oversight activities will continue for the duration of DOE environmental management activities at DOE facilities in New Mexico to assure continuing public confidence in the DOE's efforts to protect public health and the environment and ensure worker safety.

### **2. Misc. Projects**

The NSU, WERC, and ETC projects will be completed by the end of FY 2001. The ITRD program will end when all sites have been remediated or when there is no longer a need for innovative remediation technology. The NCP program will continue as long as there is a research and development need.

## **C. STRATEGIES AND PRIORITIZATION**

### **1. NM AIP**

The NMED will continue activities under the AIP to assure the citizens of the State of New Mexico that public health, safety and the environment are being protected through existing programs, DOE's compliance with applicable laws, including rules, regulations, and standards; substantial new commitments by DOE; prioritization of cleanup and compliance activities; and a program of independent monitoring and oversight by the State.

### **2. Misc. Projects**

These projects help ensure that the DOE's EM Program needs for trained personnel and innovative technologies are met. Support from these projects will continue as long as there is a need.

The projects covered in this summary are primarily support activities and critical closure path analysis cannot be readily applied to them. Funding from these projects is provided through grants and the AIP rather than standard contracting vehicles.

## **D. SCOPE, COST AND SCHEDULE**

### **1. NM AIP**

NMED employees supporting AIP activities are located onsite at DOE facilities in Los Alamos and Albuquerque and at the NMED in Santa Fe. NMED will continue oversight activities under the AIP to assure the citizens of New Mexico that public health, safety, and the environment are being protected and informed in accordance with the objectives of the

AIP. FY 1997 was the seventh year that the State of New Mexico has provided oversight activities at DOE facilities. Estimated cost for the NM AIP Project for FY 1997 through FY 2006 is \$13.5 million (Table ALO1).

*Table ALO1. NM AIP Project Escalated Cost for FY 1997 - 2006 (\$000)*

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>Cost</b>	2141	1969	1969	1579	1500	1425	1425	1425	1425	1425

## **2. Misc. Projects**

The NSU, WERC, and ETC programs include 27 educational institutions across the United States that collaborate with two national laboratories and more than 45 industrial partners. The scope of activities involves education, research and technology transfer, and partnering. The NSU current cooperative agreement is scheduled for completion at the end of FY 1999; the WERC cooperative agreement is scheduled for completion in February 2001; and the ETC cooperative agreement is scheduled for completion at the end of FY 2001.

The ITRD program interfaces with the DOE, EPA, industry and the states to generally establish technical advisory and performance evaluation groups for each remediation demonstration, recommend personnel for these groups, coordinate assessment of suggested innovative technologies, coordinate and manage performance and cost evaluations, and disseminate treatment technology assessment data after review and release by DOE. ITRD activities will include the initiation of two innovative remediation projects during the target year, and the completion of two projects from the prior fiscal year through FY 2006. Current planning assumes this program will end in FY 2006.

EM commitments are to support the acquisition of nuclear data and the maintenance of analytical methods. Three laboratories contribute to the NCPP: 1) Los Alamos National Laboratory, 2) Oak Ridge National Laboratory, and 3) Argonne National Laboratory. Each laboratory provides unique and complimentary capabilities and expertise in support of the NCPP objectives. This project, in close coordination with the other major program elements, strives to ensure continuation of DOE excellence in nuclear criticality safety. Current planning assumes this program will end in FY 2006.

Estimated annual costs for the AL Miscellaneous Projects for FY 1997 through FY 2006 are shown in Table ALO2.

*Table ALO2. AL Miscellaneous Projects Escalated Cost for FY 1997 - 2006 (\$000)*

	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
<b>Cost</b>	11794	13101	2864	3041	2410	2445	2480	2515	2250	2290

## **E. REGULATORY COMPLIANCE**

The NMED will continue compliance oversight activities for EM activities at DOE New Mexico facilities as needed and as funding of the AIP is provided.

## **F. STAKEHOLDER INVOLVEMENT AND COMMENT DISPOSITION**

The AL Paths to Closure Draft Executive Summary describes AL's stakeholder involvement and comment disposition process.

### III. SUMMARY OF ISSUES

#### GENERAL

- The New Mexico Environmental Department has not yet reached agreement on final approval criteria and review timeframes to finalize closure of various cleanup actions at both SNL and LANL. NMED is also in the process of developing fee regulations. These fee regulations are intended to allow NMED to acquire the resources necessary for timely review of deliverables and permit actions. As drafted, the fee regulations will have a definite budget impact on NM sites.

#### LANL

- A strategy to optimize characterization was finalized in April 1997 and is under review by a regulator. Lessons learned during canyon characterization will be applied to future canyon work in order to maximize streamlining potential. A focused assessment of the canyons with optimal use of existing data and implementation of the EPA's data quality objectives process will facilitate timely and cost effective decisions. LANL is currently working with the pueblos and regulators to ensure that this approach achieves the goals of the corrective action process..
- DOE and NMED have not reached agreement on either the requirements to be included in an NFA proposal or a standard plan. Therefore, only 14% of the sites that DOE states are complete have been formally recognized by NMED.
- NMED has not agreed to a specific time period for review of regulator documents. The AL Paths to Closure Draft assumes a nine-month regulatory review/approval process as a key planning assumption.

#### SNL

- There is a backlog of regulatory documents awaiting review at NMED. SNL has provided a priority list of these documents to NMED along with a schedule of need. A response from NMED is pending.

#### SNL AND LANL

- The ecorisk requirements have not yet been established by NMED, therefore NFA proposals will continue to have uncertainty in their acceptability.

#### GJO

- The planned completion date for the UMTRA Ground water Program at the Shiprock, NM, site of 2012 is incorrect. The date should be changed in the PBS to 2011.
- The planned assessment date of October 1997 is incorrect for the Spook, WY, UMTRA Groundwater Program site and should be changed to May 1997 in the PBS.

## **IV. ATTACHMENTS**

- Attachment 1. AL Project Baseline Summaries Reference Sheet
- Attachment 2. AL FY 1999 Integrated Priority List
- Attachment 3. AL Waste Disposition Maps
- Attachment 4. AL Technology Deployment Management Plan Outline
- Attachment 5. Glossary of Terms
- Attachment 6. List of Acronyms

**ATTACHMENT 1. AL PROJECT BASELINE SUMMARIES REFERENCE SHEET**

<b>PBS ID</b>	<b>Project</b>
AL0529	Albuquerque Operations Office -- Miscellaneous Programs
AL0123	South Valley Superfund Site
AL0465	New Mexico Agreement in Principle
AL0125	Lovelace Respiratory Research Institute
AL0466	Kansas City Plant Environmental Restoration
AL0467	Nuclear Materials & Facility Stabilization Program
AL0562	LANL Environmental Restoration
*AL0471	LANL Newly Generated Waste Management
AL0472	LANL Legacy Waste Management
AL0473	Pantex Plant Environmental Restoration
*AL0593	Pantex Plant Waste Management
*AL0134	SNL Waste Management
AL0135	SNL Environmental Restoration
AL0136	Pinellas Plant Closeout & Administrative Activities
AL0475	UMTRA Surface Project
AL0138	Maxey Flats Field Management
AL0476	Monticello Superfund Sites
AL0477	UMTRA Groundwater Project
AL0478	Grand Junction Office -- All Other Projects
AL0479	Pinellas Plant Groundwater Restoration

\*Projects will be transferred to Defense Programs beginning in FY 1999.

**ATTACHMENT 2. AL FY 1999 INTEGRATED PRIORITY LIST**

<b>Priority Ranking</b>	<b>PBS ID</b>	<b>Project</b>	<b>Subproject</b>
1	AL0471	LANL Newly Generated Waste Management	Newly generated waste management
2	AL0125	Lovelace Respiratory Research Institute	Newly generated waste management
3	AL0136	Pinellas Plant Closeout & Administrative Activities	Project closeout activities; post-employment benefits and pension
4	AL0475	UMTRA - Surface Project	UMTRA Surface site closures; site licensing; project closeout activities
5	AL0125	Lovelace Respiratory Research Institute	Groundwater monitoring
6	AL0478	GJO/All Other Projects	RUST contract closeout
7	AL0476	Monticello Projects	Millsite remediation, repository construction, and restoration
8	AL0476	Monticello Projects	Complete remedial action reports; groundwater restoration
9	AL0476	Monticello Projects	State grant; independent verification; air monitoring and environmental reporting
10	AL0123	South Valley Superfund Site	Payments to General Electric
11	AL0138	Maxey Flats Field Management	Payments to the Maxey Flats Steering Committee
12	AL0479	Pinellas Plant Groundwater Restoration	Operation & maintenance of groundwater restoration systems
13	AL0466	KCP Environmental Restoration	Environmental restoration activities
14	AL0478	GJO/All Other Projects	Long-Term Surveillance and Maintenance Program
15	AL0473	Pantex Plant Site Remediation	Environmental restoration base program
16	AL0473	Pantex Plant Site Remediation	Multiple site activities
17	AL0135	SNL Environmental Restoration	Corrective Action Management Unit; Chemical Waste Landfill; project management & technical support
18	AL0562	LANL Environmental Restoration	Environmental Restoration base program, decommissioning, closures, technical support & management
19	AL0562	LANL Environmental Restoration	Field Units 2, 3, & 5: field

Priority Ranking	PBS ID	Project	Subproject
			management, canyons assessment
20	AL0478	GJO/All Other Projects	GJO facility management; uranium leasing base program; waste operations; waste minimization
21	AL0477	UMTRA Groundwater Project	UMTRA Groundwater base program
22	AL0478	GJO/All Other Projects	GJO Remedial Action Project base program
23	AL0472	LANL Legacy Waste Management	Recover TRU & place in inspectable storage; store, characterize & dispose of MLLW;
24	AL0467	Nuclear Materials & Facility Stabilization Program	Ongoing plutonium stabilization research & development
25	AL0135	SNL Environmental Restoration	Corrective action Foothills, Tijeras Arroyo, Central Coyote, TA-35
26	AL0562	LANL Environmental Restoration	Field Units 1 & 4: continue remedial actions at TA-21
27	AL0562	LANL Environmental Restoration	Field Units 1 & 4: continue remedial actions and assessments at TA-21
28	AL0562	LANL Environmental Restoration	Field Units 2, 3 & 5: TA-15, TA-16, TA-36, TA-39, TA-46, TA-49, TA-50, TA-54, Area F, and townsites
29	AL0135	SNL Environmental Restoration	Remediation of SNL California fuel oil spill
30	AL0562	LANL Environmental Restoration	Field Units 2,3 & 5: townsite investigation; well installation; TA-3 remedial actions; decommissioning of TA-21; material disposition
31	AL0472	LANL Legacy Waste Management	Characterization of recovered TRU waste to meet state regulations
32	AL0562	LANL Environmental Restoration	Field Units 1 & 4: decommissioning at TA-21 & TA-33
33	AL0562	LANL Environmental Restoration	Field Units 1 & 4: decommissioning at TA-33
34	AL0135	SNL Environmental Restoration	SNL New Mexico TA-2, canyons
35	AL0562	LANL Environmental Restoration	Field Units 1 & 4: decommissioning at TA-33
36	AL0529	AL Miscellaneous Programs	Innovative Technologies Remediation Demonstration
37	AL0465	New Mexico Agreement in Principle	Funding to State of New Mexico for regulatory support



Priority Ranking	PBS ID	Project	Subproject
38	AL0529	AL Miscellaneous Programs	Innovative Technologies Remediation Demonstration
39	AL0472	LANL Legacy Waste Management	Prepare and ship additional legacy TRU to WIPP
40	AL0562	LANL Environmental Restoration	Field Units 2,3 & 5: closeout and decommissioning activities
41	AL0529	AL Miscellaneous Programs	Grants to universities for environmental programs

LLW, low level waste; MLLW, mixed low level waste; TRU, transuranic waste

Waste Management Activities for LANL, SNL, and Pantex, which are expected to transfer to Defense Programs in FY 1999, have been removed.

**ATTACHMENT 3. AL WASTE DISPOSITION MAPS**

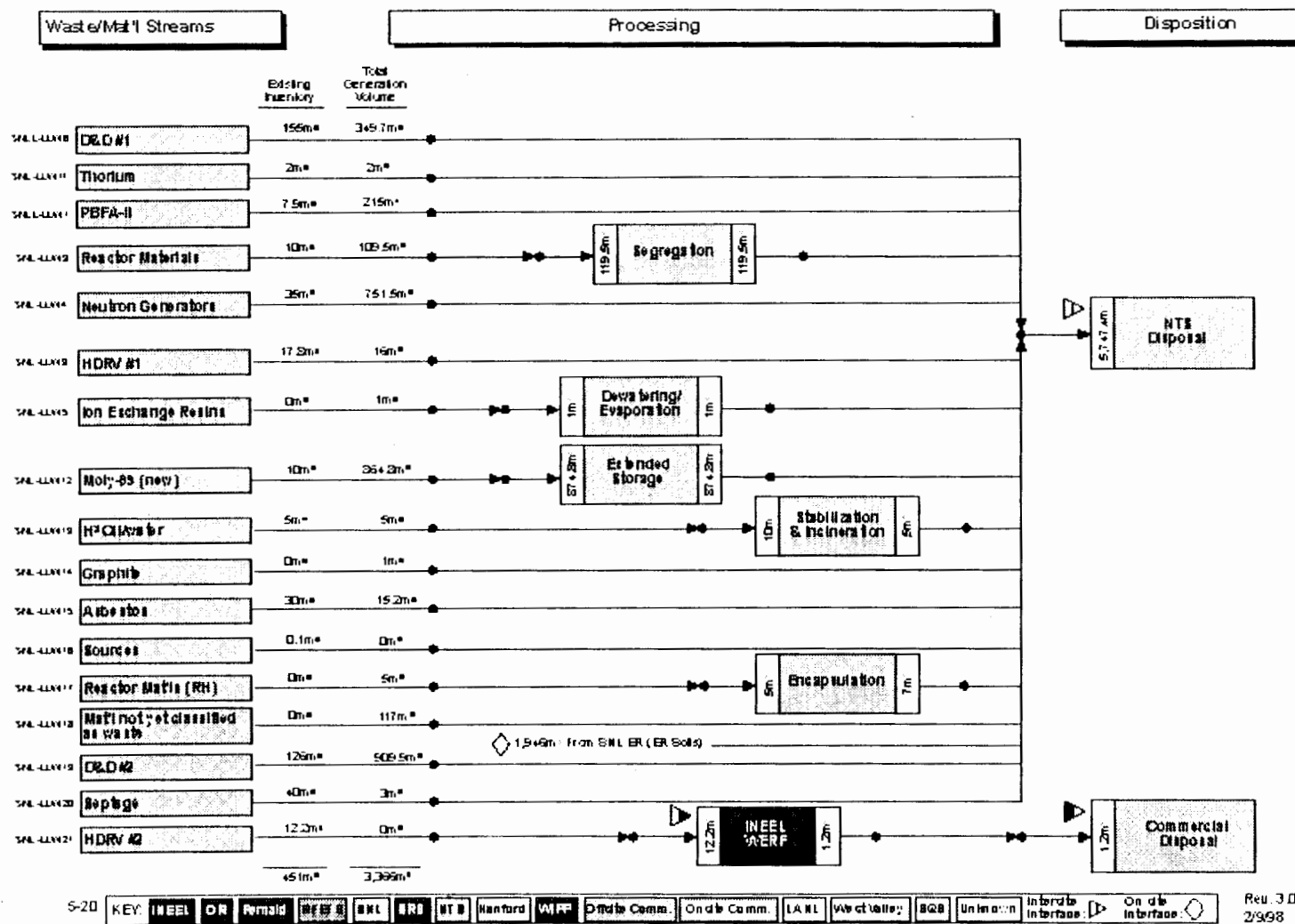
AL sites have prepared preliminary baseline disposition maps for most of their waste management and environmental restoration waste streams. The waste volumes and disposal paths identified in these disposition maps are for planning purposes only and final waste disposition decisions have not been made.

Baseline disposition maps are included for the following wastes:

1. SNL low level waste
2. SNL mixed low level waste
3. SNL transuranic waste
4. SNL environmental restoration waste
5. LANL low level waste
6. LANL mixed low level waste
7. LANL transuranic waste
8. LANL environmental restoration waste
9. LRRI low level waste, mixed low level waste, and transuranic waste
10. KCP environmental restoration waste
11. Pinellas Plant environmental restoration waste
12. Pantex Plant low level and mixed low level waste
13. Pantex Plant environmental restoration waste
14. GJO environmental restoration waste
15. Monticello environmental restoration waste
16. UMTRA ground water environmental restoration waste

## SNL LLW Baseline Disposition Map

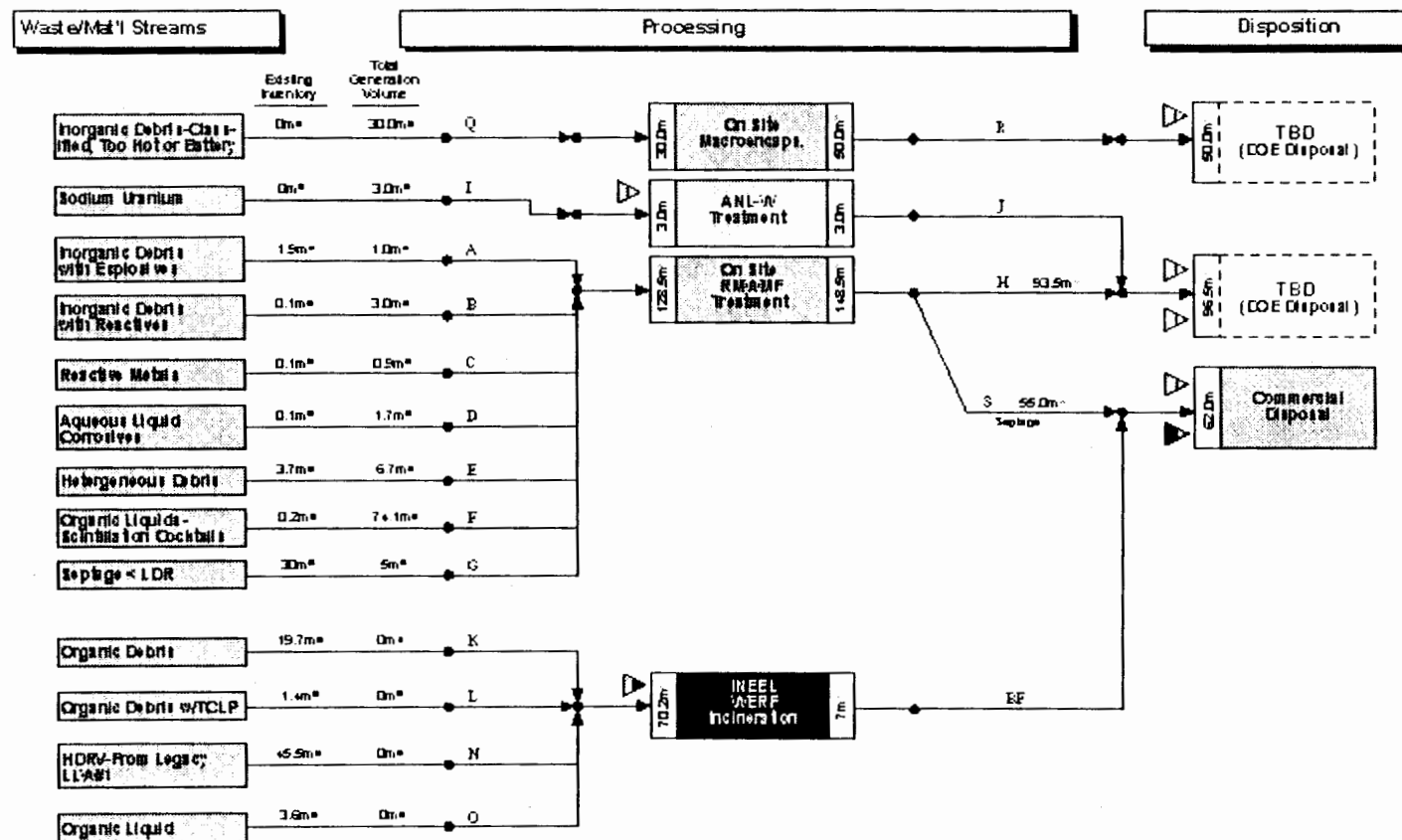
PREDECISIONAL DRAFT



This map is conceptual and in many cases does not represent cleanup or transfer decisions; this map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Maps have been changed to add this caveat and are currently on the EMI Home Page (<http://info.share.mel.gov/publishedmaps.html>)

## SNL MLLW Baseline Disposition Map (Page 1 of 2)

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3-21.1

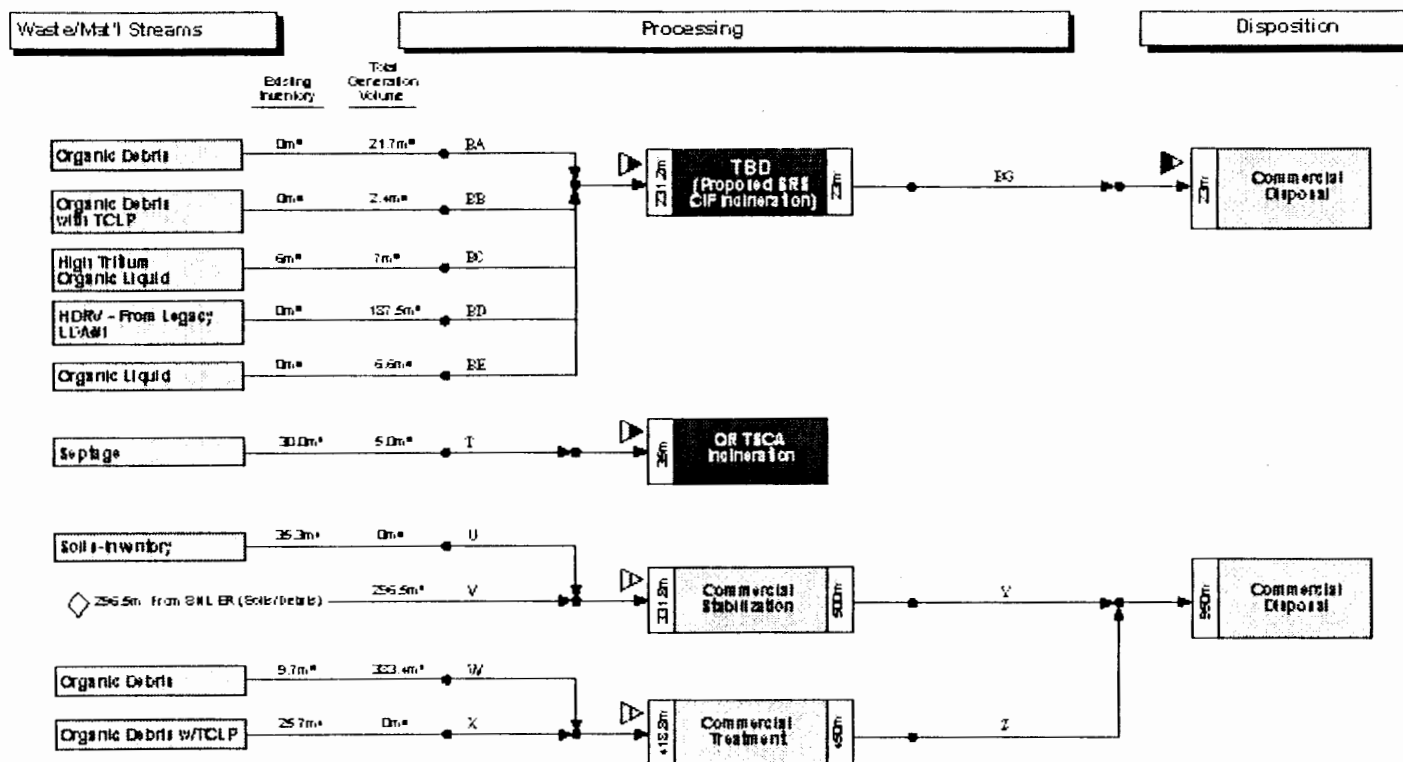
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Letters in blue are link identifiers

Rev. 3.0  
1/27/98

## SNL MLLW Baseline Disposition Map (Page 2 of 2)

PREDECISIONAL DRAFT



3-212

KEY: INEL OR Fermi REF B SNL SRS HTB Hanford WFP Other Comm. On-Is Comm. LANL Verc Valley BQO Unknown Interface Interface On-Is Interface

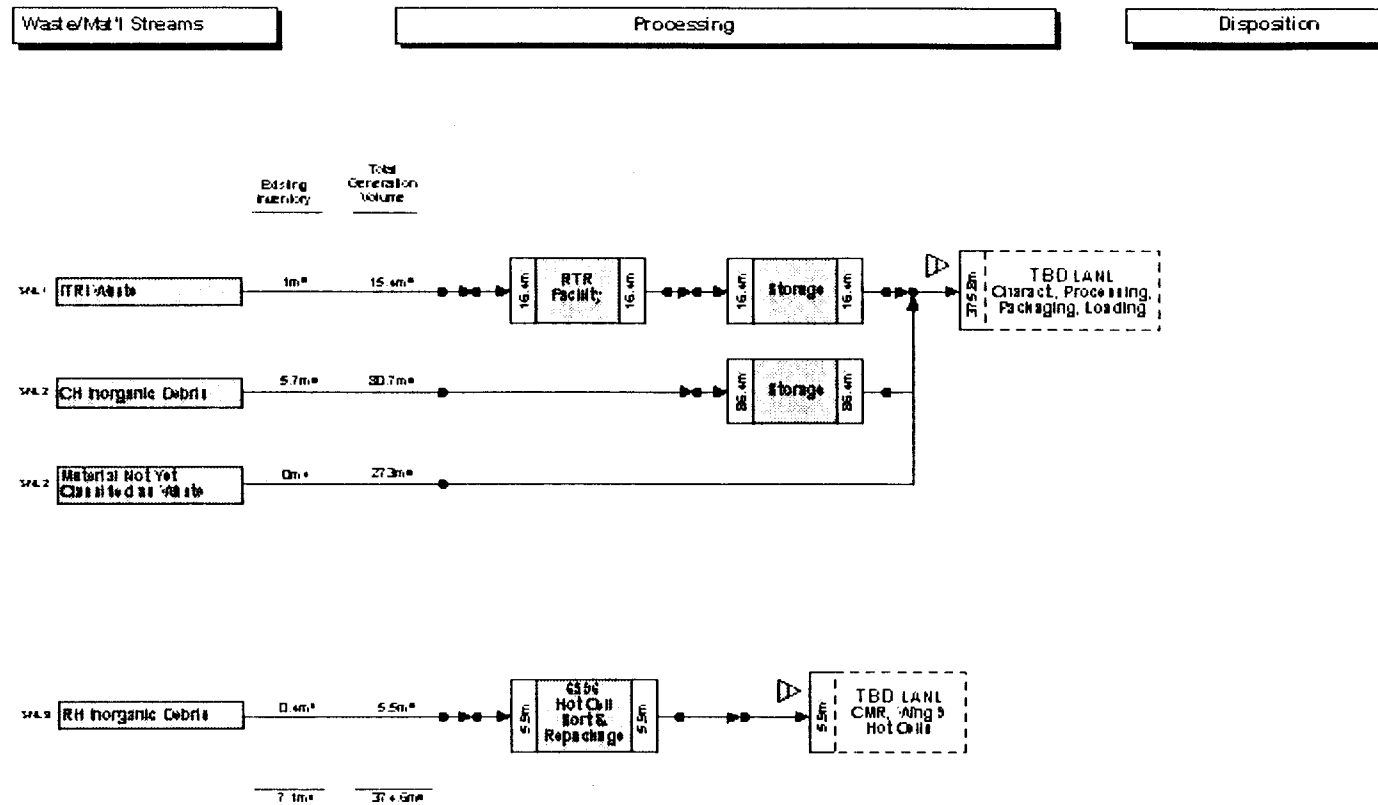
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Rev. 3.0  
1/27/06

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## SNL TRU Baseline Disposition Map

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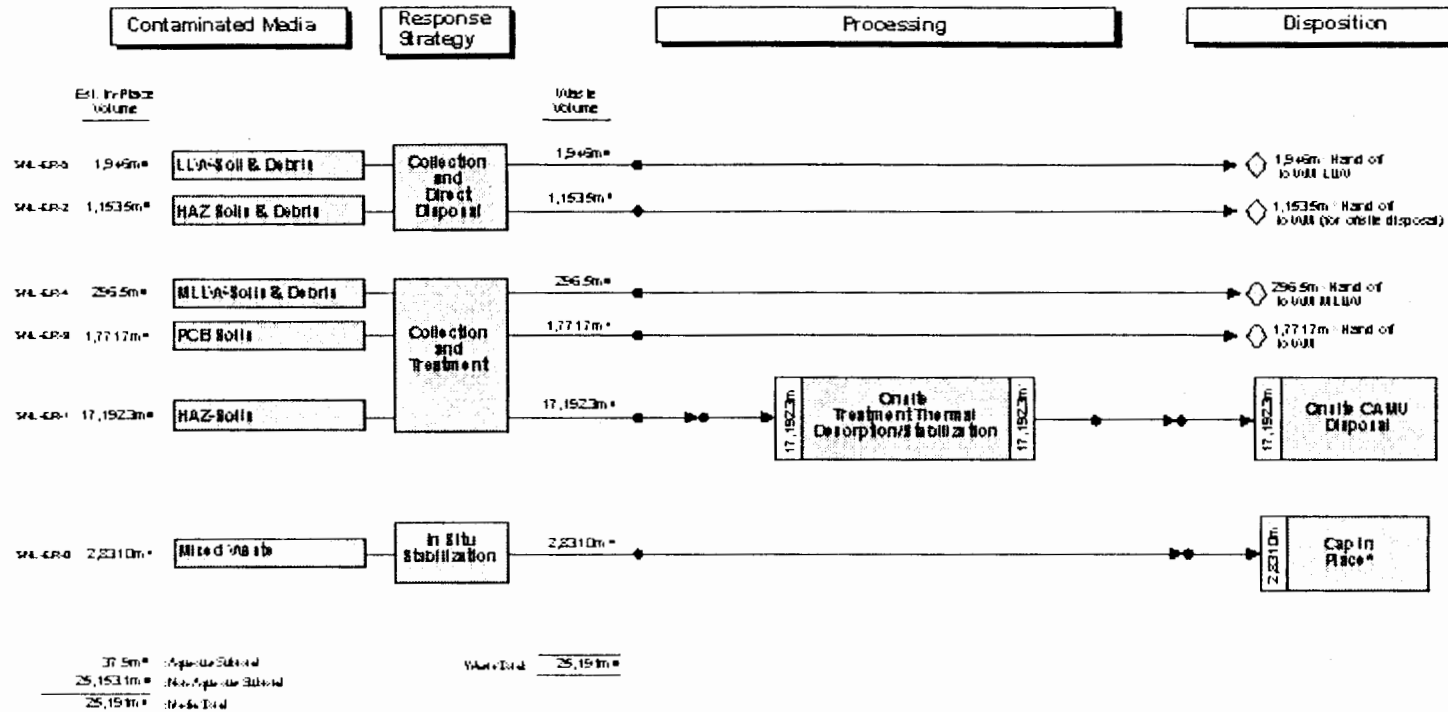


1-15

Rev. 3.0  
12/2/97

## SNL ER Baseline Disposition Map

PREDECISIONAL DRAFT



## Notes:

LLVA:	MLLVA:	HAZ:	HAZ (CAMU):	HAZ (CAMU):
Soil = 1,816.4m³	Soil = 32.5m³	Soil = 959.5m³	Soil = 11,192.3m³	Soil = 1,111.1m³
Liquid = 4.1m³	Liquid = 15.1m³	Debris = 114.6m³		
Debris = 45.9m³	Debris = 151.1m³	Liquid = 11.1m³	TOTAL: 17,192.3m³	TOTAL: 1,771.7m³
Soil/Debris = 3.1m³	Soil/Debris = 1.8m³	Sludge (Septage) = 94.5m³		
Soil/Debris/PTC = 8m³	Sludge (Septage) = 19.9m³	Soil/Debris = 1.1m³		
Sludge (Septage) = 11.3m³	TOTAL: 296.5m³	TOTAL: 1,153.5m³		
TOTAL: 1,946.0m³				

Under RCRA, waste that is not excavated, dewatered, and not "generated", thus we do not have capped in place to be "generated"

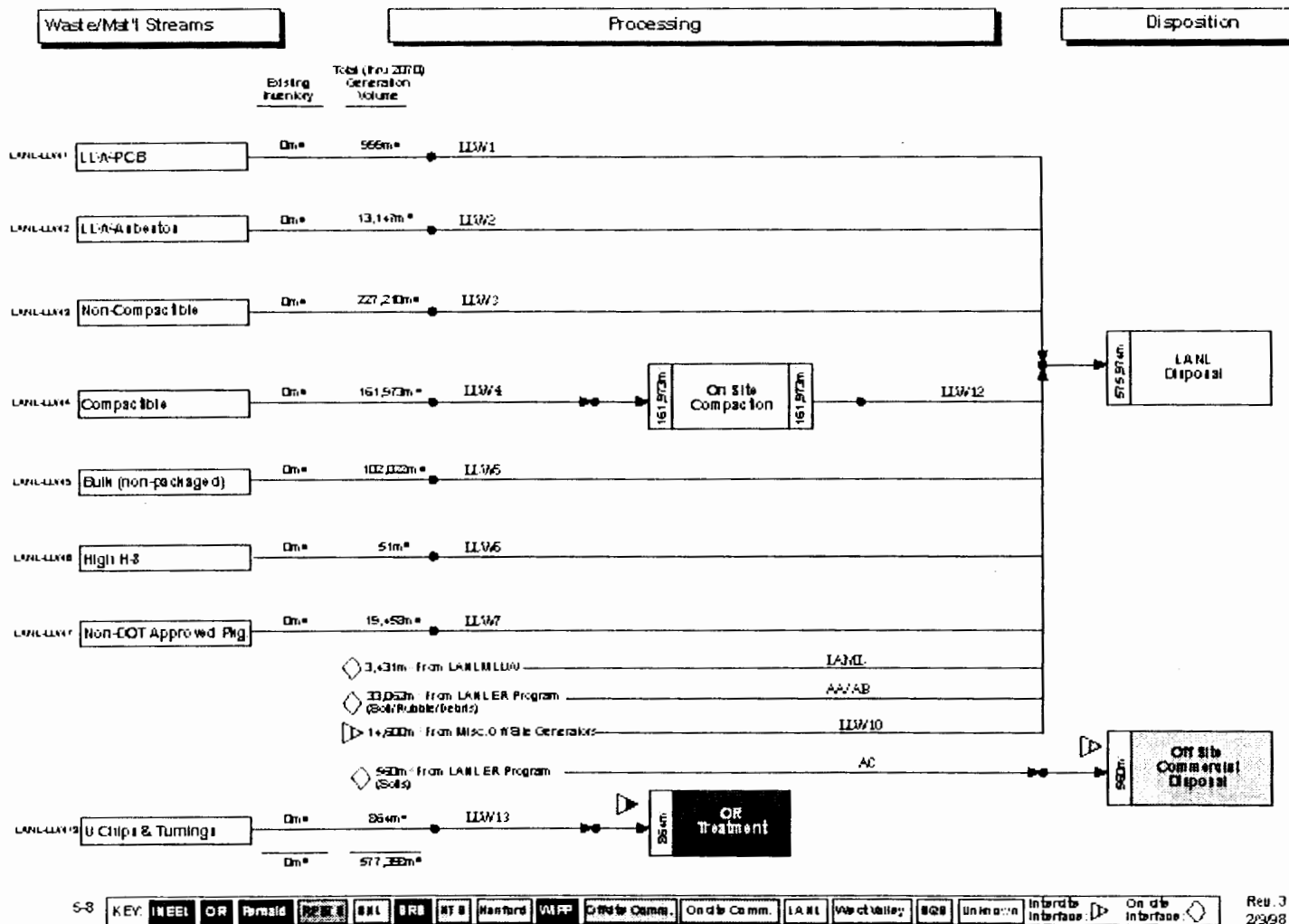
7-28

KEY: INTEL OR Periodic PERI EML ERM NTR Remediation WMFP Off-site Comm. On-site Comm. LAML Wastewater B2B Uninformed Intended to Interface On-site Interface

Rev. 3.0  
1/20/06

## LANL LLW Baseline Disposition Map

PREDECISIONAL DRAFT

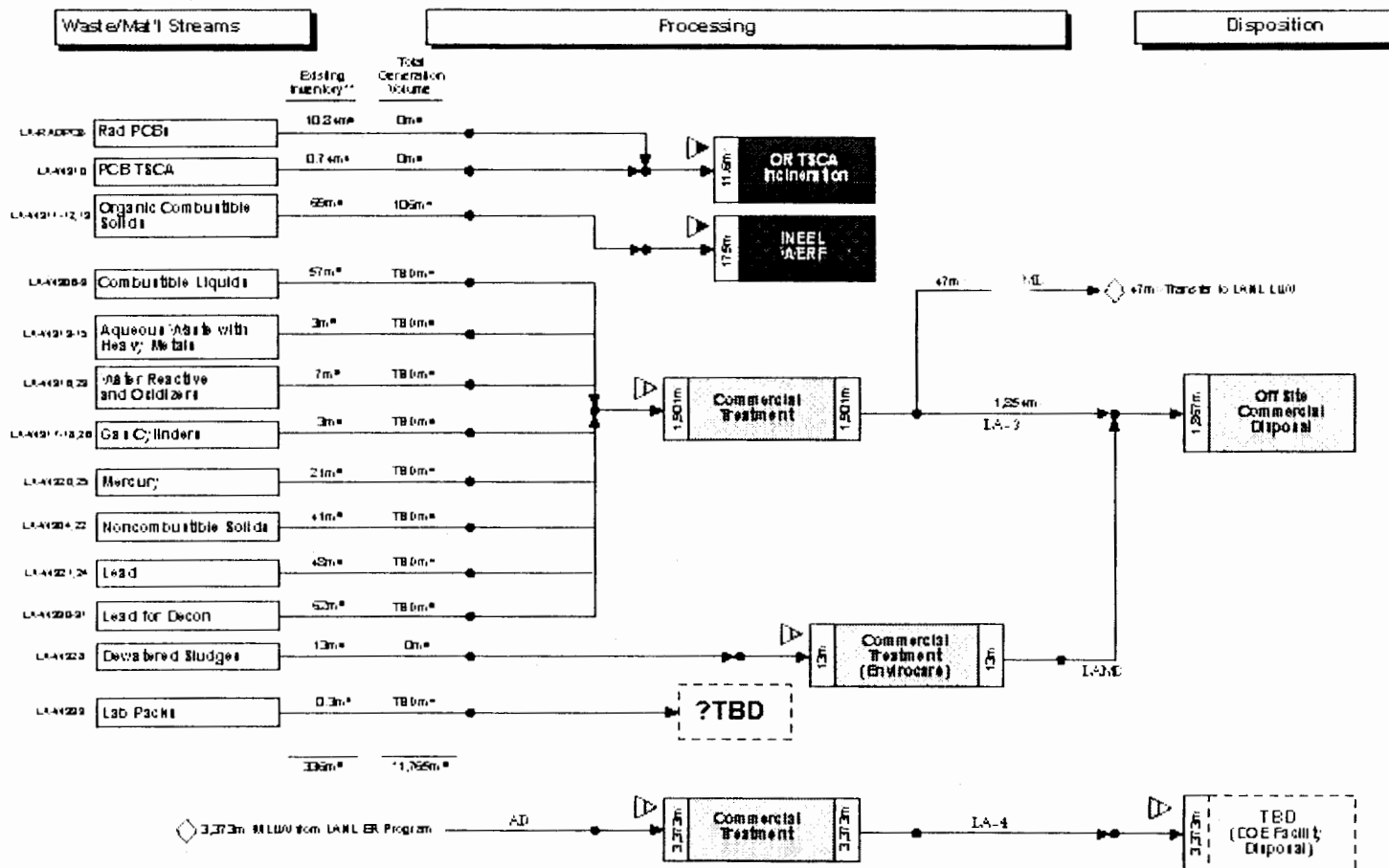


This map is a pre-decisional draft and in many cases does not represent cleanup or transfer decisions; this map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Maps have been changed to add this caveat and are currently on the EMI Home Page (<http://info.share.inel.gov/published/maps.html>)



## LANL MLLW Baseline Disposition Map

PREDECISIONAL DRAFT



3-8

KEY: INEL OR Remediation EML ERL ATB Hanford WIPP On-site Comm. On-site Comm. LANL West Valley EQB Unlabeled Interfacial Interface On-site Interface

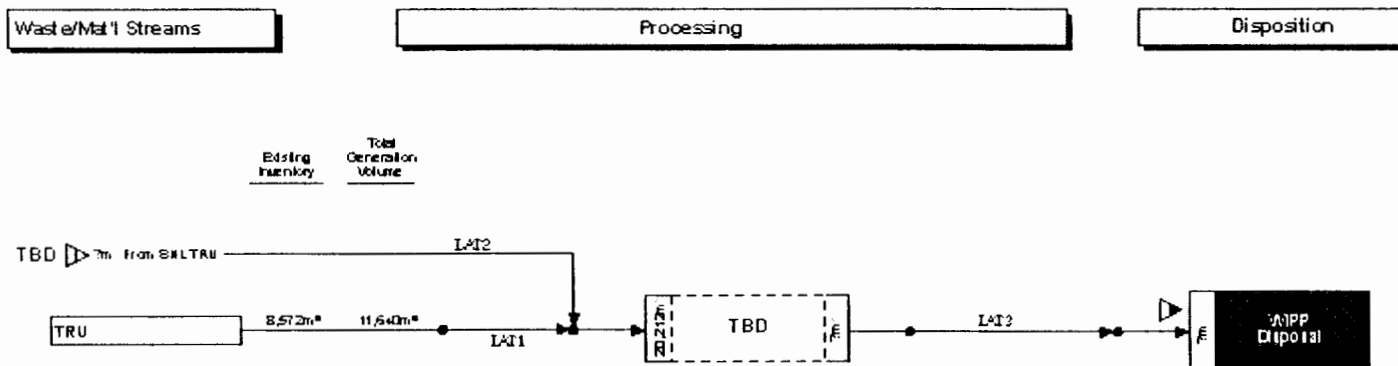
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2/9/98

This map is conceptual and in many cases does not represent cleanup or transfer decisions. This map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Maps have been changed to add this caveat and are currently on the EML Home Page (<http://infoshare.inel.gov/published/maps.html>)

## LANL TRU Baseline Disposition Map

PREDECISIONAL DRAFT



1-6 KEY: INEEL OR Fermi LANL ORB HTS Hanford WIPP On-site Comm. On-site Comm. LANL West Valley BGE Unknown Interf. to Interface On-site Interface

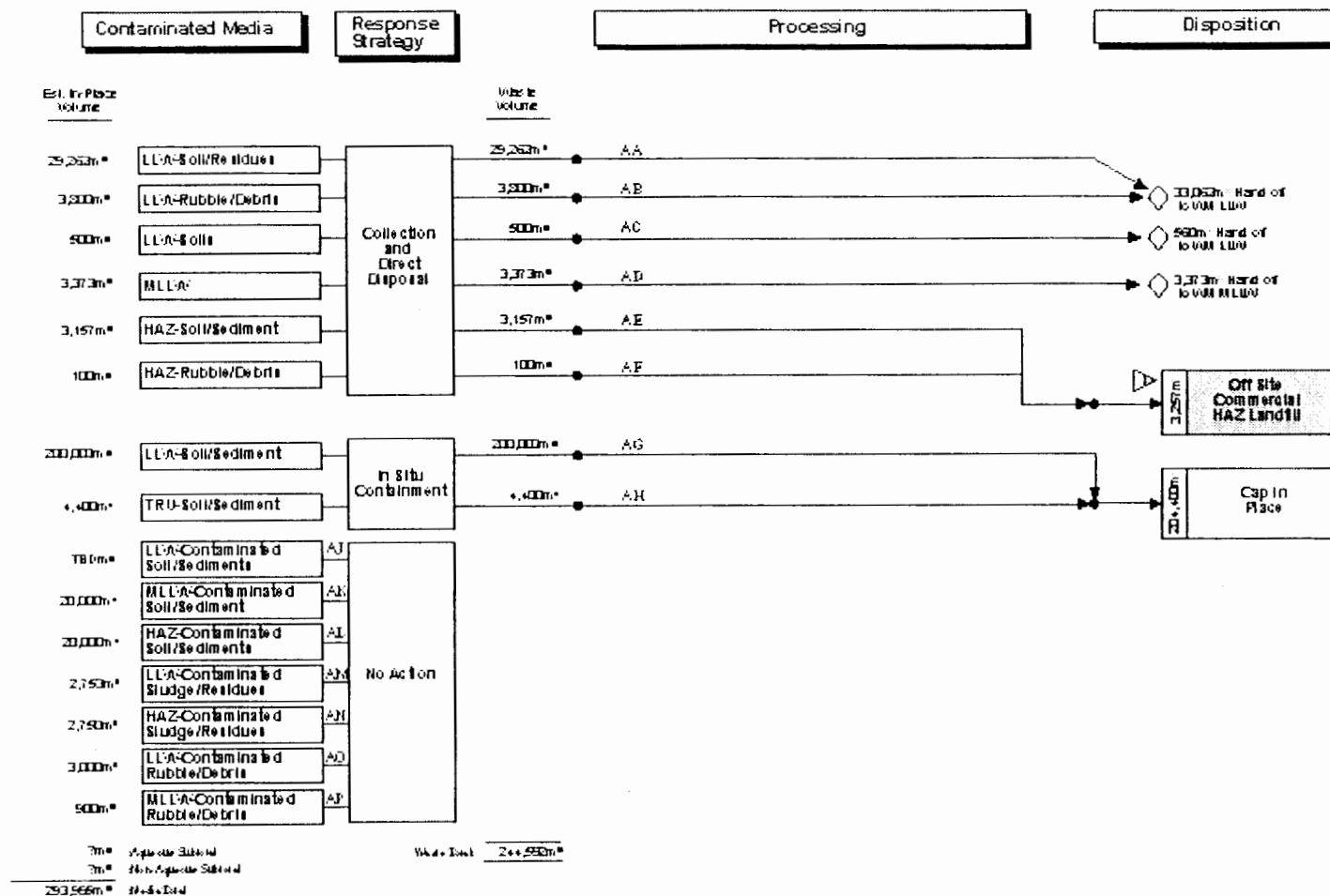
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2/9/98

This map is conceptual and in many cases does not represent cleanup or transfer decisions; this map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Maps have been changed to add this caveat and are currently on the EMI Home Page (<http://info.share.inel.gov/published/maps.html>)

## LANL ER Baseline Disposition Map

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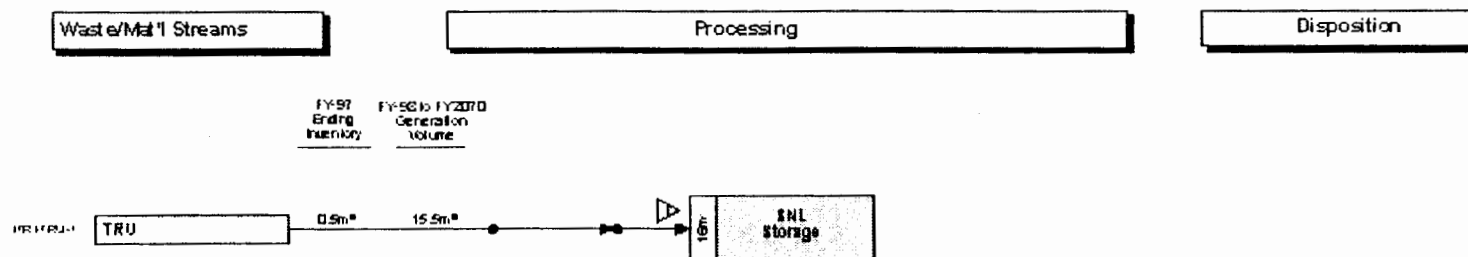
7-13

KEY: INTEL OR Remediation BNL BRL HTB Hanford WIPP On Site Comm. On Site Comm. LANL Wackajack BQB Unknown Interface Interface On Site Interface

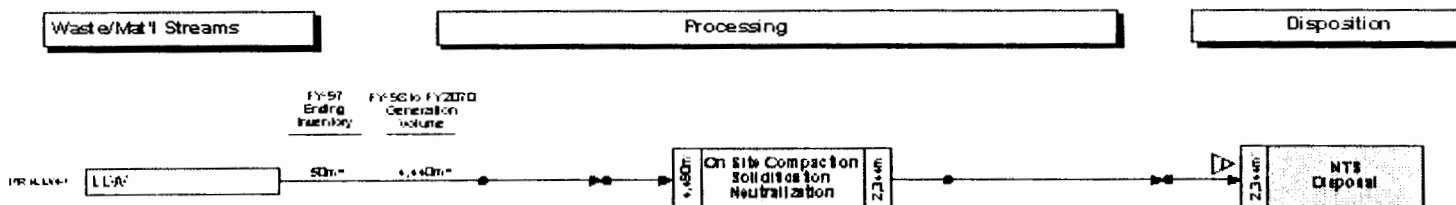
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2/9/98

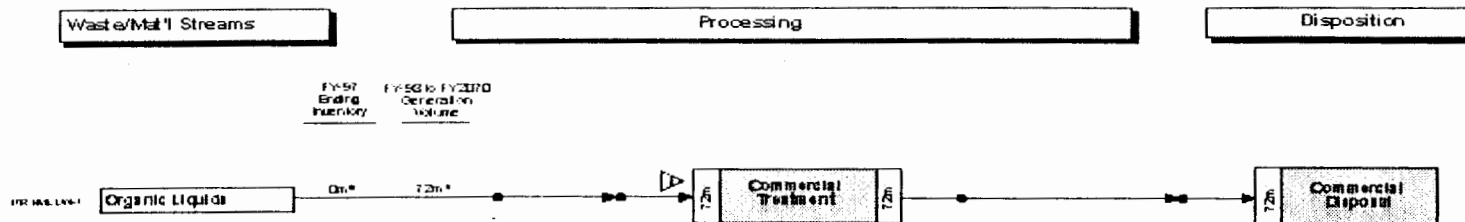
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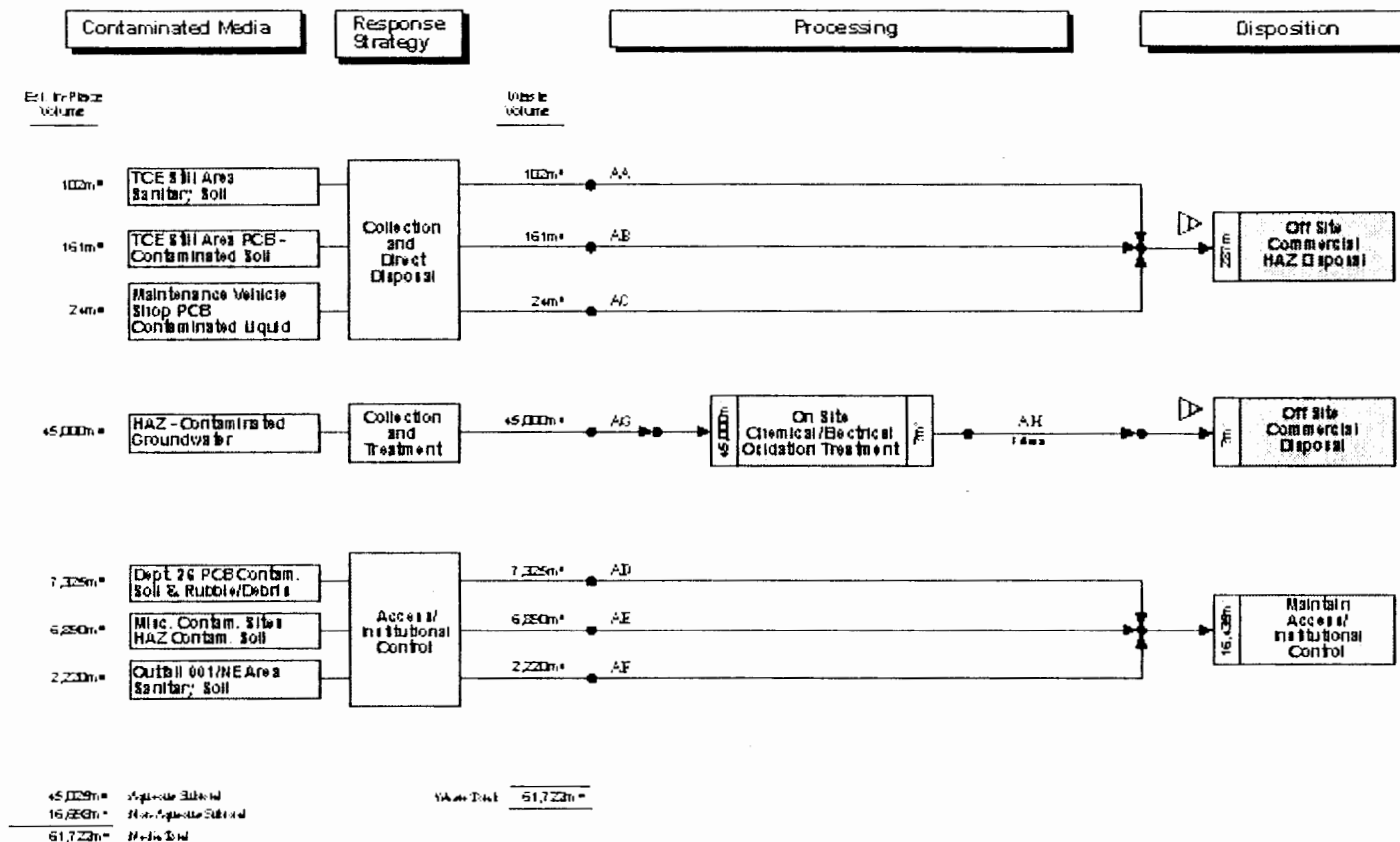
**PREDECISIONAL DRAFT**

Rev. 3 0  
12/23/97

A-16

## Kansas City ER Baseline Disposition Map

PREDECISIONAL DRAFT



7-12

KEY: INEEL OR Permal **AFER** BNL BRB NTB Hanford WIPP On Site Comm. On Site Comm. LARL West Valley BQS Unknown Inerts to Interface On Site Interface

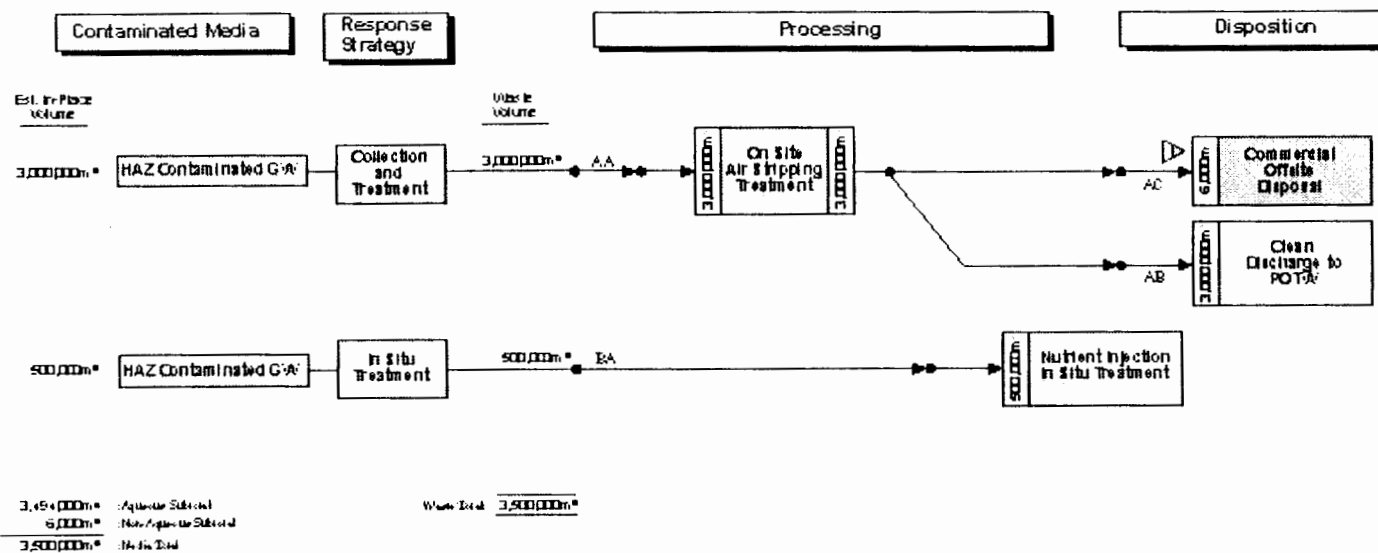
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Rev. 3.0  
12/18/97

This map is conceptual and in many cases does not represent cleanup or transfer decisions; this map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Maps have been changed to add this caveat and are currently on the EMI Home Page (<http://info.share.mel.gov/published/maps.html>)

## Pinellas ER Baseline Disposition Map

PREDECISIONAL DRAFT



7-24



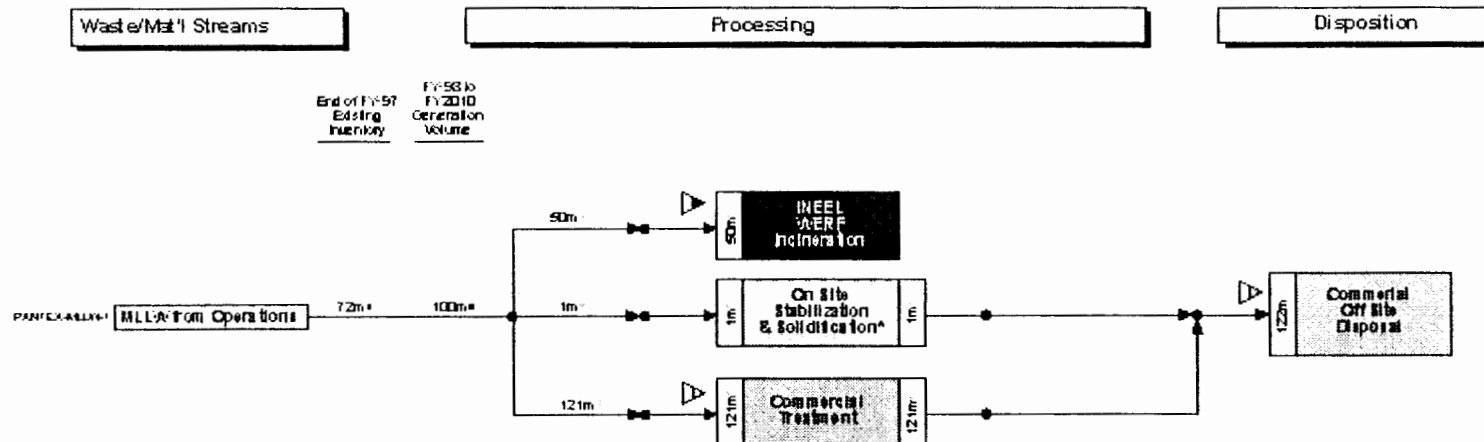
Letters in blue are link identifiers

Rev. 3.0  
2/3/98

This map is conceptual and in many cases does not represent cleanup or transfer decisions; this map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Maps have been changed to add this caveat and are currently on the EMI Home Page (<http://info.share.inel.gov/publishedmaps.html>)

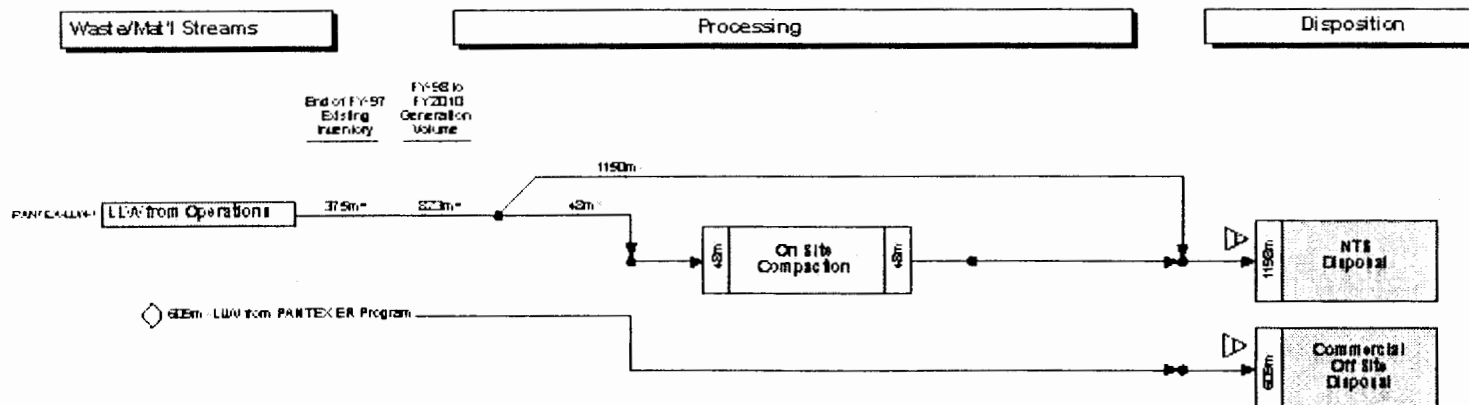
## PANTEX Waste Management MLLW Baseline Disposition Map

PREDECISIONAL DRAFT



## PANTEX Waste Management LLW Baseline Disposition Map

PREDECISIONAL DRAFT



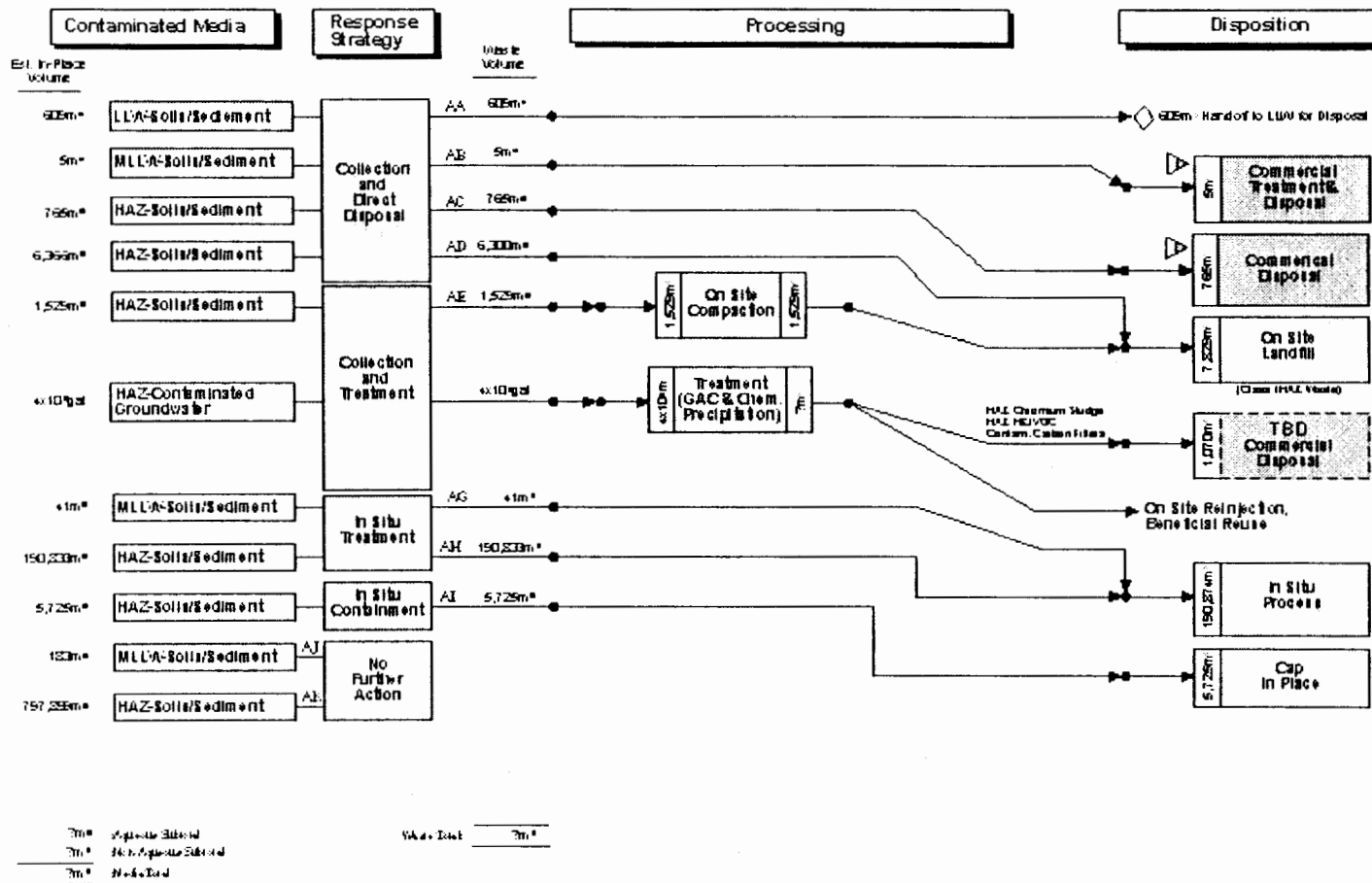
S-16 KEY: INEL OR Remains Rev. 3.0 12/8/97

Letters in blue are link identifiers

This map is conceptual and in many cases does not represent cleanup of transfer decisions; this map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Maps have been changed to add this caveat and are currently on the EMI Home Page (<http://infoshare.inel.gov/published/maps.html>)

## PANTEX ER Baseline Disposition Map

PREDECISIONAL DRAFT



7-23

KEY: INTEL OR Permit SBL BRB MYB Hanford WPP On-Site Comm. On-Site Comm. LANL West Valley BGR Uninac Interf. Interface On-Site Interface

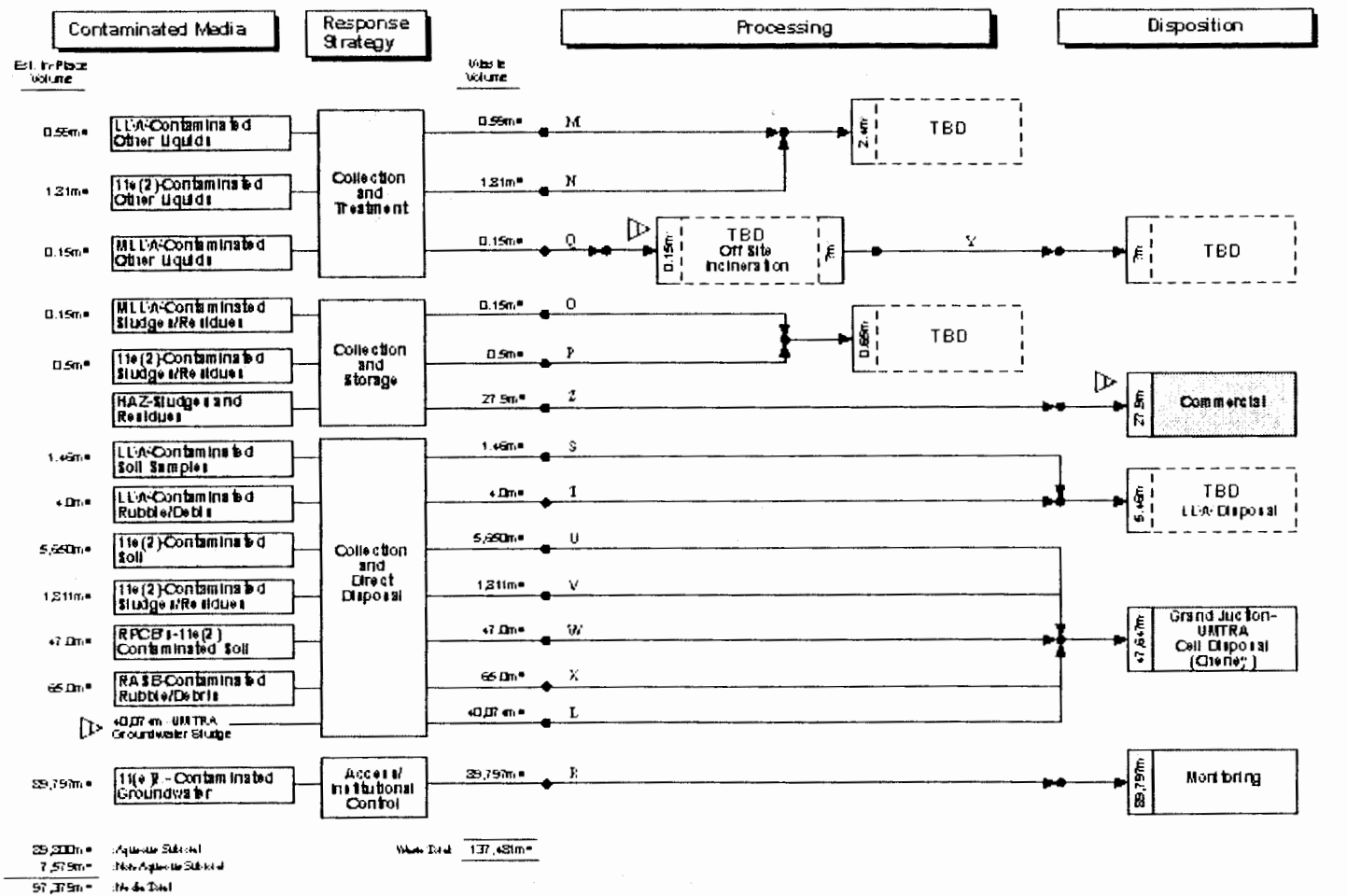
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Rev. 3.0  
2/4/98



## Grand Junction ER Baseline Disposition Map

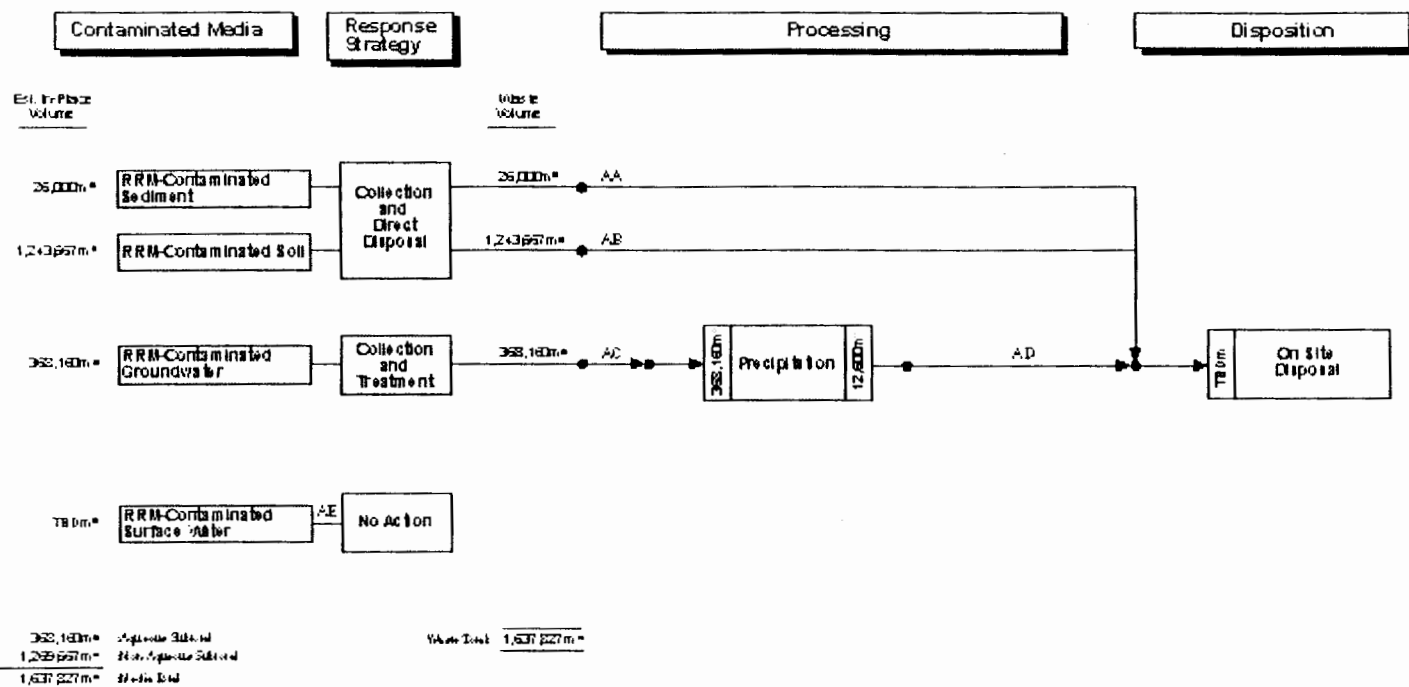
PREDECISIONAL DRAFT

Rev. 3.0  
2/998

This map is a preliminary disposition map. It is not a final disposition map. It is a map of transfer decisions. This map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Map information is published currently on the EMI Home Page (<http://info.share.mel.gov/publishedmaps.html>)

## Monticello ER Baseline Disposition Map

PREDECISIONAL DRAFT



7-18

KEY: INTEL OR Remed RRR BNL DRG HTB Hanford WIPP Other Comm. On Site Comm. LANL Nevada Valley BQB Unknown Interfaced Interface On Site Interface

Letters in blue are link identifiers

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1/8/98

This map is conceptual and in many cases does not represent cleanup or transfer decisions; this map does not preclude the ongoing regulatory and stakeholder decision-making processes. All Baseline Disposition Maps have been changed to add this caveat and are currently on the EMI Home Page (<http://infoshare.inel.gov/published/maps.html>)

PREDECISIONAL DRAFT



KEY	INTEL	OR	Revised	REF ID	ENL	ISS	NTB	Manford	WAP	On to Comm.	On to Comm.	L.A. NL	West Valley	EQE	Unknown	Inter to Interface	On to Interface
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Rev. 3 D  
1/29/66

**ATTACHMENT 4. AL TECHNOLOGY DEPLOYMENT MANAGEMENT PLAN OUTLINE****FOREWORD**

- 1.0 Objective and Scope
  - 1.1 Overview (Technology Deployment at AL, Site Technology Coordination Group, Area Office, Plants, and Laboratories)
  - 1.2 Objective (identify and assess opportunities and issues related to deployment of technologies that meet the objectives of the AL Paths to Closure and AL Strategic Plan)
  - 1.3 Scope of Technology Deployment (National and AL Office of Science & Technology Environmental Restoration, Waste Management, and Science Programs)
- 2.0 Potential Opportunities for Deployment of New Technologies
  - 2.1 Identification and Schedule of Key Technology Deployments
  - 2.2 Summary of AL Paths to Closure Tables O.9.1 and O.9.3
  - 2.3 Office of Science & Technology Linkage Tables
- 3.0 Management Strategy
  - 3.1 Management Actions (technology needs matching, Site Technology Coordination Group support)
  - 3.2 Roles and Responsibilities (customer involvement)
- 4.0 Site Approach to Enhancement of Technology Development
  - 4.1 Technology Development, Environmental Restoration, Waste Management Coordination of Resources
  - 4.2 Technology Development, Environmental Restoration, Waste Management Technology Assessment and Selection
  - 4.3 MultiAgency Information/Opportunities
  - 4.4 Cost Savings Methodology
- 5.0 Barrier Reduction
  - 5.1 Institutional
  - 5.2 Financial
  - 5.3 Performance Data
  - 5.4 Regulatory
- 6.0 Key Information Requirements
  - 6.1 Technology Maturity
  - 6.2 Efficacy
  - 6.3 Cost
  - 6.4 Applicability

## ATTACHMENT 5. GLOSSARY OF TERMS

**Advisory committee.** Any committee, board, commission, council, conference, panel, task force, or other similar group, or any subcommittee or other subgroup thereof; established by statute; or established or utilized by the President or any agency official for the purpose of obtaining advice or recommendations on issues or policies that are within the scope of his/her responsibilities.

**Agreement-in-principle.** An agreement between the Department of Energy and a state that describes commitments by the Department to fund certain activities, generally environmental oversight, monitoring, site access, and emergency response initiatives performed by the state at a facility.

**Alpha particle.** A positively charged particle emitted during decay of certain radioactive elements. Alpha particles are the least penetrating of the three common forms of ionizing radiation (alpha, beta, gamma). They can be stopped by a sheet of paper or the skin but are harmful if inhaled or ingested. An alpha particle is indistinguishable from a helium nucleus and consists of two protons and two electrons.

**Aquifer.** A geologic formation or structure capable of yielding water in usable quantities.

**Assessment.** A determination of a project's condition made by reviewing cost, schedule, technical issues, and performance against objectives, regulatory requirements, and baseline project plans.

**Atomic Energy Commission (AEC).** Entity created by Congress in 1946 as the civilian agency responsible for producing nuclear weapons; it also researched and regulated atomic energy. In 1975, its weapons production and research activities were given to the Energy Research and Development Administration, while its regulatory responsibilities were handed over to the newly formed Nuclear Regulatory Commission. The Energy Research and Development Administration became the Department of Energy in 1977.

**Baseline.** A quantitative expression of planned costs, schedules, and technical requirements for a defined project. Baselines should include criteria to serve as a standard for measuring the status of resources and the progress of a project.

**Burial grounds.** An area for near-surface disposal in soil or shallow rock used for low level radioactive, chemical, hazardous, or other waste, and obsolete or contaminated equipment.

**Characterization.** the collection and analysis of information needed to define the hazardous material in an area or storage tank, such as planning, sample collection, laboratory analysis, collection of field data, statistical analyses, and reporting.

**Closure reports.** Documentation in support of the plan prepared to guide the deactivation, stabilization, and surveillance of a waste management unit or facility under RCRA.

**Compliance agreement.** A legally binding agreement between regulators and regulated entities that sets standards and schedules to meet the requirements of environmental statutes. Also called a consent order, Federal facility agreement, and Federal facility compliance agreement.

**Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).** A Federal law enacted in 1980 that governs the cleanup of hazardous, toxic, and radioactive substances. The act and its amendments created a trust fund, commonly known as Superfund, to finance the investigation and cleanup of abandoned and

uncontrolled hazardous waste sites. Under this act, the Department conducts remedial investigations and feasibility studies to determine the sources and extent of contamination and ultimately the cleanup alternatives.

**Consent Order.** See compliance agreement.

**Contamination.** The presence of unwanted hazardous or radioactive matter at levels that present potential safety and health risks to the public, site workers, or facility occupants; or render some portion of the environment unsuitable for use.

**Cooperative Agreement.** An assistance agreement whereby a Federal agency (e.g., the Department of Energy) transfers money, property, services, or anything of value to a state for the accomplishment of CERCLA-authorized activities or tasks.

**Decommissioning.** Activity that takes place after deactivation and includes surveillance and maintenance, decontamination, and/or dismantlement. These actions are taken to retire a facility from service while protecting workers, the public, and the environment.

**Decontamination.** The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soil by washing, heating, chemical or electromechanical action, mechanical cleaning, or other techniques to achieve a stated objective or end condition.

**Defense Nuclear Facilities Safety Board (DNFSB).** A group of five experts and staff, reporting directly to Congress, which is responsible for safety oversight of the Department's nuclear operations. Non-nuclear safety is self-regulated by the Department, but adheres to Occupational Safety and Health Administration requirements, per the Secretary's decree.

**Department of Energy.** The cabinet-level U.S. Government agency responsible for providing the technical information and scientific and educational foundation for the technology, policy, and institutional leadership necessary to achieve efficiency in energy use, diversity in energy sources, a more productive and competitive economy, improved environmental quality, and a secure national defense.

**Disposal.** Emplacement of waste in a manner that ensures isolation from the biosphere for the foreseeable future, signifies no intent to retrieve it, and requires deliberate action to assess it.

**Enforceable milestones.** The important or critical events that occur in the project cycle to achieve objectives stipulated in an enforceable agreement.

**Environmental Management (EM) program.** An office within the Department of Energy that was created in 1989 to oversee the Department's waste management and environmental cleanup efforts. Originally called the Office of Environmental Restoration and Waste Management, it was renamed in 1993.

**Environmental Protection Agency (EPA).** A Federal agency responsible for enforcing environmental laws, including the Resource Conservation and Recovery Act; the Comprehensive Environmental Response, Compensation, and Liability Act; and the Toxic Substances Control Act. It was established in 1970.

**Environmental Restoration (ER).** A wide range of activities pertaining to cleanup such as stabilizing contaminated soil, pumping and testing ground water; decommissioning process buildings, nuclear reactors, chemical separations plants, and many other facilities; and exhuming sludge and buried drums of waste.

**Feasibility study.** A study undertaken to develop and evaluate different options for cleaning up contamination. Feasibility studies usually are associated with remedial actions. See also CERCLA.

**Federal Facility Compliance Act (FFA).** The Federal act that requires the Department of Energy to develop and submit to states or the Environmental Protection Agency plans for developing mixed-waste treatment capacity and technologies.

**Fiscal year (FY).** The 12-month period extending from October 1 to September 30 that the Federal Government uses to plan its spending.

**Hazardous waste.** Waste that is regulated under RCRA Subtitle C. A solid waste or combination of solid wastes that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in serious, irreversible, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

**High-level waste.** The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste and any derivative solid waste, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

**National Priorities List.** The Environmental Protection Agency's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under CERCLA (Superfund). The list is based primarily on the score a site receives from the Agency's Hazard Ranking System. The Agency is required to update the list at least once a year.

**No further action (NFA).** A determination made, based upon technical evidence, that remedial action is not warranted at a given site.

**No migration variance petition.** A process used to exempt a hazardous waste from land disposal prohibitions. The petition must show that there will be no movement of hazardous contaminants from a disposal unit during the time that the waste remains hazardous.

**Notice of noncompliance.** Notification by the EPA to a facility owner or operator that the owner/operator has failed to adhere to an agreement or a permit.

**Nuclear material and facility stabilization.** An EM subprogram that manages the transfer of responsibilities and facilities formerly belonging to the nuclear weapons program.

**Nuclear Regulatory Commission (NRC):** The Federal agency responsible for regulating the safety of commercial nuclear operations, including nuclear power plants and other commercial and medical uses of nuclear materials. See Atomic Energy Commission.

**Operable unit.** Term for a number of separate activities undertaken as part of a Superfund site cleanup. It may address geographical portions of a site, specific site problems, or initial phases of an action. In addition, it may consist of any set of actions performed over time or any concurrent actions that are performed in different parts of a site.

**Organic.** Chemical compounds that contain carbon and hydrogen; chemicals associated with living entities.

**Landlord activities.** Activities that involve the physical operation and maintenance of Department of Energy installations. Specific tasks vary but generally include providing utilities, maintenance, and general infrastructure for the entire installation.

**Legacy waste.** Any waste within a complex that was generated by past weapons production or research activities and is in storage awaiting treatment or disposal.

**Low level waste.** Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, spent nuclear fuel, or by-product material.

**Management and operating contractors (M&O).** One of three categories of general contractors who oversee and perform large-scale work activities for the Department of Energy. Management and operating contractors focus on operating and maintaining Department facilities, as well as managing the efforts of subcontractors.

**Mixed waste.** Waste that contains both radioactive and hazardous chemical components.

**National Environmental Policy Act (NEPA).** A Federal law, enacted in 1970, that requires the Federal Government to consider the environmental impacts of, and alternatives to, major proposed actions in its decision-making processes. The act is the basic national charter for the protection of the environment. It requires the preparation of an Environmental Impact Statement for every major Federal action that may significantly affect the quality of the human or natural environment.

**Plume.** A three-dimensional area, usually in air or ground water, containing measurable concentrations of a compound or element that has migrated from its source point.

**Plutonium.** A man-made fissile element. Pure plutonium is silvery metal heavier than lead. The plutonium-239 isotope is the variant preferred for manufacturing nuclear weapons, although any plutonium can be used. Plutonium-239 has a half-life of 24,000 years.

**Polychlorinated biphenyls.** More commonly known as PCBs. A family of colorless, odorless compounds used in industrial applications throughout the nuclear weapons complex. Polychlorinated biphenyls are found in many gaskets and large electrical transformers and capacitors in gaseous diffusion plants. They have proven to be toxic to both humans and laboratory animals. Polychlorinated biphenyls are noted for their flame retardance and thermal stability.

**Privatization.** A contracting approach wherein contractors shoulder the risks and rewards associated with providing goods and services. Instead of using government-provided facilities and services, contractors use their own facilities and equipment to accomplish work.

**Public participation.** The process by which the views and concerns of the public are identified and incorporated into the DOE's decisionmaking. Public participation includes identifying public concerns and issues; providing information and opportunities for the public to assist the Department in identifying environmental management-related issues and problems, and in formulating and evaluating decision alternatives; listening to the public; incorporating public concerns and input into decisionmaking; and providing feedback on how decisions do or do not reflect input received.

**Pump-and-treat system.** A system that extracts ground water and removes contaminating substances before returning the water (e.g., recharge in injection wells) or disposing of it elsewhere.



**Radioactive waste.** Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended, and is of negligible economic value considering recovery costs.

**Radioactivity.** The spontaneous emission of radiation from the nucleus of an atom. Radionuclides lose particles and energy through this process.

**Radionuclide.** A radioactive species of an atom. Tritium, strontium-90, and uranium-235 are radionuclides.

**Radon.** A chemical element, atomic number 86, that is a radioactive gas produced by the decay of one of the daughters of radium.

**Release site.** A location at which hazardous, radioactive, or mixed waste release has occurred or is suspected to have taken place. Release sites usually are associated with areas where hazardous, radioactive, mixed waste, or waste-contaminated substances have been used, treated, stored, migrated, and/or dispositioned.

**Rem.** Roentgen equivalent man. Unit used in radiation protection to measure the amount of damage to human tissue from a dose of ionizing radiation.

**Remedial action.** steps taken to clean up inactive sites and facilities that were contaminated by past activities.

**Remedial investigation.** The process of gathering data necessary to determine the nature and extent of contamination at a CERCLA site, establishing criteria for cleaning up the site, identifying preliminary alternatives for remedial action, and supporting the technical and cost analyses of the alternatives. The remedial investigation usually is done together with the feasibility study.

**Remediation.** The process of cleaning up a site where a hazardous substance has been released.

**Resource Conservation and Recovery Act (RCRA).** A Federal law enacted in 1976 to address the treatment, storage, and disposal of hazardous waste.

**Risk.** probability of an event multiplied by the quantitative consequences.

**Risk assessment.** Qualitative and quantitative evaluation designed to define the hazards posed to human health and/or the environment by the presence or potential presence of and exposure to specific contaminants. Risk assessment is performed in conjunction with remedial investigations at CERCLA sites.

**Safety Analysis Report.** A report that assesses safety conditions at a nuclear facility to ensure that the facility can be constructed, operated, maintained, shut down, and decommissioned safely and in compliance with applicable laws and regulations.

**Site-Specific Advisory Board.** A committee tasked with providing advice on the Environmental Management program's environmental restoration, waste management, and technology development activities. The board also provides input and recommendations on Environmental Management strategic decisions that impact future use, risk management, economic development, and budget prioritization activities.

**Site Treatment Plan.** The Department of Energy's strategy, required by the Federal Facility Compliance Act, for treating mixed waste at each of its sites nationwide.

**Stakeholder.** Anyone interested in or affected by DOE activities. Stakeholders have varying levels of concern about the Environmental Management program and varying levels of expertise.

**Superfund.** A term commonly used to refer to the Comprehensive Environmental Response, Compensation, and Liability Act.

**Surplus facility.** A facility or site (including installed equipment) that has no identified programmatic use; it may or may not be radioactively contaminated to levels that require controlled access.

**Surveillance and maintenance.** Activities to monitor a facility or area through regular inspections and data gathering to ensure that safety and stability are maintained; to identify changes that need to be made; and to maintain operability of structures, systems, and components required to preserve safety.

**Tailings.** Solid wastes produced from primary processing of ores.

**Toxic Substances Control Act.** This act was enacted in 1976 to protect human health and the environment from unreasonable risk caused by exposure to or the manufacture, distribution, use, or disposal of substances containing toxic chemicals. For example, under this act, any hazardous waste containing more than 50 parts per million of polychlorinated biphenyls is subject to regulation.

**Transuranic waste (TRU).** Waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries per gram at the time of assay. Most transuranic waste was created in the nuclear weapons production process. The category transuranic waste does not specify source or form. It contains hazardous constituents regulated under RCRA Subtitle C.

**Treatment.** Any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous; make it safer to transport, store, or dispose of; or reduce its volume.

**Tri-Party Agreement.** A compliance agreement signed by three parties: DOE, the Environmental Protection Agency, and state. See also compliance agreement.

**Uranium.** The basic material for nuclear technology. Uranium is a slightly radioactive, naturally occurring heavy metal that is more dense than lead. It is a heavy, silvery-white metallic element with an atomic number of 92. Uranium is 40 times more common than silver.

**Uranium Mill Tailings Radiation Control Act.** This act, passed in 1978, directed to DOE to stabilize and control uranium mill tailings from inactive sites in a safe and environmentally sound manner to minimize radiation health hazards to the public. The act authorized the Department to undertake remedial actions at 24 designated inactive uranium processing sites and at approximately 5,000 vicinity properties. The Uranium Mill Tailings Remedial project was created to handle the cleanup.

**Uranium Mill Tailings Remedial Action Project (UMTRA).** The world's largest materials management project ever undertaken to reduce or eliminate risk to the general public from exposure to potentially hazardous and radioactive materials. This project details the responsibility for encapsulating and isolating almost one-fourth of all the uranium mill tailings generated across the entire United States (more than 44 million cubic yards).

**Uranium mill tailings.** The sand-like materials left over from the separation of uranium from its ore. More than 99 percent of the ore becomes tailings.

**Uranium milling.** The process of separating uranium from mined ore.

**Vadose zone.** The unsaturated soil zone. An area above the water table where soil pores are not fully saturated, although some water may be present. It is located vertically between the land surface and the surface of the saturated zone (i.e., the water table).

**Vanadium.** A metallic transition element that is soluble in strong acids and bases, melts at 1900°C and boils at around 3000°C, and commonly is used as a catalyst.

**Variance.** Government permission for a delay or exception in the application of a given law, ordinance, or regulation.

**Vicinity properties.** A real property in the vicinity of a radioactive materials processing site that has become radioactively contaminated as a result of site activities.

**Volume reduction.** Various methods of waste treatment, such as evaporation for liquids or compaction for solids, aimed at reducing the volume of waste.

**Voluntary corrective measures.** Remedial actions at a site that are completed outside of a RCRA- or CERCLA-mandated action but may be subject to third-party oversight.

**Waste.** Material that has no identifiable future use for which suitable disposal must be found.

**Waste management.** Activities that include treating, storing, and disposing of a variety of wastes, including high-level radioactive, transuranic, low level radioactive, low level mixed, hazardous chemical, and sanitary waste.

**Waste minimization.** An action that economically avoids or reduces the generation of waste by reducing its source, decreasing the toxicity of hazardous waste, improving energy usage, or instituting recycling. In addition, minimization efforts must reduce present and future threats to human health, safety, and the environment.

**Waste stream.** waste (liquid, solid, or gas) leaving a facility or operation.

**ATTACHMENT 6. LIST OF ACRONYMS**

AAO	Amarillo Area Office
AC	Accelerated Cleanups
AL	Albuquerque Operations Office
AOC	Areas of concern
BLM	Bureau of Land Management
CAB	Citizens Advisory Board
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DP	Defense Programs
EM	Environmental Management
EPA	Environmental Protection Agency
ER	Environmental Restoration
FY	Fiscal Year
GJO	Grand Junction Office
GJORAP	Grand Junction Office Remedial Action Project
GW	Groundwater
HSWA	Hazardous and Solid Waste Amendments
ICM	Interim Corrective Measures
ITRI	Inhalation Toxicology Research Institute
KAO	Kirtland Area Office
KCP	Kansas City Plant
LANL	Los Alamos National Laboratory
LLW	Low Level Waste
LRRI	Lovelace Respiratory Research Institute
LTRM	Long-Term Radon Management
LTSM	Long Term Surveillance and Maintenance
MF	Maxey Flats
MLLW	Mixed Low Level Waste
NFA	No Further Action
NM AIP	New Mexico Agreement in Principle
NMFS	Nuclear Materials Facility Stabilization

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NPL	National Priorities List
NRC	Nuclear Regulatory Commission
PBS	Project Baseline Summary
PX	Pantex Plant
RAMROD	Radioactive Materials Research, Operation and Demonstration Facility
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigations
RSRP	Radioactive Source Recovery Program
SNL	Sandia National Laboratories
SWMU	Solid Waste Management Units
TNRCC	Texas Natural Resource Conservation Commission
TRU	Transuranic Waste
TRUPACT	Transuranic Waste Package Transporter
ULM	Uranium Lease Management Program
UMTRA	Uranium Mill Tailings Remedial Action
UST	Underground Storage Tank
UMTRCA	Uranium Mill Tailings Radiation Control Act
WCRRP	Waste Characterization, Reduction, Repackaging Facility
WERF	Waste Experimental Reduction Facility
WM	Waste Management