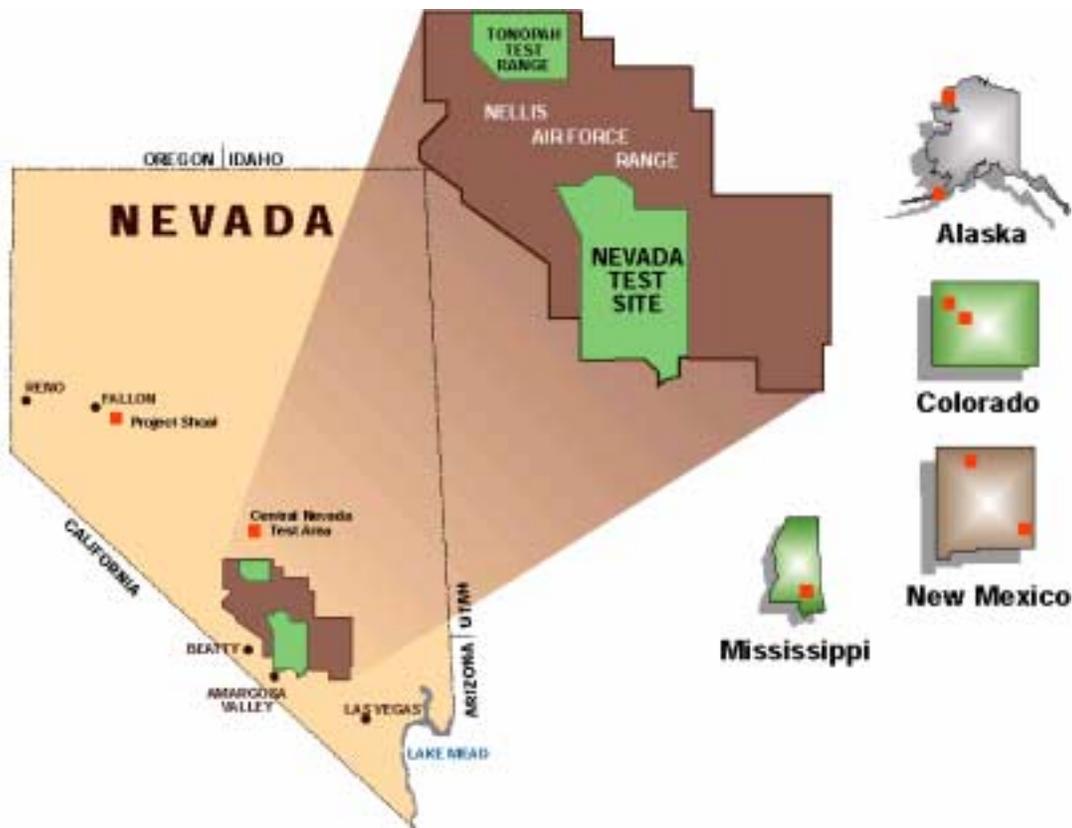
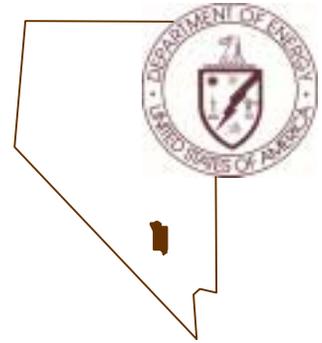


Accelerating Cleanup: Paths to Closure

Nevada Operations Office



June 1998

Environmental Management
U.S. Department of Energy, Nevada Operations Office

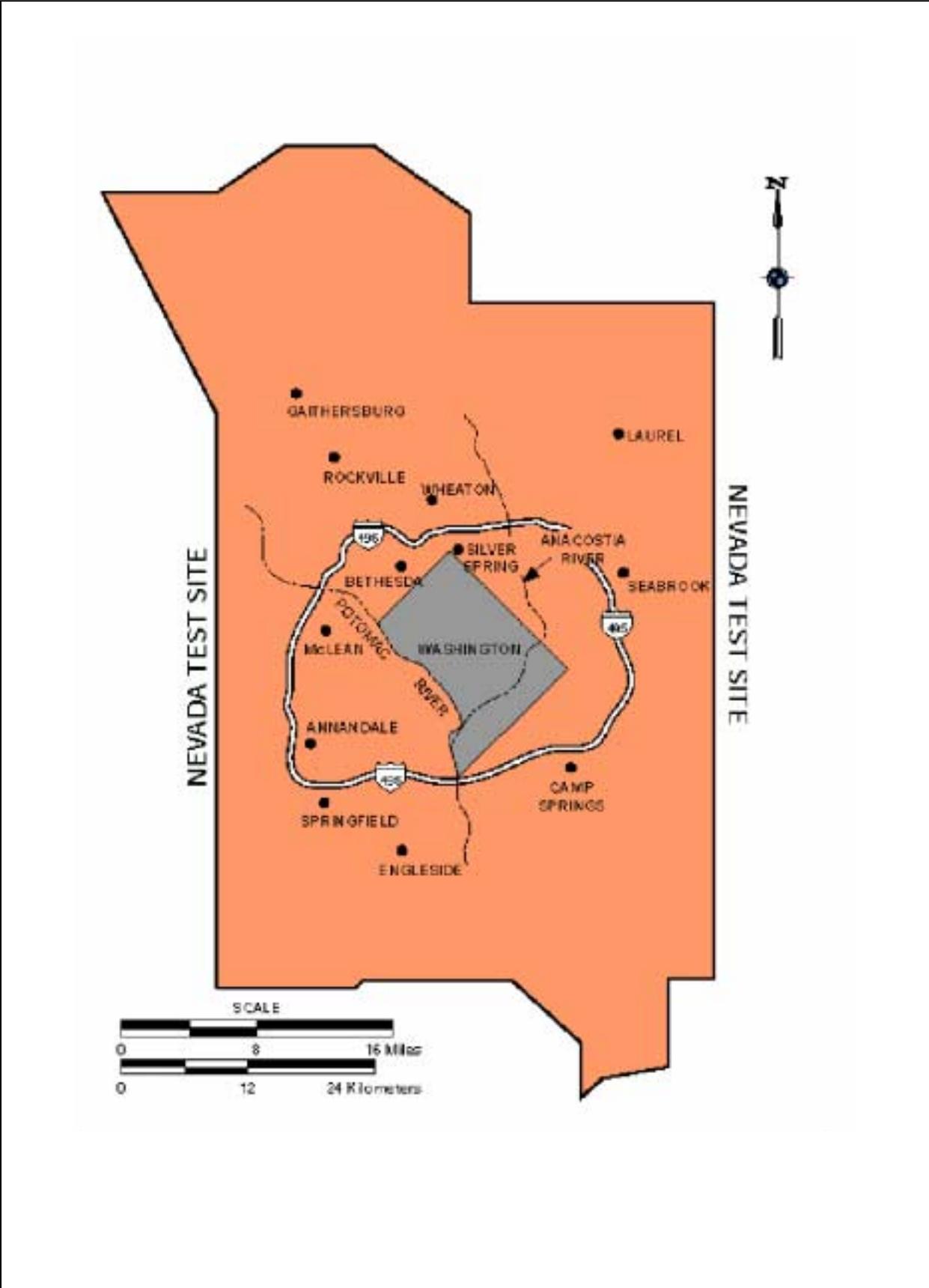
**ACCELERATING CLEANUP:
PATHS TO CLOSURE**

NEVADA OPERATIONS OFFICE

DOE Nevada Operations Office
Las Vegas, Nevada

June 1998

This document, *Accelerating Cleanup: Paths to Closure* (herein referred to as *Paths to Closure*), was previously referred to as the *Draft National 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 widespread 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, *Paths to Closure* retains a focus on 2006, which serves as a point in time around which objectives and goals are established.



Nevada Test Site Compared to the Washington, DC Area

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List of Acronyms and Abbreviations

ADS	Activity Data Sheet(s)
B	Billion(s)
BLM	Bureau of Land Management
CADD	Corrective Action Decision Document
CAU	Corrective Action Unit
CFR	<i>Code of Federal Regulations</i>
D&D	Decontamination & Decommissioning
DoD	Department of Defense
DOE	U.S. Department of Energy
DOE/HQ	DOE/Headquarters
DOE/NV	U.S. Department of Energy, Nevada Operations Office
EIS	Environmental Impact Statement
EM	Environmental Management
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ESC	Expedited Site Characterization
FFACO	<i>Federal Facility Agreement and Consent Order</i>
FY	Fiscal year
IPABS	Integrated Accountability, Planning and Budgeting System
LLW	Low-level waste
M	Million
M&O	Management & Operating
MTRU	Mixed transuranic waste
MW	Mixed waste

List of Acronyms and Abbreviations (continued)

nCi	Nanocurie(s)
NAFR	Nellis Air Force Range (Complex)
NTS	Nevada Test Site
NTS EIS	<i>Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada</i>
PBS	Project Baseline Summaries
RCRA	<i>Resource Conservation and Recovery Act</i>
ROD	Record of Decision
SAFER	Streamlined Approach for Environmental Restoration
TRU	Transuranic waste
UGTA	Underground Test Area
WAC	Waste Acceptance Criteria
WIPP	Waste Isolation Pilot Plant
WM	Waste Management
WMPEIS	<i>Waste Management Programmatic Environmental Impact Statement</i>

1.0 Introduction/Overview

This document, *Accelerating Cleanup: Paths to Closure* (herein referred to as *Paths to Closure*), was previously referred to as the *Draft National 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 widespread 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, *Paths to Closure* retains a focus on 2006, which serves as a point in time around which objectives and goals are established.

Why is the Focus on the Year 2006?

DOE/Headquarters (DOE/HQ) has embarked on a process to reduce its environmental liability by completing a major part of its cleanup responsibility by 2006. The following vision that forms the foundation for *Paths to Closure* has been established:

Within a decade, the Environmental Management Program will complete cleanup at most sites. At a small number of the Department of Energy's sites, treatment will continue for the few remaining legacy waste streams. This unifying vision will drive budget decisions, sequencing of projects, and actions taken to meet program objectives. The vision will be implemented in collaboration with regulators and stakeholders.

For over 40 years, the primary mission of the U.S. Department of Energy/Nevada Operations Office (DOE/NV) was to conduct field testing of both nuclear and conventional explosives. Field testing was primarily conducted at the Nevada Test Site (NTS), established in 1950, when President Truman authorized a continental weapons testing area. In addition to weapons tests, the NTS has also hosted secondary missions, including neutron and gamma-ray interaction studies; open-air nuclear reactor, nuclear engine, and nuclear furnace tests; hazardous materials spill response testing; and experiments conducted by the Department of Defense (DoD) involving radioactive and nonradioactive materials. In the 1950s, aboveground atmospheric tests were the predominant site activity. Aboveground testing of nuclear weapons ceased in 1963, and off-site tests conducted at eight locations in five states ceased in 1973. Subsurface nuclear testing was suspended in October 1992, although a readiness posture is maintained by presidential mandate (Figure 1-1).

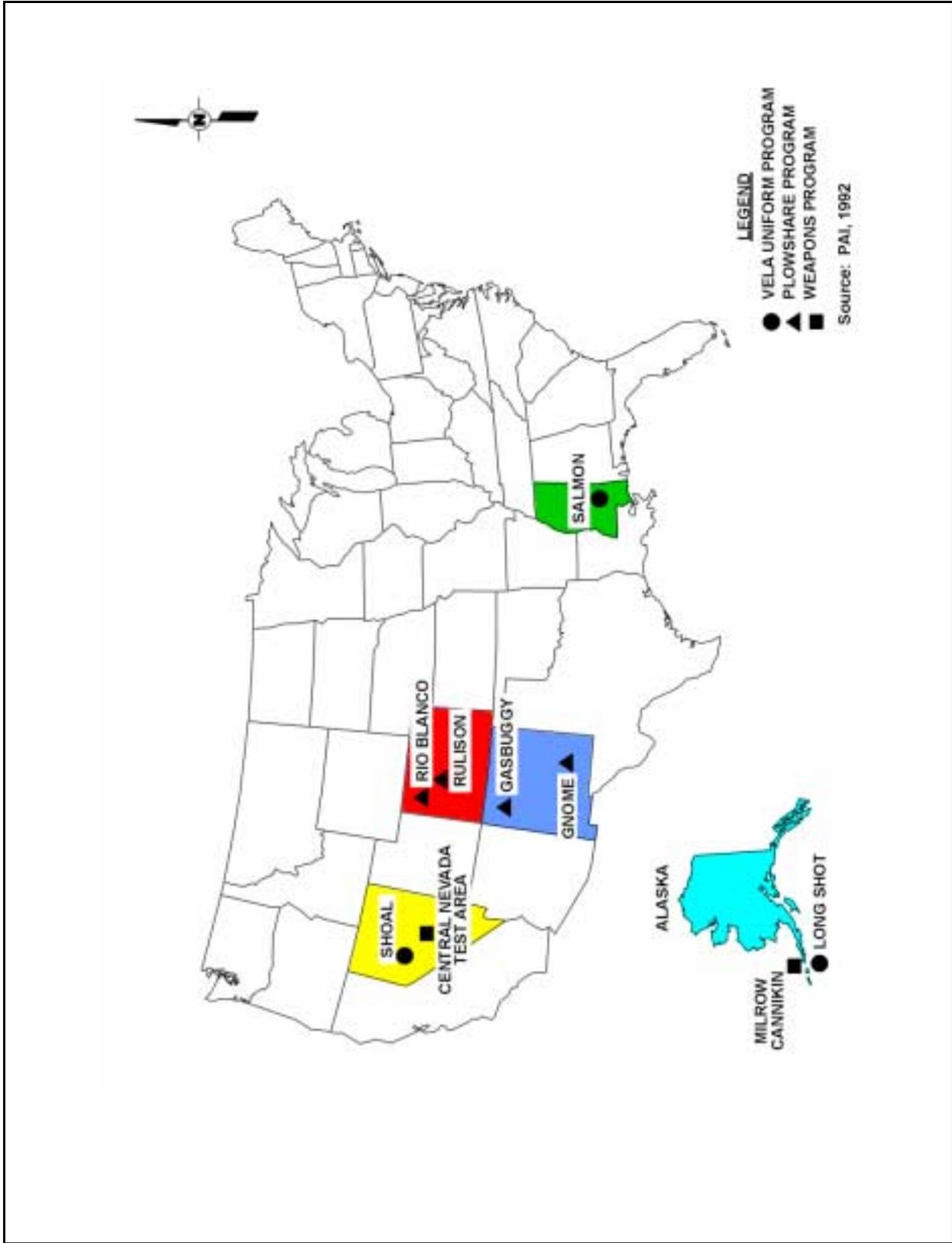


Figure 1-1
DOE/NV Off-Site Locations

Use of the NTS and other DOE/NV resources for technology initiatives is anticipated to increase significantly in the future based on the *Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (NTS EIS) Record of Decision (ROD) (December 9, 1996). Furthermore, it is assumed that the NTS will remain under U.S. Department of Energy (DOE) ownership and institutional control. DOE/NV is undergoing significant changes to be compatible with future strategic plans of the Department. In support of these plans, DOE/NV intends to develop and/or enhance capabilities for remote field operations in connection with nuclear requirements; management of special nuclear materials; environmental stewardship of facilities; nonnuclear research and experimentation; and technology transfer through partnership with private industry, national laboratories, and other federal, state, and local entities.

The DOE Environmental Management (EM) Program, created in 1989, has grown rapidly to address the environmental liabilities of 50 years of nuclear weapons production in the United States. As the world's largest environmental cleanup effort, it is an essential part of the DOE mission. DOE environmental liabilities include: the risk and future cleanup costs associated with environmental contamination, hazardous and radioactive materials and wastes, and contaminated buildings and facilities. These costs can be collectively referred to as the DOE "environmental mortgage." The EM Program is now embarking on an ambitious, decade-long effort to reduce this environmental mortgage.

For the purpose of this *Paths to Closure*, the DOE EM Program formalized the following definition of "complete cleanup":

- Deactivation of all facilities currently in the EM Program has been completed, excluding any long-term facility monitoring;
- All releases to the environment have been cleaned up in accordance with agreed-upon cleanup standards with the exception of groundwater;
- Groundwater contamination has been contained or long-term treatment or monitoring is in place;
- Legacy waste has been disposed in an approved manner;
- Nuclear material and spent fuel have been stabilized and/or in safe, long-term storage; and
- Responsibility for newly generated waste has been returned to the generator.

The DOE/NV EM *Paths to Closure* represents the program's environmental restoration (ER), waste management (WM), and technology development vision for the period 1997 through 2006 and describes actions which must be conducted in 2007 and beyond. Management actions described from 1997 through 2006 are designed to address the DOE environmental mortgage to the greatest extent possible by characterizing and remediating the NTS and associated off-site locations, adopting strategies to safely accept and dispose of low-level waste (LLW), removing legacy transuranic (TRU) waste and mixed waste (MW) for disposition, and closing on-site disposal areas in compliance with regulatory requirements. After completing applicable EM activities, DOE will maintain a presence at the NTS to ensure reduced risks to human health and the environment. This long-term stewardship will include passive and active institutional controls, the degree of which will be determined through negotiations between DOE/NV, regulators, Tribal Nations, and stakeholders.

Waste Definitions

Radioactive Waste - Solid, liquid, or gaseous radioactive nuclides regulated under the *Atomic Energy Act of 1954*, as amended, and of negligible economic value considering costs of recovery.

Transuranic Waste - Radioactive waste containing alpha-emitting radionuclides having an atomic number greater than 92 and half-lives greater than 20 years, in concentrations greater than 100 nanocuries (nCi) per gram.

Low-level Waste - Radioactive waste not classified as high-level waste, transuranic waste, or spent nuclear fuel, or the tailings of wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic elements is less than 100 nCi per gram.

Hazardous Waste - Wastes that are designated as hazardous by the U.S. Environmental Protection Agency (EPA) or State of Nevada regulations. Hazardous waste, defined under the *Resource Conservation and Recovery Act (RCRA)*, is waste from production or operation activities that poses a potential hazard to human health or the environment when improperly treated, stored, or disposed. Hazardous wastes that appear on special EPA lists or possess at least one of the following characteristics: (1) ignitability, (2) corrosivity, (3) reactivity, and (4) toxicity.

Mixed Waste - Waste containing both radioactive and hazardous components, as defined by the Atomic Energy Act and RCRA, respectively. Mixed waste intended for disposal must meet the Land Disposal Restrictions as listed in Title 40 CFR Part 268. Mixed waste is a generic term for specific types of mixed wastes such as low-level mixed waste and transuranic mixed waste.

Low-level Mixed Waste - Low-level waste that also includes hazardous components, as identified in 40 CFR Part 261, Subparts C and D.

Transuranic Mixed Waste - Waste containing both transuranic and hazardous components, as identified in 40 CFR Part 261, Subparts C and D.

Risk management is an integral element of EM's approach to setting priorities, sequencing project work, and measuring performance. Initiatives set forth in *Paths to Closure*, place priority on projects that eliminate urgent risks, especially those that may affect workers, the public, or the environment. The strategy is a step to identify opportunities to reduce risk more quickly than in the past. Those opportunities will be open to discussion with Tribal Nations and stakeholders before they are included in future versions of the *Paths to Closure*.

The mission of DOE/EM involves the management and remediation of large amounts of radioactive and hazardous waste and materials. Accordingly, EM is committed to a policy that can be summarized as "do work safely or don't do it." EM will not compromise safety and health to accelerate site closures and will continue to implement its safety management policy and the recommendations of the Defense Nuclear Facilities Safety Board.

EM's Safety Management System provides the framework for safety and health management. Integral to the system is up-front involvement of workers in defining the work and evaluating hazards. The system provides the basis for identifying the appropriate mix of skills and other resources required for planning, budgeting, and conducting the safe and effective completion of project work. EM is identifying methods of improving safety and health performance, establishing benchmarks by which to measure such performances, and holding managers accountable for performance. The Secretary has directed that strategies include appropriate provisions for the protection of health and safety. DOE/NV has and will continue to set minimum tolerance goals to strive for maximum protection and related safety and health training for its workers. Performance indicators are established, per *Code of Federal Regulations* (CFR) and DOE Orders, and those indicators are reported on a quarterly basis. This information will also be tracked through the Discussion database. The goals established for DOE/NV and its Management & Operating (M&O) contractor include total recordable case rate for work-related injuries requiring care beyond first aid per 200,000 hours worked; lost workday case rate for work-related injuries or illnesses that involve days away from work or restricted work activity per 200,000 hours worked; procedure violations and/or deficiencies per 200,000 hours worked; and corrective actions as necessary relevant to any of the above.

In addition, Health and Safety Plans are developed for each project and are a key component of the Project Readiness Reviews held before implementation of each field activity. Specific field requirements and ways to avoid potential risks are

addressed through training and safety meetings before workers go into the field to begin a project. Office workers are also trained to be aware of hazards and to focus on safe conduct as a standard.

Funding is provided through National Programs to conduct pollution prevention (P2) and waste minimization activities for the site including EM projects. The Nevada Operations Office is committed to reduce waste generation; establish partnerships with government and private industry; and comply with local, state, and federal regulations. This commitment includes implementing P2 and waste minimization options to prevent or reduce pollution at the source wherever feasible, recycling waste in an environmentally acceptable manner, treat wastes that cannot feasibly be prevented or recycled, or dispose of waste, only as a last resort. A priority is to minimize the generation, release, and/or disposal of pollutants to the environment by implementing cost-effective P2 and waste minimization technologies, practices, and policies. Pollution prevention activities include a site-wide recycling program, participation in community outreach programs (i.e., Earth Fair) and conducting pollution prevention opportunity assessments (PPOAs) to recommend viable options to reduce or eliminate the generation of waste. In addition, pollution prevention and waste minimization is practiced as a standard throughout the Nevada Operations Offices because it is a good business practice, a performance enhancement, and supports a safer and healthier environment.

As EM projects come to a close and sites begin to restructure the workforce, DOE intends to provide assistance, in accordance with the requirements of Section 3161 of the *National Defense Authorization Act* for FY 1993. Employment levels are expected to stay relatively constant through 2006 to provide the work force necessary to perform the work defined in DOE/NV projects. As projects close, resources will be refocused and/or replaced as appropriate to the type of work in progress at the time. After 2006, there will be a significant reduction in the overall workforce, as reflected in the reduced scope and budget. Some normal attrition is expected; however, the combined federal and contractor work force is assumed to be adequate to meet and complete compliance requirements and associated activities.

1.1 Site Summary Planning Assumptions

Institutional control (defined in DOE Order 5820.2A as “a period of time, assumed to be about 100 years, during which human institutions continue to control waste management facilities”) of the NTS is assumed in perpetuity at the existing boundaries. For

the foreseeable future, the landlord is assumed to be NTS. Should the DOE cease to exist, it is assumed another federal agency will become the landlord, as institutional control of the site is considered an obligation of the federal government and one that is expected to be maintained.

Completion of a DOE/NV Resource Management Plan is required before state regulators will negotiate final clean-up levels for corrective action activities and particularly for radiological contaminants. It is assumed the Resource Management Plan will be completed by October 1998.

Renegotiation of the *Federal Facility Agreement and Consent Order* (FFACO) will not be required at this time. Ongoing coordination with state regulators will be required to ensure that state and programmatic priorities are in agreement.

Questions regarding responsibility for certain portions of Pahute Mesa will be resolved during the preparation of the Nellis Air Force Range (NAFR) EIS anticipated in FY 2001.

Classified data and access to that data continues to be an issue for determining risk as the result of previous testing activities at Soils and Underground Testing Area (UGTA) sites. It is assumed that a major declassification initiative will be supported and that the initiative will be completed by FY 1998.

Because stakeholders and the state regulator have placed a high priority on understanding the extent of subsurface contamination, funding of the UGTA modeling/monitoring program is assumed to be one of the highest priority ER activities.

Subsurface contaminants in and around the cavities created by underground nuclear tests will not be remediated since cost-effective groundwater technologies have not yet demonstrated an ability to effectively remove or stabilize radioactive contaminants at the various Corrective Action Units (CAU).

Characterizing surface areas within NTS boundaries will be conducted in areas identified in Alternative 3 of the ROD for the NTS EIS as having the most potential for future use. For all sites, characterization activities will focus on developing typical contaminant exposure profiles of various CAUs. Detailed characterization activities will be performed at sites that are exceptions to the profiles. The Streamlined Approach for Environmental Restoration (SAFER) and Expedited Site Characterization (ESC) methodologies will be used to reduce

costs and accelerate schedules whenever possible. Remediation will be performed for applicable areas once future land-use decisions are made.

The six applicable remaining Decontamination & Decommissioning (D&D) activities under purview of DOE/NV EM will be completed within the ten-year window. Defense Programs facilities (approximately 1,500) are not covered by the current DOE/NV EM program.

Surface soil plumes that straddle or extend outside NTS boundaries will be characterized and remediated. Sites within the boundaries of the NTS will be characterized and monitored.

The nature and extent of contaminated sites must be adequately understood to avoid developing overly prescriptive long-term surveillance and monitoring requirements based on worse-case scenarios. Full definition of the components of the long-term monitoring program will be developed as corrective actions are completed. Monitoring will focus on soil, water, air, plants, animals, and cultural resources. Subsurface monitoring will take place for two to three years then responsibility will transfer to the U.S. Environmental Protection Agency (EPA) for long-term monitoring. Subsurface monitoring is planned for 100 years because of the nature and extent of subsurface contamination.

Both the Soils and Industrial Sites Projects are scheduled for completion in 2007.

Completion of the UGTA modeling effort is scheduled for 2008; and completion of the validation effort (Proof of Concept) is scheduled for 2014.

Waste Management projects are limited to current activities as determined by the NTS EIS ROD. The outcome of the *Waste Management Programmatic Environmental Impact Statement* (WMPEIS) may significantly change the current assumptions and planned actions for WM projects.

LLW disposal operations will continue for DOE complex-wide needs through FY 2070. At that time, a long-term surveillance and monitoring program will continue through FY 2100.

Disposal of legacy mixed LLW waste from the NTS will be completed by the end of FY 1999, but the project will continue through FY 2007 to accommodate ER waste. Most NTS MW generated in the future are expected to be derived primarily from ER activities, including D&D.

Disposal of TRU/mixed TRU (MTRU) (legacy waste) currently in storage at the NTS will be completed in FY 2003 when the waste is sent to the Waste Isolation Pilot Plant (WIPP). The final WIPP Waste Acceptance Criteria (WAC) will be in place and WIPP will be available for waste disposal. The NTS TRU/MTRU waste will meet the WIPP WAC.

Off-site Surface CAU Corrective Action Units will be characterized and, where necessary, remediated prior to release of the surface areas for alternate uses. Off-site Subsurface CAU Corrective Action Units will not be remediated due to the lack of cost-effective remedial options.

Off-site Subsurface CAU will be monitored for a minimum of 100 years to minimize risk to the public and to the environment.

Off-site subsurface restrictions (institutional control) will be maintained in perpetuity to prohibit access to radioactive contamination and contaminated groundwater.

1.2 Changes from June 1997 Discussion Draft to December 1997 Draft and Refinements to this Document

In providing information to DOE/HQ to assist in the preparation of the Discussion Draft National Plan for Accelerating Cleanup, distributed for review and comment in June 1997, DOE/NV was asked to examine two planning cases:

- 1.) One based on a \$6.0 billion (B) per year budget for the DOE, starting in FY 1999 (the High Planning Scenario), and
- 2.) A second based on a \$5.5B per year budget starting in FY 1999 (the Low Planning Scenario).

The current DOE/NV *Paths to Closure* submittal addresses only one funding scenario of \$5.75 B for the Complex. Project Baseline Summaries (PBS Project Baseline Summaries) were initially developed based on the assumption of flat budgets from FY 1999 through FY 2006; an escalation factor of 2.7 percent; and best scope, schedule, and cost estimates available at the time. Estimates did not include efficiency targets which were negotiated at the DOE Corporate Forum held in late March 1997.

Updated PBSs, re-submitted by DOE/NV on January 23, 1998, are based on the revised Program Baselines, per guidance from DOE/HQ. Waste volumes and scheduling estimates were updated, through coordination and integration efforts with other DOE sites during the last six months, and submitted as Disposition Maps. These maps portray a graphic picture of all

waste types and the intended disposition throughout the DOE Complex.

This document refines the discussion draft, as it corrects clerical errors and incorporates the stakeholder comments/responses to the draft document in [Section 7.0](#).

The Integrated Priorities List submitted in June remains in order as negotiated with stakeholder and regulatory input. There has been a slight redistribution of budget to reflect the latest information available in PBSs.

Stakeholders were asked to comment on the Discussion Draft and DOE/NV held several workshops to receive that input. The PBSs reflect the clarification requested by Stakeholders and a key change in the budget request. Additional funding of \$20 million (M) per year is requested in this document to complete the additional well drilling as requested by congressional staff, the public, and the state regulator. With the dedicated drilling funds available for the UGTA projects, planned activities for FFACO compliance could be accomplished in both the UGTA and the Industrial Sites Project. Also, the impacts to the TRU/MTRU would be mitigated. Funding required for this effort is reflected in the PBS Summaries, Site Summary, and Operations/Field Office Data Summary.

1.3 Life Cycle Costs and Closure Dates

The ER and WM projects represented in the DOE/NV PBSs require a budget of \$90M per year through FY 2006. Projects scheduled to complete in that time frame include TRU/Mixed TRU in 2003 and Off-sites in 2006. From FY 2006 forward the total budget per year for the remaining work is \$56M. This supports completing the MLLW, Soils, and Industrial Sites projects in 2007; Low-level Waste in 2070; and UGTA in 2014. Long-term surveillance and monitoring would continue for UGTA and Industrial Sites supported by the Program Integration and AIPs/Grants PBSs. Long-term surveillance and maintenance would continue for 30 years beyond the LLW end date for the LLW project. A more detailed discussion of the project time frames and activities is found in [Sections 2.0](#) and [3.0](#). A graphic depiction of the life cycle costs can be found in [Section 4.0](#).

1.4 2006 Planning and Budget Formulation Processes

Success of the strategy is built upon a comprehensive, integrated management foundation. This approach focuses the program on mission completion and provides a streamlined and efficient

method to achieve the Vision. One of the elements of this foundation is the grouping of similar and/or associated activities into projects having a defined scope, schedule, and cost supporting a defined “end state.” The baseline and life cycle of each project is represented in a PBS Summaries.

Each year, EM is required to formulate a budget to satisfy Departmental, Office of Management and Budget, and Congressional mandates. Budgets are submitted for the current fiscal year plus two. For instance, in the FY 1999 Field Budget Call, distributed January 24, 1997, the DOE Chief Financial Officer definition of the prior year would be FY 1998, FY 1999 (current year), and FY 2000 (budget year). FY 2000 is the focus of this current budget submittal. Each FY budget is developed with scope, cost, schedule, and now includes performance indicators that can actually be measured. Examples of performance metrics include volumes of waste treated, stored, or disposed and acreage or units of land or buildings assessed, remediated, decontaminated, decommissioned, or closed.

Previously a system of submitting Activity Data Sheets (ADSs) was used, but this is being phased out as a part of the Integrated Accountability, Planning, and Budgeting System (IPABS). The IPABS system consists of a relational database, which will be updated annually with planning and actual data input to the spreadsheets currently being developed: the PBSs, the Site Summary Level, and the Operations/Field Office Baseline Summaries. The data requested in these spreadsheets supporting the *Paths to Closure* is in direct response to the more stringent requirements for budget justification, and planned and demonstrated performance.

The planning scenarios in this Site Draft follow the premise stated in the *Accelerating Cleanup: Paths to Closure*. The national document is not a budget document and does not reflect actual Congressional appropriations in FY 1998, nor the President’s FY 1999 request forwarded to Congress on February 2, 1998. The Department developed the *Paths to Closure* using a planning level of \$5.75 billion per year over time. The strategy should be viewed as a management tool that demonstrates what can be accomplished, assuming a constant funding level over time. The tool allows the Department to formulate annual strategies and goals in the context of impacts to life-cycle cleanup costs and schedules.

The Department prepared the FY 1999 budget request with consideration given to the data and assumed site end states in the national *Paths to Closure*. In developing the FY 1999 budget request, the EM program also established a new budget

structure which categorizes projects into three accounts: (1) closure, including projects at sites on a path to close by 2006 (except for stewardship activities); (2) project completion, including projects that will be completed by 2006; and (3) post-2006 completion, including projects that will continue beyond 2006. Data from project baselines permitted this categorization.

The Department recognizes that there will be differences in future iterations of the Plan between actual budget requests and appropriations and the assumed level funding amount. In fact, there are differences between the FY 1999 budget request and the national Draft. These differences are inevitable due to the dynamic nature of the budget formulation process. Nevertheless, there is value for the strategy to guide annual budget decisions because the normal range of annual budget variation will always be small compared to the much larger life-cycle costs of the cleanup program.

It also should be noted that since the time that a plan for accelerated cleanup was first proposed, a balanced budget agreement was reached by the President and Congress. As an underlying premise, therefore, this national Draft reflects the Department's need to control costs and meet the President's balanced budget agreement with Congress. Consistent with this premise, the document outlines a process for making work execution adjustments to account for differences between work that is planned, annual appropriations, and projected funding levels.

The first step in this process involves aggressive application of performance enhancements (described in [Section 4.0](#)). The performance enhancements are expected to include improvements in the efficiency of day-to-day operations, and new, streamlined approaches—to be developed with regulators and reflected in enforceable agreements for managing waste and cleaning up contaminated areas.

If performance enhancements are not sufficient to close funding gaps—either real or projected—at specific sites, EM plans to pursue one of several options. In cases where new work is required to immediately address safety and health activities, and related costs exceed available appropriations, the Department will seek Congressional approval to reprogram or reallocate funds from activities not required to maintain compliance or to address other high priorities. If this effort is unsuccessful, the Department will work with regulators, Tribal Nations, and stakeholders to address site priorities and proposed work deferrals. The Department would be required to obtain approval

from regulators before adopting any proposed modifications to enforceable agreements.

Where performance enhancements are insufficient and small funding gaps are projected at some sites in budget “outyears” (as is the case in FY 1999), the Department will use funding for other Environmental Management programs at each of those sites in order to comply with all applicable requirements of Federal, state, and local statutes and their implementing regulations; permits, orders, or judicial decrees; enforceable provisions of negotiated agreements between the Department and regulators; and safety commitments to the Defense Nuclear Facilities Safety Board.

In future years where larger funding gaps are projected, the Department intends to work with the Office of Management and Budget to seek additional funds for vitally important missions. No matter how successful these efforts are, however, the discipline of working within a binding budget ceilings means that the Department must engage in an active dialogue with regulators, Tribal Nations, and stakeholders about activities and programs at each of the sites—and collectively make hard choices regarding priorities. The Department will seek adequate funding to meet safety requirements and compliance obligations—but also hopes to do more under limited funding projections. The Department is committed, therefore, to work with regulators, Indian Tribes, and stakeholders to review all aspects of environmental programs, including activities covered in enforceable agreements and activities that are not required under those agreements, to reach agreement on site programs that balance many competing priorities and needs. The Department expects the planning process and the review of program options that are embodied in the development of the strategy to become an important element of this effort.

2.0 End State, Future Use, and Stewardship

2.1 Site Maps

A series of site maps is included in this section to illustrate the areas on the NTS and in Nevada and other states where DOE/NV has responsibility for environmental restoration and waste management activities. The time frames depicted are current use, 2006 status, and/or final end state. The following is a brief explanation of the maps in the order they appear.

- 1.) An illustration of the Radioactive Waste Management Sites in Area 3 and Area 5 on the NTS. Waste Management activities are discussed in the LLW, TRU/MTRU, and MLLW project narratives (Figure 2-1).
- 2.) Before and after restoration depictions of a standardized off-site project facility layout. All off-site areas are planned for completion by 2006 (Figure 2-2 and Figure 2-3).
- 3.) The currently designated ER areas on the NTS and the Tonopah Test Range. The graphic shading defines the time frame expected for completion in those areas (Figure 2-4).

2.2 Planning End State/Future Use/Stewardship

The defining of end states is an ongoing process. Establishing a *planning* end state allows the sites to develop a description of the work scope, cost estimates, and schedule for its cleanup strategy. The planning end states have been the subject of numerous discussions with stakeholders and regulators at the local level. These assumed end states may or may not be ultimate end states. EM maintains that current assumptions about end states do not preclude future change resulting from changes in planning assumptions, improved technology, increased cost efficiencies, or the availability of additional resources.

Nevada Test Site **EM End State.** Future land-use decisions for the Nevada Test Site will be compatible with the Resource Management Plan, scheduled for completion in October 1998. The NTS (Defense Programs) mission is to maintain a primary site for Operational Readiness and Stockpile Stewardship. The types of contamination that will remain in the surface soils and subsurface areas impacted by past nuclear testing activities, as well as the NTS waste disposal areas, necessitate institutional control of the existing boundaries of the NTS for the foreseeable future. Filled disposal pits and trenches will be closed and

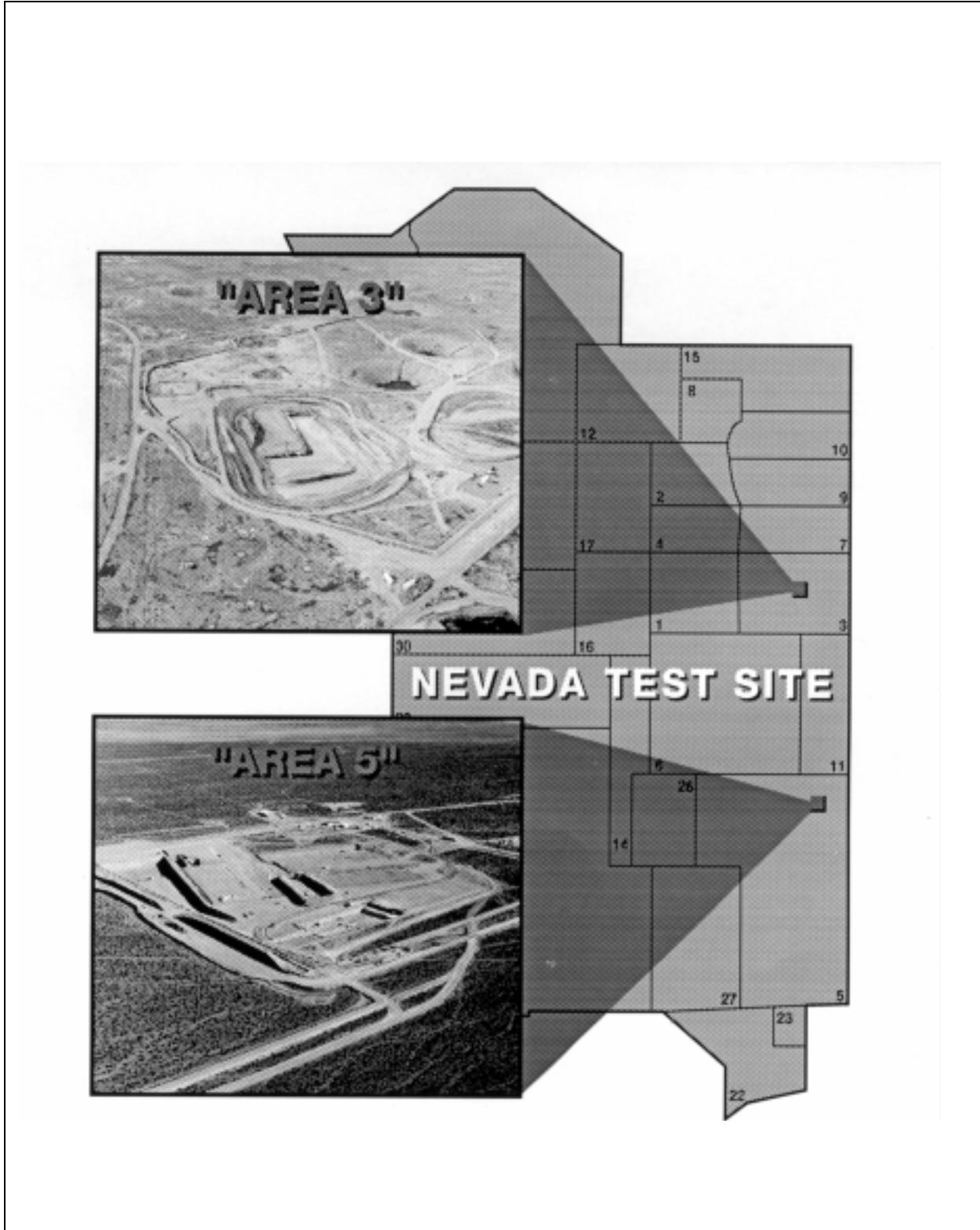


Figure 2-1
NTS Radioactive Waste Management Sites

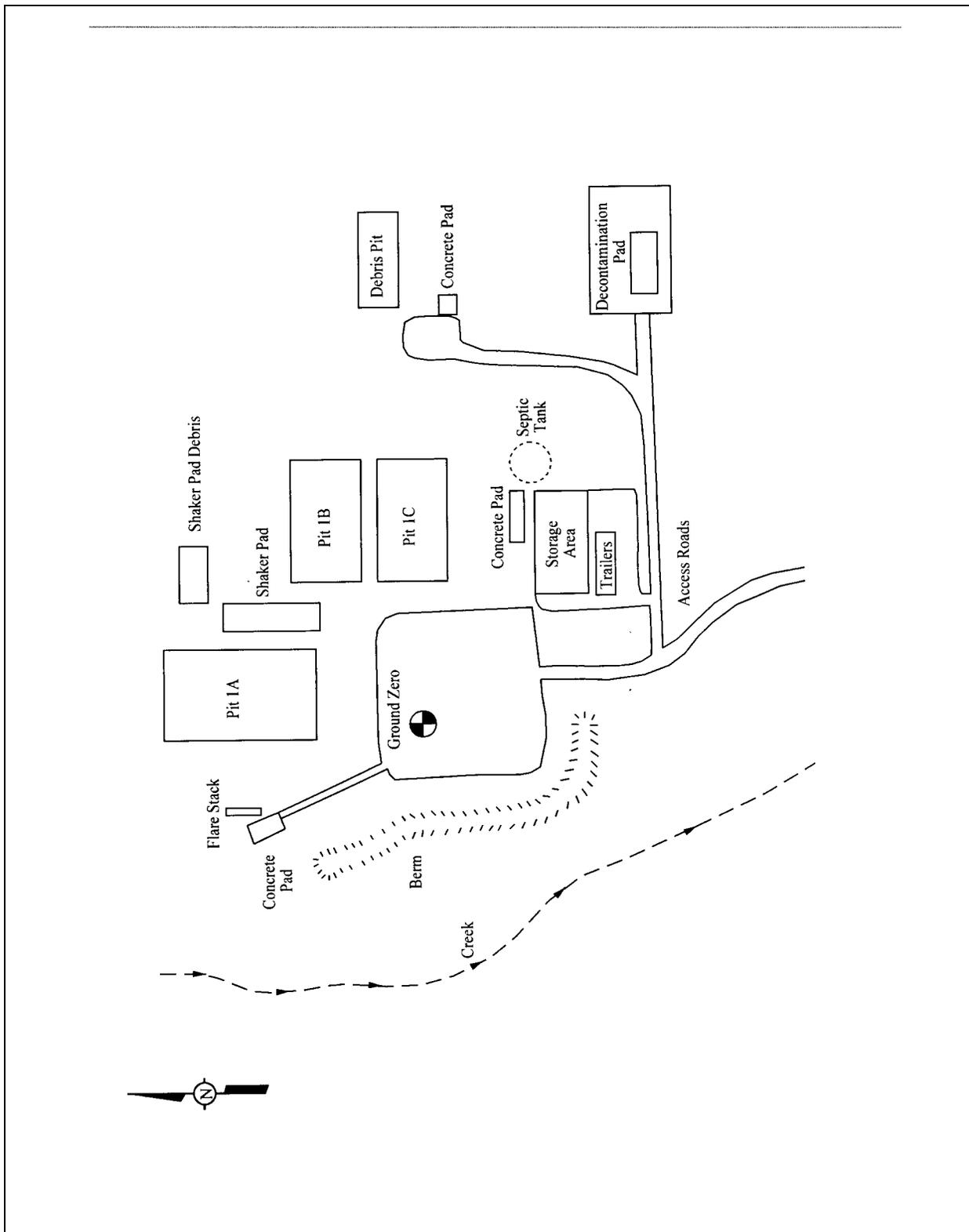


Figure 2-2
Generalized Off-Site Project Site Facility Layout Before Restoration

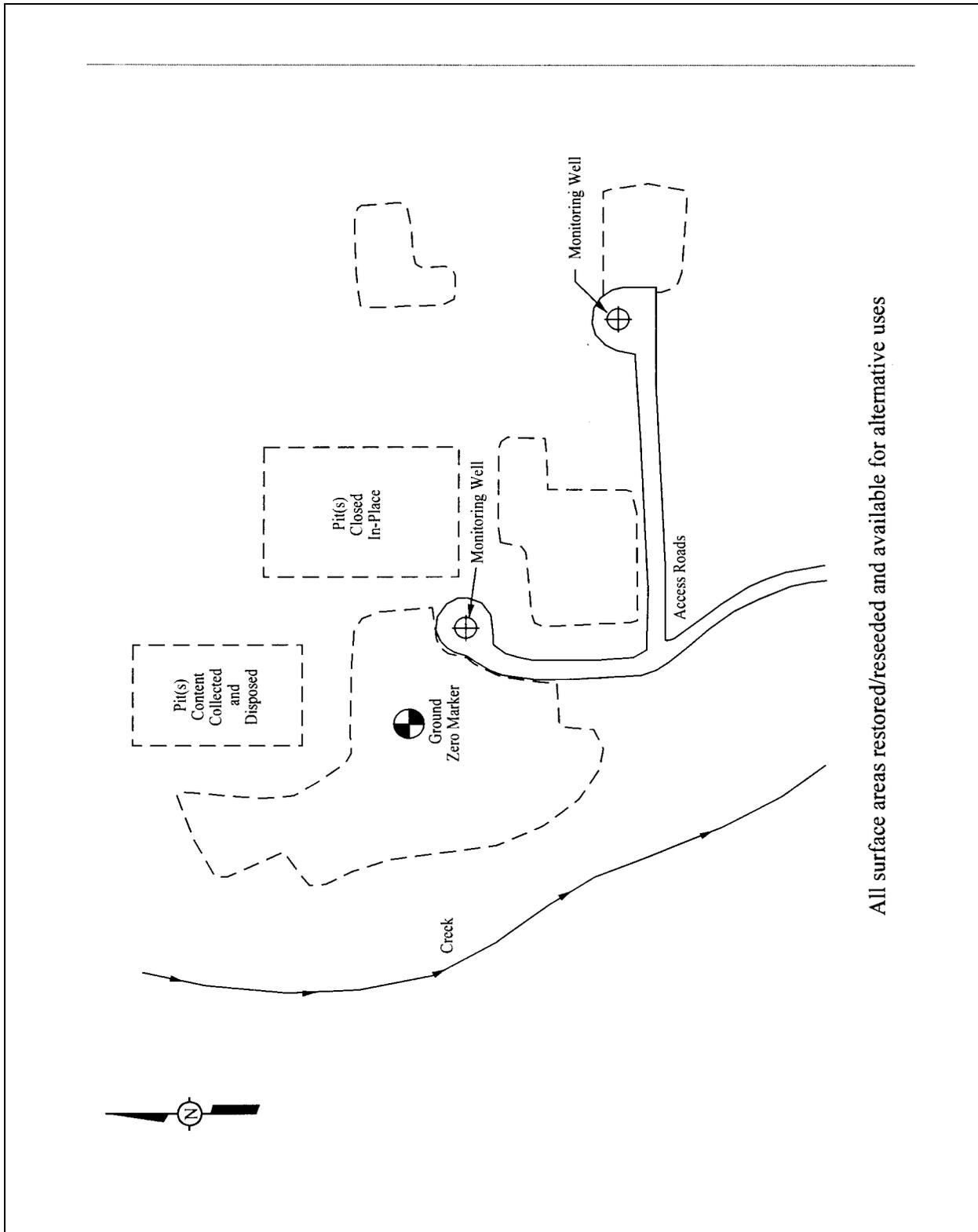


Figure 2-3
Generalized Off-Site Project Site Facility Layout After Restoration

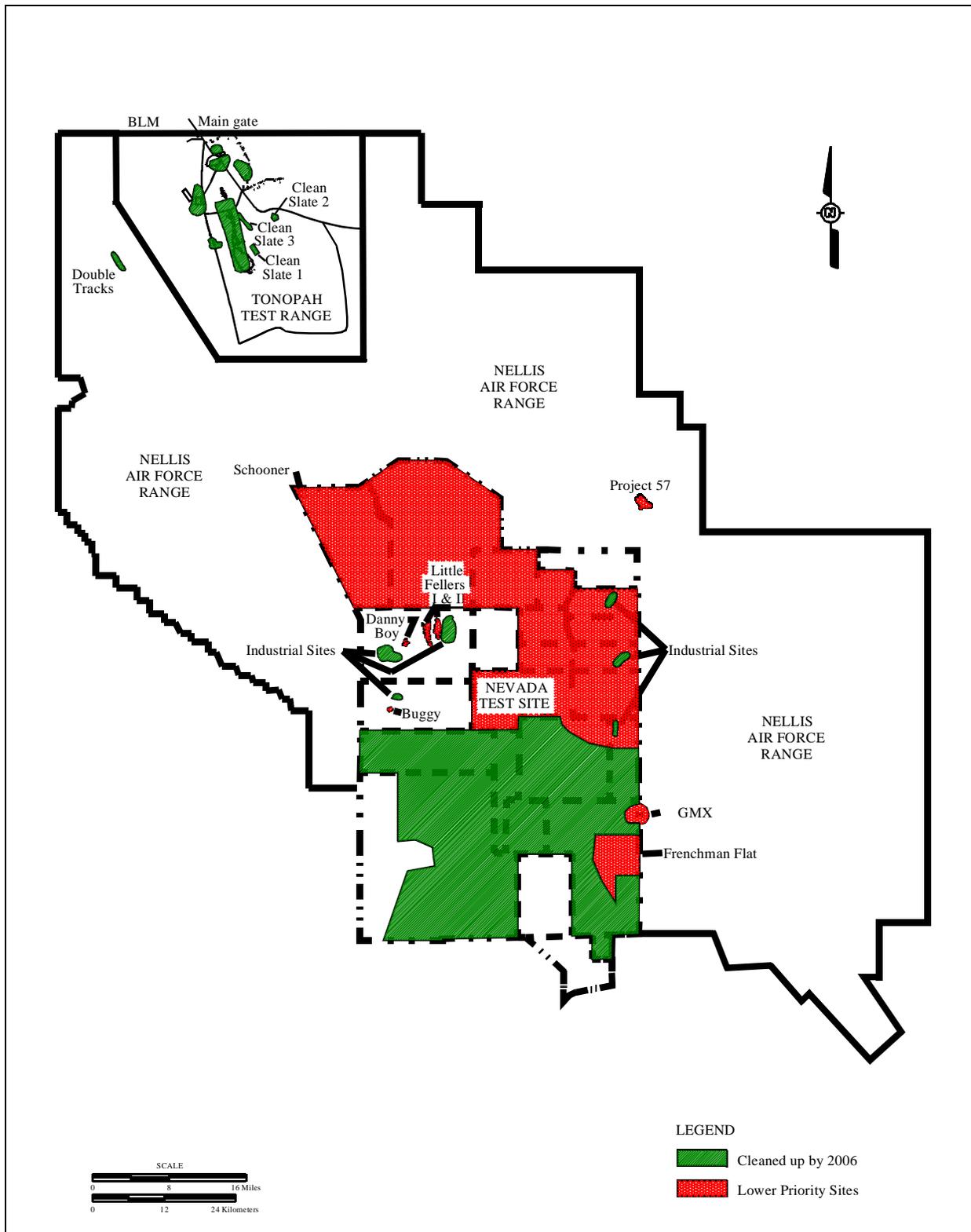


Figure 2-4
Current Plan for ER Activities at the Nevada Test Site and Tonopah Test Range

capped as appropriate. To support landlord operations (Defense Programs), storage and disposal operations may continue at the former waste management locations.

Future Use Plans. Potential uses of facilities that are to be D&D are uncertain at this time. DOE/NV, the NTS Development Corporation, the M&O Contractor, and the NTS Alliance are currently developing future land and facility uses in compliance with commitments contained in the NTS EIS. At this time, businesses seeking economic development partnerships with the NTS appear most interested in the southwestern portion of the complex. Decisions involving resource management, future land use, and private development will be done in partnership with the interests of DOE, national laboratories, the U.S. Air Force, the Bureau of Land Management (BLM), Tribal Governments, state and local agencies, and stakeholders.

Future Site Stewardship. The DOE is assumed to retain oversight and management of the NTS for the foreseeable future. Long-term monitoring of the site is assumed because of the nature of the contaminants in the contaminated surface soils and subsurface areas impacted by past nuclear testing activities. Costs for the subsurface monitoring have been calculated for 100 years and are reflected in the summary cost tables as is monitoring of WM disposal sites.

**Tonopah Test Range,
Nevada**

EM Site End State. Responsibility for land use on TTR falls within the purview of the DoD, U.S. Air Force. The DoD is in the process of developing an EIS governing Air Force activities on the NAFR, which includes TTR. Future uses are assumed to remain status quo. The DOE is responsible for past nuclear testing activities conducted on TTR. Upon completion of characterization and remediation activities at the site, DOE will maintain monitoring responsibility for the DOE sites.

Future Site Stewardship. The DoD is assumed to retain oversight and management of TTR lands for the foreseeable future. Long-term monitoring of the site is assumed for a period of 30 years. Costs for monitoring are reflected in the summary cost tables.

Off-sites Projects

Off-site completion dates are shown in Table 2-1.

**Table 2-1
Off-Site Completion Dates**

Site	Date
Amchitka Island	2001
Rio Blanco	2005
Rulison	1998
Central Nevada Test Site	2006
Project Shoal	2005
Gasbuggy	2005
Gnome-Coach	2004
Salmon Site	1999

Amchitka Island, Alaska

EM Site End State. Nuclear test areas on Amchitka Island will be characterized and an ecological risk assessment will be performed. Surface and subsurface human health risk assessment will also be performed. Based on data available and a strategy developed by the U.S. Fish and Wildlife Service to date, no surface remediation will be performed on the island as the impact to ecological receptors for remedial activities would be greater than the potential benefit of remediation. Surface areas will be released for use without restriction and/or transferred to the U.S. Fish and Wildlife Service and incorporated into an existing wildlife refuge (Aleutian National Wildlife Refuge). Environmental monitoring of the surface areas, if necessary, may be implemented within five years per agreement with the State of Alaska (regulator).

Subsurface contamination and groundwater contamination will be modeled and monitored. Subsurface contaminants in and around the test cavities will not be remediated since cost-effective groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants. Restricted access to the subsurface, including restrictions on access to and use of groundwater, will be maintained. Upon establishing a monitoring network, program, and schedule acceptable to DOE, the State of Alaska, and other Stakeholders, long-term surveillance and monitoring of Amchitka Island is assumed in perpetuity and planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems.

Future Site Stewardship. DOE will not maintain an active presence at this site. It is currently anticipated that the surface

of Amchitka Island will be released for alternate uses and will be maintained by the U.S. Fish and Wildlife Service as part of the Aleutian National Wildlife Refuge. However, it is also anticipated that DOE will maintain subsurface restrictions (institutional control) in perpetuity on all subsurface areas in proximity to the shot cavities and on any areas of groundwater contamination identified by the modeling/risk assessment program.

Rio Blanco, Colorado **EM Site End State.** The Project Rio Blanco Test Area will be characterized and surface contamination remediated as necessary. Once remediated (closed in place or excavated and disposed), it is anticipated that surface areas will be released for use without restriction and/or relinquished to BLM. Environmental monitoring of the surface areas, if necessary, may be implemented within five years per agreement with the State of Colorado (regulator).

Subsurface contamination and groundwater contamination will be modeled and monitored. Subsurface contaminants in and around the test cavities will not be remediated since cost-effective groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants. Restricted access to the subsurface, including restrictions on access to and use of groundwater, will be maintained. Upon establishing a monitoring network, program, and schedule acceptable to DOE, the State of Colorado, and other stakeholders, long-term surveillance and monitoring of the Project Rio Blanco Test Area is assumed in perpetuity and planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems.

Future Site Stewardship. DOE will not maintain an active presence at this site. It is currently anticipated that following completion of all remedial activities associated with surface CAUs, the surface of the Project Rio Blanco Test Area will be released for unrestricted future use and/or will be relinquished to BLM. However, it is also anticipated that DOE will maintain subsurface restrictions (institutional control) in perpetuity on all subsurface areas in proximity to the shot cavities and on any areas of groundwater contamination identified by the modeling program.

Rulison, Colorado **EM Site End State.** The Project Rulison Test Area will be characterized and surface contamination remediated as necessary. Once remediated (closed in place or excavated and

disposed), it is anticipated that surface areas will be released for use without restriction and/or relinquished to BLM and to the private land owner. Environmental monitoring of the surface areas, if necessary, may be implemented within five years per agreement with the State of Colorado (regulator).

Subsurface contamination and groundwater contamination will be modeled and monitored. Subsurface contaminants in and around the test cavity will not be remediated since cost-effective groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants. Restricted access to the subsurface, including restrictions on access to and use of groundwater, will be maintained. Upon establishing a monitoring network, program, and schedule acceptable to DOE, the State of Colorado, and other stakeholders, long-term surveillance and monitoring of the Project Rulison Test Area is assumed in perpetuity and planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems.

Future Site Stewardship. DOE will not maintain an active presence at this site. It is currently anticipated that following completion of all remedial activities associated with surface CAUs, the surface of the Project Rulison Test Area will be released for unrestricted future use and/or will be relinquished to BLM and to the private land owner. However, it is also anticipated that DOE will maintain subsurface restrictions (institutional control) in perpetuity on all subsurface areas in proximity to the shot cavity and on any areas of groundwater contamination identified by the modeling program.

Central Nevada Test Area, Nevada

EM Site End State. The Central Nevada Test Area is currently being characterized and surface contamination remediated as necessary. Once remediated (closed in place or excavated and disposed), it is anticipated that surface areas will be released for use without restriction and/or relinquished to the BLM. Environmental monitoring of the surface areas, if necessary, may be implemented within five years per agreement with the State of Nevada (regulator).

Subsurface contamination and groundwater contamination will be modeled and monitored, which includes a five-year proof-of-concept period. Subsurface contaminants in and around the test cavity will not be remediated since cost-effective groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants.

Restricted access to the subsurface, including restrictions on access to and use of groundwater, will be maintained. Upon establishing a monitoring network, program, and schedule acceptable to DOE, the State of Nevada, and other stakeholders, long-term surveillance and monitoring of the Central Nevada Test Area is assumed in perpetuity and planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems.

Future Site Stewardship. DOE will not maintain an active presence at this site. It is currently anticipated that following completion of all remedial activities associated with surface CAUs, the surface of the Central Nevada Test Area will be released for unrestricted future use and/or will be relinquished to the U.S. Bureau of Land Management. However, it is also anticipated that the Department of Energy will maintain subsurface restrictions (institutional control) in perpetuity on all subsurface areas in proximity to the shot cavity and on any areas of groundwater contamination identified by the modeling program.

Shoal Site, Nevada

EM Site End State. The Project Shoal Test Area is currently being characterized and surface contamination remediated as necessary. Once remediated (closed in place or excavated and disposed), it is anticipated that surface areas will be released for use without restriction and/or relinquished to BLM. Environmental monitoring of the surface areas, if necessary, may be implemented from within five years per agreement with the State of Nevada (regulator). Subsurface contamination and groundwater contamination will be modeled and monitored, which includes a five-year proof-of-concept period. Subsurface contaminants in and around the test cavity will not be remediated since cost-effective groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants. Restricted access to the subsurface, including restrictions on access to and use of groundwater, will be maintained. Upon establishing a monitoring network, program, and schedule acceptable to DOE, the State of Nevada, and other stakeholders, long-term surveillance and monitoring of the Project Shoal Test Area is assumed in perpetuity and planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems.

Future Site Stewardship. DOE will not maintain an active presence at this site. It is currently anticipated that following completion of all remedial activities associated with surface CAUs, the surface of the Project Shoal Test Area will be released for unrestricted future use and/or will be relinquished to BLM. However, it is also anticipated that DOE will maintain subsurface restrictions (institutional control) in perpetuity on all subsurface areas in proximity to the shot cavity and on any areas of groundwater contamination identified by the modeling program.

Gasbuggy, New Mexico

EM Site End State. The Project Gasbuggy Test Area will be characterized and surface contamination remediated as necessary. Once remediated (closed in place or excavated and disposed), it is anticipated that surface areas will be released for use without restriction and/or relinquished to the BLM. Environmental monitoring of the surface areas, if necessary, may be implemented within five years per agreement with the State of New Mexico (regulator).

Subsurface contamination and groundwater contamination will be modeled and monitored. Subsurface contaminants in and around the test cavity will not be remediated since cost-effective groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants. Restricted access to the subsurface, including restrictions on access to and use of groundwater, will be maintained. Upon establishing a monitoring network, program, and schedule acceptable to DOE, the State of New Mexico, and other stakeholders, long-term surveillance and monitoring of the Project Gasbuggy Test Area is assumed in perpetuity and planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems.

Future Site Stewardship. DOE will not maintain an active presence at this site. It is currently anticipated that following completion of all remedial activities associated with surface CAUs, the surface of the Project Gasbuggy Test Area will be released for unrestricted future use and/or will be relinquished to BLM. However, it is also anticipated that DOE will maintain subsurface restrictions (institutional control) in perpetuity on all subsurface areas in proximity to the shot cavity and on any areas of groundwater contamination identified by the modeling program.

Gnome-Coach, New Mexico

EM Site End State. The Project Gnome Test Area will be characterized and surface contamination remediated as necessary. Once remediated (closed in place or excavated and disposed), it is anticipated that surface areas will be released for use without restriction and/or relinquished to BLM. Environmental monitoring of the surface areas, if necessary, may be implemented from 0 to 5 years per agreement with the State of New Mexico (regulator).

Subsurface contamination and groundwater contamination will be modeled and monitored. Subsurface contaminants in and around the test cavity will not be remediated since cost-effective groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants. Restricted access to the subsurface, including restrictions on access to and use of groundwater, will be maintained. Upon establishing a monitoring network, program, and schedule acceptable to DOE, the State of New Mexico, and other stakeholders, long-term surveillance and monitoring of the Project Gnome Test Area is assumed in perpetuity and planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems.

Future Site Stewardship. DOE will not maintain an active presence at this site. It is currently anticipated that following completion of all remedial activities associated with surface CAUs, the surface of the Project Gnome Test Area will be released for unrestricted future use and/or will be relinquished to the BLM. However, it is also anticipated that DOE will maintain subsurface restrictions (institutional control) in perpetuity on all subsurface areas in proximity to the shot cavity and on any areas of groundwater contamination identified by the modeling program.

Salmon Site, Mississippi

EM Site End State. The Project Salmon Test Area will be continue to be characterized and surface contamination remediated as necessary. Once remediated (closed in place or excavated and disposed), it is anticipated that surface areas will be released for use without restriction and site ownership officially transferred to the State of Mississippi. Environmental monitoring of the surface areas, if necessary, may be implemented within five years per agreement with the State of Mississippi (regulator).

Subsurface contamination and groundwater contamination will be modeled and monitored. Subsurface contaminants in and around the test cavity will not be remediated since cost-effective

groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants. Restricted access to the subsurface, including restrictions on access to and use of groundwater, will be maintained. Upon establishing a monitoring network, program, and schedule acceptable to DOE, the State of Mississippi, and other stakeholders, long-term surveillance and monitoring of the Project Salmon Test Area is assumed in perpetuity and planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems.

Future Site Stewardship. DOE will not maintain an active presence at this site. It is currently anticipated that following completion of all remedial activities associated with surface CAUs, the surface of the Project Salmon Test Area will be released for unrestricted future use and will be transferred to the State of Mississippi for use as a wilderness area. However, it is also anticipated that DOE will maintain subsurface restrictions (institutional control) in perpetuity on all subsurface areas in proximity to the shot cavity and on any areas of groundwater contamination identified by the modeling program.

3.0 Strategies and Prioritization

3.1 Planned Accomplishments

Program Management and Integration **1998 Planned Accomplishments.** Provide administrative support; annual project administrative management including program management, contract/subcontract administration, and records management. Provide project logistical support including computer acquisition, lease and lease maintenance, equipment, photographic and graphic support as well as necessary security support, vehicle acquisition and maintenance. Complete data calls (including development of PBSs, ODSs, SSLs, Disposition Maps, Technology Deployment Plan, and Site-Specific Plan); annual review of project-level documents and revisions as needed and appropriate; support annual revision of performance measures, and support quarterly progress reporting. Support the development of DOE/HQ and congressional data requests and briefings for project planning activities.

Complete annual updates of the Work Breakdown Structure and Dictionary. Provide cost-estimating support for maintenance of the project baselines, and annual Task Planning Sheets. Provide independent cost estimates, reviews, and project validations. Continue support for development of the NTS Resource Management Plan; development of input to the DOE/NV Project Control System and the DOE/HQ Progress Tracking System. Provide annual quality assurance programmatic planning and management, including document development and control, assessments, training, and corrective action tracking; annual programmatic health and safety support, including management, surveillance, record-keeping/maintenance, training, and program Health and Safety Plans maintenance.

Provide support for development, implementation, and maintenance of the FFACO and related action plans and amendments between DOE/NV and the State of Nevada. Continue improvements to database systems and support maintenance and update of the systems. Provide Community Relations support for the development and implementation of community relations programs for activities in Nevada and off-site locations in Alaska, Colorado, Mississippi, New Mexico, and Nevada; support for development and maintenance of reading rooms and Information Repositories in the five states where DOE/NV ER activities occur. Provide support for development of programmatic or project-wide reports, and implementation in the areas of agreements, risk assessments,

permitting, data management, and natural resource damage assessments. Operate off-site data access system to address stakeholder/Regulator concerns and for access to project data.

Update The Contingency Plan for Area 5, emergency management procedures, and O&M plans. Review and update Safety Analysis Reports. Conduct required training for field operations and safety, as well as First-On-Scene emergency management for local responders.

1999 Planned Accomplishments. Continue to provide support as defined in FY 1998.

2000 Planned Accomplishments. Continue to provide support as defined in FY 1998.

Project Status in FY 2006. Programmatic support activities will be decreasing because individual project activities will be nearing completion. Fixed-cost items for DOE/HQ initiatives, such as *Accelerating Cleanup*, and for Quality Assurance, Health and Safety, technical, and regulatory support, will continue through the life of the Nevada Environmental Management Program.

Post 2006 Project Scope. Scope after FY 2006 will include fixed-cost items for DOE/HQ initiatives and the programmatic support required until the Soils, UGTA, and Industrial Sites remediation activities are completed. Support will be provided for MLLW activities through 2007 and LLW activities through 2070.

Project End State. Fixed costs associated with regulatory and DOE/HQ reporting requirements will continue. The WM support will end when the LLW program stops accepting waste in 2070.

AIPs/Grants **1998 Planned Accomplishments.** Continue funding state of Nevada fees for oversight as directed by the FFACO; support of AIPs with Alaska, Mississippi, and Nevada for monitoring of DOE/NV assessment and characterization activities at sites for which DOE/NV is responsible. The Alaska AIP applies to Point Hope and Amchitka Island; the Mississippi AIP applies to Salmon Site; and the Nevada AIP applies to the NTS, NAFR, TTR, CNTA, and Project Shoal Area. Provide for technical support, land access, and review of plans and permits, as well as emergency response and community relations activities. Continue funding of agreements with the University of Nevada to provide research opportunities for students and faculty in support of technical programs being conducted at the NTS. Continue funding to support the Nevada Environmental Research Park Program.

1999 Planned Accomplishments. The accomplishments planned for FY 1998 will be continued.

2000 Planned Accomplishments. The accomplishments planned for FY 1998 will be continued.

Project Status in FY 2006. Funding decreases as the result of completion of activities in four states (Alaska, Colorado, Mississippi, and New Mexico). Remaining funding supports final oversight for activities within the State of Nevada and activities such as confirmation of closure results and long-term surveillance and monitoring.

Post 2006 Project Scope. Funding reflects regulatory support for long-term surveillance and monitoring programs.

Project End State. Long-term surveillance and monitoring programs for subsurface areas will remain in place for 100 years, thus moderate funding for regulatory support of the programs will continue.

Soils **1998 Planned Accomplishments.** Continue Site Restoration Clean Slate 1 Plutonium Dispersion. Complete Characterization Report Clean Slate 2 Plutonium Dispersion. Continue Assessment Project 57.

1999 Planned Accomplishments. Complete Closure Report Clean Slate 1 Plutonium Dispersion. Initiate Site Remediation Clean Slate 2 Plutonium Dispersion. Continue evaluation of new and innovative technologies for remediating contaminated soils.

2000 Planned Accomplishments. Complete Assessment (CADD) Clean Slate 3. Continue Assessment activities and complete CAIP GMX Site. Complete Assessment (CADD) Project 57.

Project Status in FY 2006. By FY 2006, surface soils addressed in the NTS EIS ROD will have been remediated to cleanup levels being negotiated between DOE/NV and the State of Nevada. All Operation Roller Coaster sites (Double Tracks and Clean Slates 1, 2, and 3), Project 57 (Area 13), Small Boy and Schooner off-site plumes, and GMX in Area 5 will have been characterized and remediated with institutional controls in place. The characterization of crater experiments is slated to begin in FY 2006.

Post 2006 Project Scope. Post FY 2006 activities have not yet been fully defined since the scope of the long-term surveillance and monitoring program must correspond proportionately with the assessed need for monitoring. In order to continuously

implement an adequate and cost-effective surveillance and monitoring program, break-through technologies will be identified and utilized to increase the effectiveness and reduce the costs of the monitoring program. Activities related to long-term surveillance and monitoring currently include air sampling, reporting, and maintenance of institutional controls (including fencing and posting appropriate signage) throughout the duration of post-closure activities.

Project End State. The end state of the Soils Project is: 1) completed characterization of all sites; 2) the remediation of surface soils to established cleanup levels at sites off the NTS, adjacent to the NTS boundary, and in future-use areas; 3) off-site and/or in-place disposal of all associated soils and wastes; and 4) determine land-use restrictions around contaminant boundaries where contaminated soils remain in future testing zones. Upon establishing a monitoring network, program, and schedule which is acceptable to DOE, the State of Nevada, and stakeholders, associated long-term surveillance and monitoring of the Soils sites will be negotiated. All Soils sites will remain under institutional control.

**Underground Test Area
(UGTA)**

1998 Planned Accomplishments. Complete sampling five existing wells. Complete Frenchman Flat Contaminant Boundary Modeling. Complete Draft CAIP Western Pahute Mesa. Continue Groundwater Recharge/Discharge studies. Submit Final BULLION Forced Gradient Experiment (FGE) Report. Begin Geochemical Modeling. Begin Yucca Flat CAU-specific Geologic Model. Complete CAIP Western Pahute Mesa.

1999 Planned Accomplishments. Begin installation of four deep groundwater monitoring wells for monitoring contaminated groundwater flow toward Oasis Valley from NTS. Complete Frenchman Flat CADD. Begin Frenchman Flat Monitoring Network Design. Complete Frenchman Flat Contaminant Boundary Report.

2000 Planned Accomplishments. Begin VOIA Central Pahute Mesa. Complete CAIP Yucca Flat. Continue groundwater monitoring of wells in Oasis Valley.

Project Status in FY 2006. By FY 2006, characterization will be completed for five CAUs: Frenchman Flat, Western Pahute Mesa, Yucca Flat, Central Pahute Mesa, and Climax Mine. In FY 2006, Frenchman Flat will have completed the 5-year Proof-of-Concept monitoring.

Post 2006 Project Scope. Post FY 2006 activities have not yet been fully defined since the scope of the long-term surveillance and

monitoring program must correspond proportionately with the assessed need for monitoring. In order to continuously implement an adequate and cost-effective surveillance and monitoring program, break-through technologies will be identified and utilized to adapt and modify work scope as the various CAUs are characterized. Identified as-needed activities related to long-term surveillance and monitoring currently include sampling, reporting, and well refurbishment/maintenance throughout the duration of post-closure activities. The Rainier Mesa/Shoshone Mountain CADD will be reviewed by the Nevada Division of Environmental Protection (NDEP) in FY 2007. The 5-year proof-of-concept monitoring will have been completed in all CAUs by FY 2014, and then long term monitoring will continue for 100 years.

Project End State. The end state for the UGTA Project is 1) shot cavities closed in place; 2) completed contaminant fate and transport modeling and proof-of-concept validation of model results; and 3) established long-term environmental monitoring program including any appropriate monitoring technology enhancements. In that no proven, cost effective technologies presently exist for remediation of extensive, deep, groundwater plumes, subsurface contaminant sources in the shot cavities will not be remediated. Modeling groundwater flow and contaminant transport as validated with proof-of-concept techniques will provide a basis for monitoring system design to monitor groundwater and risk to off-site populations. Tritium, considered to be the primary and most abundant contaminant of concern over the next 100 years, is expected to be the most mobile radiological contaminant in the groundwater. Environmental monitoring for tritium will be continued for at least 100 years.

Institutional controls including restricted access and use of groundwater will be established and maintained in the UGTA Project region for the foreseeable future. For those UGTA Projects areas located off of the NTS, transfer of responsibilities to future landlord agencies (e.g., Air Force) will include institutional controls and underground resource access limitations, where appropriate. Groundwater resources access and use restrictions as well as appropriate institutional controls would also be maintained for the UGTA Project area within the NTS boundary with responsibility transferred to future landlord agencies (e.g., Environmental Protection Division or Defense Programs).

Industrial Sites **1998 Planned Accomplishments.** Reports will be completed for the following:

- Submit 15 Final Closure Reports
- Submit 7 Final CADDs
- Submit 7 Final Characterization Plans
- Submit 8 Final CAPs)
- Start CADD Area 25 Test Cell A Facility
- Perform Facility maintenance on 6 remaining D&D facilities
- Submit Closure Report for EPA Farm

1999 Planned Accomplishments. Reports will be completed for the following:

- Submit Final Assessment Report (CADD) for 6 CAUs on TTR and 5 CAUs on NTS
- Submit Final Closure Report for 4 CAUs on TTR and 5 CAUs on NTS
- Complete CAIP Area 25 R-MAD Decontamination Facility

2000 Planned Accomplishments. Completed reports as follows:

- Complete Assessment (CADD) of 7 CAUs on NTS and 2 CAUs on TTR
- Complete Remediation activities of 1 CAU on NTS and 1 CAU on TTR
- Complete CADD Area 25-R-MAD Decontamination Facility

Project Status in FY 2006. By FY 2006, 90 percent of the CASs will have been assessed, and 74 percent of the CASs will have been remediated. Post-closure monitoring and remedial system maintenance activities will be in place according to the specific closure action chosen for a particular CAS.

Post 2006 Project Scope. The remaining CASs will be characterized and remediated as applicable with completion schedule for FY 2009. Post-closure monitoring and maintenance activities are known to include:

- 1.) Collecting periodic measurements and/or samples from monitoring wells, effluent streams, etc., as stipulated in Post Closure Care Permits;
- 2.) Condition inspection and maintenance of any passive or active remedial systems; and

3.) Sample analysis and report preparation for each monitoring period.

The DOE/NV EM Program will supervise monitoring for a negotiated site-specific length of time after completion of remedial activities at each site. The EM Program has initial responsibility for monitoring. That responsibility will be transitioned to the landlord (Defense Programs) for long-term monitoring. Upon completion of the DOE/NV ER Program, funding responsibility for long-term surveillance and monitoring will transition to the landlord.

Project End State. The end state for the Industrial Sites is completion of all applicable remedial actions with long-term surveillance and monitoring in place.

Off-Sites 1998 Planned Accomplishments. Prepare CAIP surface and subsurface - Amchitka Island, Alaska. Prepare Feasibility Study, continue groundwater remediation modeling activities, remove surface ground zero mud pit (SAFER) - Salmon Site, Mississippi. Prepare CAIP surface and subsurface - Gasbuggy, New Mexico. Prepare CAIP surface and subsurface. Begin surface CADD - Gnome Coach - New Mexico. Continue annual monitoring - Rio Blanco - Colorado. Continue groundwater remediation modeling activities, prepare CAIP for new CAU, begin surface CADD - Central Nevada Test Area, Nevada. Submit surface SAFER Closure Report - Project Shoal, Nevada.

1999 Planned Accomplishments. Complete groundwater modeling effort - Amchitka Island, Alaska. Complete Feasibility Study for subsurface, prepare Record of Decision for subsurface - Salmon Site, Mississippi. Complete groundwater modeling effort, begin preparation of subsurface CADD - Gasbuggy, New Mexico. Prepare CADD surface and subsurface - Central Nevada Test Area, Nevada Complete surface SAFER, complete subsurface CAP - Project Shoal, Nevada

2000 Planned Accomplishments. Begin remediation - Salmon Site, Mississippi. Complete surface CR, complete CAP subsurface - Central Nevada Test Area, Nevada.

Project Status in FY 2006. By FY 2006, subsurface contaminants in and around the cavities created by underground nuclear tests are not anticipated to be remediated since cost-effective groundwater technologies have not yet been developed that would effectively remove or stabilize subsurface contaminants at the various sites. If and when such technologies are developed, the corrective action decisions may be altered at that time.

In FY 2006 the status will be:

- 1.) remediation of surface soils (as necessary) to a level acceptable for unrestricted access and use;
- 2.) off-site and/or in-place disposal of all associated soils and waste;
- 3.) model groundwater to determine extent of contamination and potential for migration;
- 4.) establish boundaries and criteria for subsurface restrictions; and
- 5.) design and implement a long-term surveillance and groundwater monitoring system.

Post 2006 Project Scope. All characterization and necessary remediation activities will have been completed by FY 2006. Remaining activities anticipated to exist in the post FY 2006 time frame include the completion of official transfer of individual site ownership (surface areas only) to their respective Federal or State agencies and Long-Term Surveillance & Monitoring (LTS&M). Subsurface restrictions (institutional control) will remain in effect (in perpetuity) to prohibit unintentional entry into the shot cavities and to prohibit access to radioactively contaminated groundwater. LTS&M activities at each Off-Site location will be conducted annually (biennially at Amchitka Island due to logistical considerations). Monitoring is assumed in perpetuity due to the nature of the contaminants, and monitoring activities are costed for 100 years following closure of each site. It is further anticipated that monitoring wells will need to be refurbished and/or replaced at approximate 25-year intervals until completion of the LTS&M program.

Project End State. All Off-Site locations will be characterized and surface contamination remediated as necessary prior to FY 2006. Once remediated (closed in place or excavated and disposed), surface areas will be released for use without restriction and/or transferred to other Federal or State agencies for alternative future use. Environmental monitoring of the surface areas may be implemented within five years per agreements with host states. Subsurface contamination and groundwater contamination will be modeled and monitored. In addition, for Off-Site locations in the State of Nevada (Shoal and Central Nevada Test Area), there will be a 5-year Proof-of-Concept period. Subsurface contaminants in and around the test cavities will not be remediated since cost-effective groundwater technologies have not yet been demonstrated for effectively removing or stabilizing radioactive contaminants. Restricted access to the subsurface, including restrictions on access to and

use of groundwater, will be maintained and upon establishing a monitoring network, program, and schedule acceptable to DOE, impacted state governments, and stakeholders, long-term surveillance and monitoring of each Off-Site location is planned for 100 years. Based on modeling and monitoring results, subsurface drilling restrictions and institutional controls implemented on known areas of contamination may need to be extended to ensure no intrusion into potentially contaminated groundwater systems. A plan needs to be developed to provide consideration for restoration of natural gas withdrawal for all the gas stimulation sites.

TRU/Mixed TRU

1998 Planned Accomplishments. Obtain approval from WIPP of the NTS TRU Waste Characterization Project. Complete training of all personnel scheduled for the operation of the WEF. Provide quarterly report, weekly RCRA inspections, and monitoring. Complete all TRU/MTRU waste characterization project procedures; pre-characterization activities required by WIPP. Procure a radiography system or vendor to examine the TRU/MTRU waste.

Begin processing MTRU waste with intent to characterize the waste for certification to ship to WIPP.

Finalize the following for Greater Confinement Disposal: Plant Uptake Methodology Letter Report, Individual Protection Requirements Methodology, Climate Change Methodology, Upward Advection Model, Source Term inventory calculations for Greater Confinement Disposal/Buried TRU.

1999 Planned Accomplishments. Characterize and certify drums of MTRU waste for disposal at WIPP. Finalize the following for Greater Confinement Disposal:

Assurance Requirements Package; Disruptive Scenarios Letter Report; Consequences of LLW Subsidence Model; and Nuclear Criticality Report.

2000 Planned Accomplishments. Characterize and certify drums of MTRU waste for disposal at WIPP. Initiate shipments of TRU waste to WIPP.

Project Status in FY 2006. 671 cubic meters of TRU waste will have been shipped to WIPP by FY 2003.

Post 2006 Project Scope. None

Project End State. Facility will be turned over for alternate use by low level waste program in FY 2004. Long term surveillance and

monitoring will be conducted, as required, as part of the long-term monitoring program for the RWMS under LLW for TRU formerly disposed of in GCD holes in Area 5 RWMS. TRU Pad and Cover Building will be released for use by other programs. By 2003, all waste will have been shipped off-site for disposal. All disposal long term requirements are transferred to or are encompassed by the WIPP plan.

Low-Level Waste

1998 Planned Accomplishments. The Radioactive Waste Acceptance Program will perform facility evaluations of generators, as necessary. Title I design of the U3axbl Closure Cap will be initiated after the Design Basis Memorandum is prepared. The Criticality Safety Program will be implemented. The permit to dispose of LLW containing asbestos will be initiated. The Area 3 Radioactive Waste Management Site Performance Assessment/Composite Analysis will be approved.

1999 Planned Accomplishments. The Area 5 Composite Analysis, the Area 3 Performance Assessment/Composite Analysis, and the Area 5 Performance Assessment Addendum will be completed and approved. RWAP will continue to perform facility evaluations of generators.

Title II design of the U3axbl Closure Cap will be initiated and the Closure Plan finalized. Complete design of post closure monitoring of U3ax/bl. Complete comprehensive investigation of sources, hydrologic properties, and geotechnical properties of construction materials for closure caps and flood control structures. Post-closure monitoring for U3ax/bl will be designed. The Conceptual Design for U3bh closure will be prepared. The Design Basis Memorandum will be prepared for the Closure Cap.

2000 Planned Accomplishments. The Conceptual Design and the Design Basis Memorandum will be prepared for the west block of cells in Area 5. RWAP continues to perform generator facility evaluations. The Area 3 and Area 5 Performance Assessment/Composite Analyses will be updated, as necessary. Post-closure monitoring of U3bh will be designed.

Project Status in FY 2006. The project status for the LLW project in FY 2006 is ongoing based on the need for continued radioactive waste disposal capabilities at the NTS. Ongoing volumes of waste generated during the restoration operations to be conducted during the period covered by *Accelerating Cleanup* are anticipated to be disposed of at the NTS. The LLW project will remain open as long as approved generators are shipping waste; for now, acceptance of LLW is assumed to FY 2070. Future activities may include acceptance, treatment, and disposal of LLW from commercial, DOE, and DOD classified

LLW. Site Monitoring will continue to ensure the performance objectives of the site are continued to be met. A PA maintenance program will provide for outyear updates and verification of the site data.

NOTE: Metrics provided reflect current forecasts of LLW being received for disposal from external sources (i.e., generators throughout the DOE Complex).

Post 2006 Project Scope. NTS LLW disposal capabilities are anticipated to be needed through 2070 to support the remaining DOE operations and other related radioactive waste generating activities. Volume estimates from currently-approved generators indicate waste shipments up to the year 2070. Performance assessments will be updated as long as waste disposal continues.

Project End State. As disposal units are filled, closure will be conducted. Long-term surveillance and monitoring is planned for 2071 through 2100. All legacy LLW and disposal-related activities will have been completed.

Mixed Low-Level Waste

1998 Planned Accomplishments. Meet deadlines as designated in FFCAct Consent Order and the Mutual Consent Agreement treatment and disposal plans.

1999 Planned Accomplishments. Meet deadlines as designated in FFCAct Consent Order and milestones designated in the Mutual Consent Agreement treatment and disposal plans. Dispose of all legacy MLLW.

2000 Planned Accomplishments. MLLW activities continue to accept ER-generated waste.

Project Status in FY 2006. MLLW disposal continues for ER activities.

Post 2006 Project Scope. The MLLW project will continue through 2007 to accept ER waste.

Project End State. The Area 5 Radioactive Waste Management Site may remain open for disposal of on site generated MLLW or NTS-related MLLW under the responsibility of DOE/NV beyond 2006. All legacy MLLW will be dispositioned by the end of FY 1999. The Site Treatment Plan/Consent Order project end date is Fourth Quarter FY99 which means that there will be complete disposition of all MLLW covered under the Site Treatment Plan. The Mutual Consent Agreement, which requires a maintenance program, may transfer to the WM Program Management project if necessary at the end of FY 2007.

The long term surveillance and monitoring liability will be covered under the LLW project.

3.2 Technology Development

Science and technology development and deployment at the Nevada Test Site is facilitated by the Site Technology Coordinating Group (STCG). The STCG includes representatives from DOE/NV Environmental Restoration, Waste Management, and Energy Technologies Divisions, DOE/NV contractors, academia, research institutions, regulatory agencies and stakeholders. Quarterly public meetings are held to present technology development updates to regulators and stakeholder, and to receive comments. The regulators and stakeholders also participate in the prioritizing of technology needs, based on the technology needs summaries and presentations.

The STCG identifies and recommends technological solutions to address site needs.

Actual deployment of the technologies is conducted by the ER and WM programs. Specific activities of the STCG include:

- Identifying technology needs based on discussions with ER and WM project managers
- Preparing technology needs summaries containing performance requirements, target deployment dates, etc. for review by DOE Office of Science and Technology Focus Areas and others.
- Communicating with other DOE sites, the Focus Areas and others to identify possible solutions. One example is DOE/NV participation in the DOE Ohio Field Office Integrated Technology Research and Development program co-funded by DOE and US EPA.
- Proposing technology research and/or development projects for DOE HQ funding for needs for which solutions don't exist. Examples include proposals to the EM-50 Accelerated Technology Deployment program.

Other science and technology support to site activities is provided by the Remote Sensing Laboratory and the Special Technologies Laboratory. The Remote Sensing Laboratory develops, evaluates and uses sensing technology for environmental restoration and waste management activities. The Special Technologies Laboratory develops measuring and sensing instruments, including the Laser-induced Fluorescence Imaging system, which can be used to detect surface

contamination, and Associated Particle Imaging system, which can be used to detect contamination inside pipes and vessels.

Science and technology development has in the past, and will in the future, support NTS ER and WM programs. Examples of past technology deployments include: Cotter Concentrate recycling to recover valuable radionuclides; use of “burrito” wrapping instead of super sacks for contaminated soil transportation; and use of the Kiwi system to efficiently characterize soil surface contamination over large project areas.

Ongoing and potential technology implementation to enhance site activities include the following:

- Proposed deployment of the Segmented Gate System for soil volume reduction at soil remediation sites.
- TRU waste characterization technology demonstrations at the NTS Waste Examination Facility.
- Use of technologies for rapidly characterizing contamination during the D&D of facilities.

DOE/NV is also the lead site for the Characterization, Monitoring and Sensor Technology (CMST) crosscutting program in the Office of Science and Technology. THE CMST program supports research, development and deployment of sensing and monitoring technologies at the national level.

The management and transportation and coordination of related activities is also under the peer view of the science and technology division.

3.3 Path to Completion

The Critical Closure Path is a streamlined schedule of high level activities, events, and/or decisions that warrant DOE management attention. The events listed must occur on schedule to achieve the DOE/NV EM project closure dates. For the NTS, a Defense Programs site, there is no “site closure” as there will be for many of the EM landlord sites throughout the Complex. DOE/NV EM's critical path highlights project-specific, rather than site-specific schedules.

The three key decisions which will impact EM programs at NV are: 1) the DOE/HQ WM Programmatic Environmental Impact Statement Record of Decision, 2) the completed NTS Resource Management Plan, and 3) an agreement with the state of Nevada on cleanup levels.

The high level completion activities for EM projects are listed by category (i.e., Off-sites, WM, UGTA) and chronology (Figure 3-1). Detailed discussions are found in “Planned Accomplishments” earlier in this section. Milestones and graphics can also be found in the Project Baseline Summaries.

EM Integration. DOE/NV EM is actively participating in the EM Integration Core Team to evaluate cross-cutting and intersite opportunities for achieving program efficiencies. Interactive communication with other operations/field offices and headquarters will continue as recommendations made in the Complex-wide report are considered.

Consistent intersite data regarding estimated waste volumes and projected destinations is another goal of the integration effort. DOE/NV is evaluating and refining the environmental restoration and waste management data shown in the EM Integration disposition maps. DOE/NV EM Disposition Maps are being developed to define and illustrate treatment, storage and/or disposal of waste streams for ER, LLW (based on generator projections), MLLW, and TRU/MTRU projects (Figure 3-2).

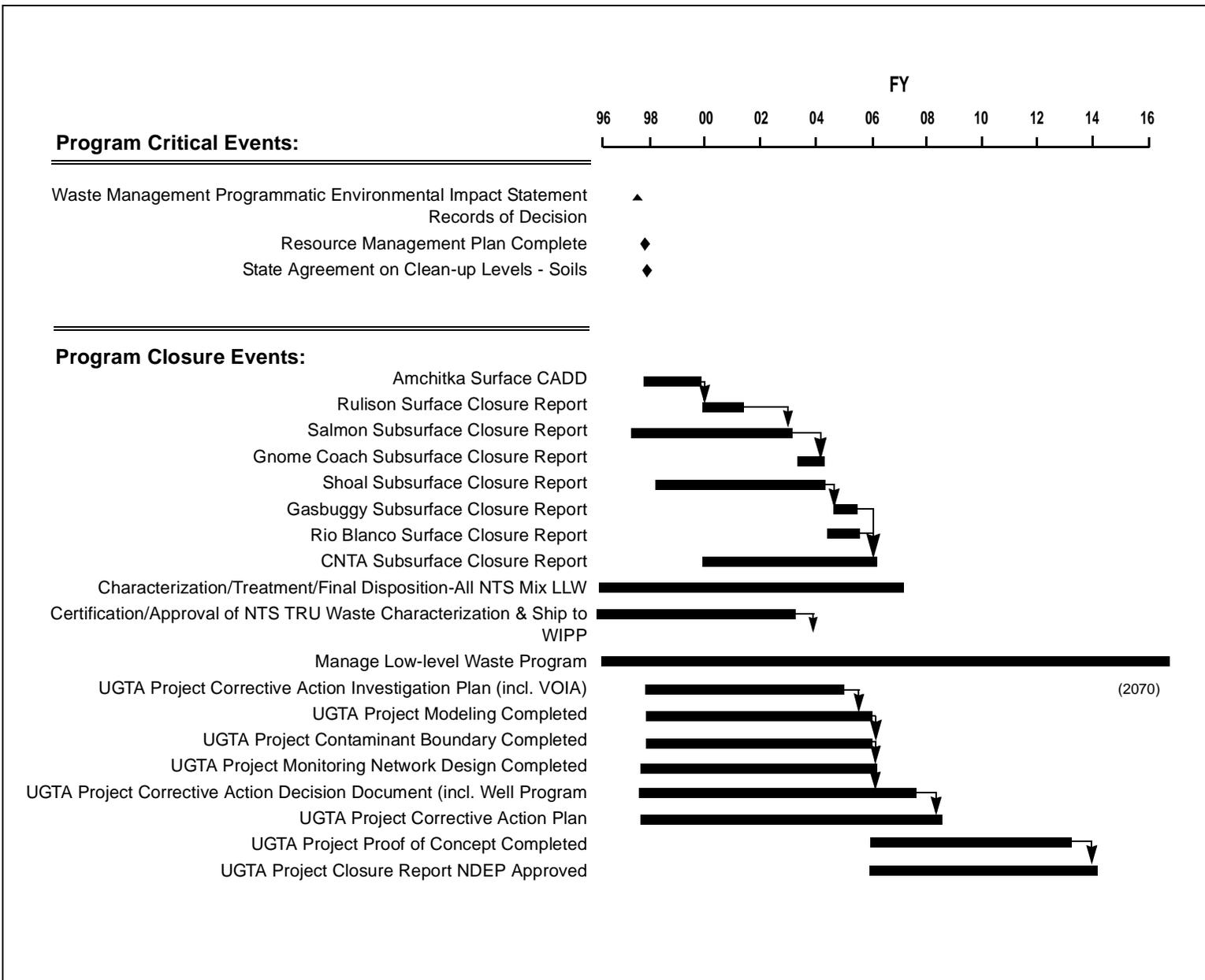
3.4 Mortgage Reduction Opportunities

Mortgage is described for purposes of this document as contamination including hazardous and radioactive wastes and materials, excess buildings and facilities, soils, surface water, groundwater, and the associated infrastructure. Disposal of waste at the NTS provides a net mortgage reduction and liability reduction for the DOE complex. However, the liability and cost for activities such as long-term surveillance, monitoring, and maintenance at the NTS are increased. Environmental restoration projects will result in some mortgage reduction in the areas of soil remediation, and D&D activities. The removal of currently stored TRU/MTRU will also provide reduced long-term mortgage.

3.5 Contracting Approach

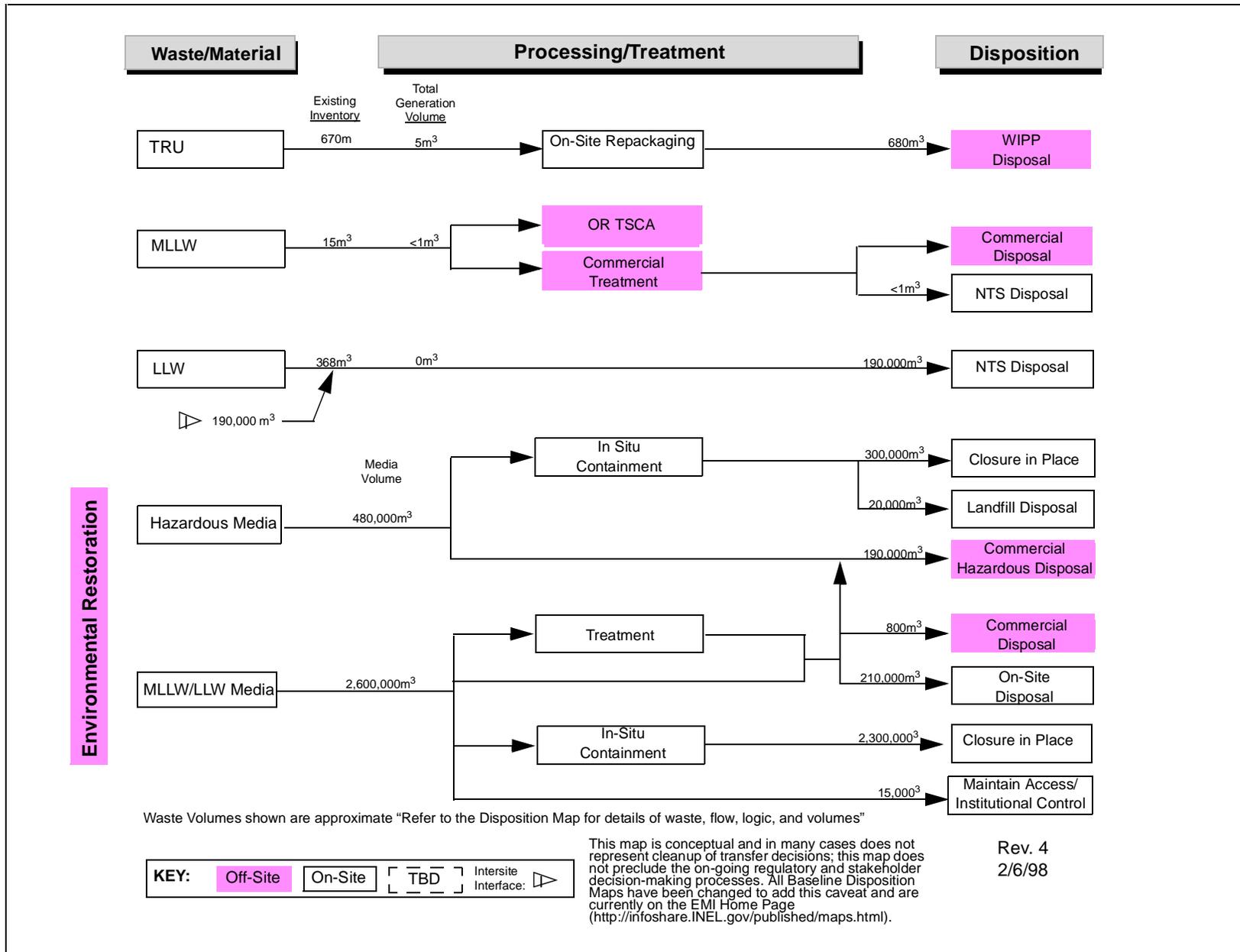
At DOE/NV, many steps have already been taken to accomplish the goal of a more cost-effective contracting strategy. In 1995, DOE/NV consolidated the scope of three contractors into one M&O contract, which was competed as a performance-based contract. In January 1996, a considerable workforce reduction for the site as a whole. Occurred as a result of this new contract. A reduction in costs because of consolidated support in the areas of finance, human resources, etc. also occurred. Additionally, an environmental services contract supporting ER characterization activities was recompeted in 1996 as an Architectural &

Figure 3-1
Critical Closure Path



Nevada Field Office Treatment Disposition Summary Map
 Figure 3-2

Environmental Restoration



Engineering (A&E) performance-based contract. Recompetition of that contract has also resulted in lower support costs. An information management contract was also recompeted in 1996 and resulted in award of the contract to a new contractor. A security protection force contract is currently being recompeted to replace an existing M&O contract for security services.

The M&O and A&E contracts, which are the major contracts affecting EM Program work, have performance measures that are tied to completion of significant programmatic milestones, in a safe manner, in accordance with regulatory requirements, and scope, cost, and schedule parameters. The incentive fee is shared with employees, encouraging motivation at all staff levels to promote cost effectiveness, cooperation, work completion, and quality. In addition, key contract reform items, such as necessary and sufficient requirements and use of commercial practices, are achieved to eliminate redundant or outdated restrictions and increase cost efficiencies.

Subcontractor work scope for the M&O and A&E contracts is subject to the make-or-buy process to determine whether the most efficient and cost-effective skills, resources and/or materials are available in-house, or if outsourcing or subcontracting is a better alternative. If a subcontractor is selected, the scope is well-defined with clear requirements and/or deliverables established. Specifications are drawn up using nonspecific language to maximize competition, and contain only specific requirements to the extent needed to satisfy the customer or as authorized by law. Specifications are stated in terms of function so that a variety of products and services may qualify, or in terms of performance, with a range of acceptable characteristics or minimum acceptable standards.

Subcontracts over \$2,500 are competed unless there is a valid justification for sole source in accordance with FAR 6.302. Subcontracts are usually categorized as Fixed Price, Basic Order Agreements, Task Order Agreements, or Time and Materials/Labor Hours. All have a fixed-cost ceiling, requirements for safety and health, well-developed performance criteria, and specific quality standards. Special consideration is made to utilize small and/or disadvantaged businesses to promote diversity in the workforce as well as the work style.

Other contracting initiatives included within these contracts involve increasing communication to users through in-house training; prequalifying suppliers to reduce buying lead time; using electronic commerce; using basic ordering agreements to reduce administrative costs; simplifying terms and agreements per FAR 12.603; holding pre-performance and post-performance

conferences with users and suppliers; and maximizing the use of firm, fixed-price awards as prudent.

Contracting Officer Relationships. The DOE/NV Manager is also the Head of Contracting Activity and has ultimate responsibility and authority for contract administration at DOE facilities assigned to NV. The Manager has selected the Assistant Manager for Business and Financial Services to function as the Contracting Officer. The Contracting Officer serves as the government procurement agent, the focal point for all contract matters, and is the only individual authorized to accept nonconforming work, waive any requirement of the contract, and/or modify any term or condition of the contract.

The Contracting Officer in the Contracts Management Division (including the Division Director) may be designated to perform work that represents the Contracting Official and also provide administrative support of contracts and expertise in procurement regulations, contracting methods, negotiations, contract provisions, accounting, financial, and other business management matters. The Contracting Officer may also assign, in writing, certain responsibility and authority regarding a contract to Designated Officials or Contracting Officer Representatives. The designated DOE personnel act as authorized representatives of the Contracting Officer for such purposes as technical monitoring, inspections, and other functions of a more technical or programmatic nature. Authority of a Designated Official is limited by the Contracting Officer to those actions not involving a change in contract scope, cost, terms, or conditions. The designation is person-specific and cannot be authorized to others. The contractor is provided copies of such designations and is expected to comply with the written direction provided by the Designated Officials acting within his/her authority.

Some Designated Officials are in DOE line-management positions. As Designated Officials, line managers are supported by program staff and technical support staff, including project managers, facility representatives, engineers, scientists, industrial hygienists, industrial safety specialists, quality assurance, and other technical experts. The activities performed by Designated Officials and their line management staff and support personnel ensure expected contractual-level performance on behalf of DOE. The Federal staff monitors, inspects, and assesses performance, and ensures that the contractor is meeting the scope of the contract, including mandatory environment, safety, and health requirements. The DOE personnel are also responsible for evaluating contractor performance and providing input for fee determination and

recommendations to the Contracting Officer and the Fee Determination Official (Manager, DOE/NV).

The EM Contracting Data Table included in the ODS submittal is also included as information for the above discussion ([Table 3-1](#)).

**Table 3-1
DOE/NV Environmental Management Contracting Data**

Project Expenditures as Percentage of Operations/Field Office Overall Budget					
Contract Type	1997	1998	1999	2000	2001
Firm Fixed Price	15%	14%	14%	14%	14%
Fixed Price Award Fee					
Fixed Price Incentive					
Fixed Price, Level-of-Effort					
Cost Plus Award Fee	4%	5%	4%	5%	5%
Cost Plus Incentive Fee	53%	50%	52%	49%	50%
Cost Plus Fixed Fee					
Basic/Task Ordering Agreement					
Time and Materials/Labor Hours	28%	31%	30%	32%	31%
Indefinite Delivery					
Other					
Total	100%	100%	100%	100%	100%

Source: Operations/Field Office Data Summary, Section O.6, Environmental Management Contracting

4.0 Scope, Cost, and Schedule

4.1 General Scope

DOE/HQ has initiated a new management foundation which will restructure and streamline formerly independent pieces of the DOE EM program into a single, cohesive system. The focus is to bring more resources to bear on remediation of as much of the Complex as possible by the end of 2006. To more effectively support accomplishing this goal, all activities in the DOE/NV EM program have been organized into projects.

The DOE/NV EM program is comprised of ten projects; each project has defined scopes, costs, schedules, accomplishments, and end points. The EM project plans described in this document cover required characterization and remediation of contaminated sites and facilities, and the associated waste operations and disposal of waste generated by DOE nuclear activities. These projects will be conducted in compliance with all applicable environmental laws and regulations.

The six ER projects (Program Integration, Agreements In Principle and Grants, Soils, UGTA, Industrial Sites, and Off-sites) are designed to address the DOE legacy of contamination resulting from its weapons testing activities. Contaminated surface sites outside the NTS boundaries will be characterized and remediated and the surface restored for unrestricted use. Institutional control of the subsurfaces will be retained, and the groundwater will be monitored to ensure there is no risk to the public. It is assumed that acquisition of additional subsurface rights will be required to ensure protection against inadvertent penetration of the subsurface by entities outside the DOE. Because groundwater contaminants at some sites may have migrated beyond the boundary of areas owned or previously administered by DOE, and because of the nature and extent of contamination in the subsurface, long-term subsurface monitoring and surveillance of the sites is planned for up to 100 years. Within the boundaries of the NTS, site characterization will be performed and remediation completed by the end of FY 2006. Because of the nature and extent of contamination of the groundwater at the NTS, characterization and remediation of the subsurface areas will continue through FY 2014. The modeling of the individual CAUs will be substantially completed by FY 2006. Activities beyond 2006 are primarily focused on the design and installation of the monitoring networks for each unit and five-year proof of concept to verify results of the modeling efforts.

The four WM projects (Program Management, LLW, MLLW, and TRU/MTRU) are designed to safely dispose of the waste generated by DOE activities throughout the complex. TRU and MTRU legacy waste from Lawrence Livermore National Laboratories, stored since 1987 at the NTS will be characterized and shipped to WIPP in New Mexico. MLLW generated on site will be treated and disposed, as appropriate, either on-site or off-site. LLW received from approved generators currently identified in the NTS EIS ROD will be disposed at the Radioactive Waste Management Sites (RWMSs) in Areas 3 and 5 on the NTS. Receipt of LLW from other DOE generators across the complex cannot be considered until the Secretary makes programmatic disposal decisions within the context of the WMPEIS (Records of Decision for LLW and MLLW expected to be completed in FY99). Results of performance assessments (PAs) show that the combination of exceptionally low population density, arid desert environment, and thick unsaturated zones make the NTS an ideal candidate for disposal of low-level radioactive waste.

The Program Direction PBS, for planning federal salaries, training, travel, and support services, was included in the Discussion Draft, but has been transitioned to DOE/HQ for development and is not submitted with this Draft document.

4.2 Life Cycle Costs Profile

Annualized cost table is at [Table 4-1](#).

4.3 Completion Profile

Completion Profile is at [Figure 4-1](#).

Baseline Methodology. Baseline costs within the DOE/NV environmental restoration program are derived from bottoms-up, activity-based work packages comprised of templates. Templates were developed based on preliminary site assessments, historical information, professional judgements, bids from external vendors and commercially available data. Projected costs are non-escalated, current-year dollars, based on existing infrastructure. Escalation is applied externally to the cost-estimating process. This baseline document also reflects a high degree of stakeholder and regulator input in terms of project prioritization and completion in conjunction with *Paths to Closure* goals.

The DOE/NV waste management baseline is also based on bottoms-up, activity based estimates of discrete work elements. Cost data input is derived from historical facility and operations

**Table 4-1
Annualized Costs per Project**

Project	Annual Costs (FY) (\$000)										
	97	98	99	00	01	02	03	04	05	06	2007 to End
Soils	7,240	1,850	6,103	5,696	5,785	10,849	27,778	30,474	36,277	47,637	22,413
UGTA	15,142	20,914	38,541	38,753	37,630	28,992	22,401	17,651	15,147	9,280	247,561
Industrial Sites	8,912	10,638	13,557	12,281	16,536	22,261	23,477	27,729	26,352	23,829	132,670
Off-Sites	9,947	8,969	7,163	8,634	6,186	4,035	7,935	5,737	4,342	1,737	24,946
TRU/Mixed TRU	2,968	2,690	5,792	6,483	5,785	4,223	3,154	--	--	--	--
Mixed LLW	738	719	402	388	388	388	388	388	388	388	388
LLW	5,037	5,945	6,011	5,864	6,128	8,106	8,960	12,132	12,117	12,034	589,612
Program Mgt.	4,571	4,822	2,795	2,265	2,699	2,283	2,498	2,480	2,495	2,578	187,998
Program Integration	9,183	7,568	7,268	7,268	6,495	6,495	6,245	6,245	6,060	6,060	106,615
AIPs/Grants	1,902	2,213	2,368	2,368	2,368	2,368	2,164	2,164	1,822	1,457	3,721
TOTAL	65,640	66,328	90,000	90,000	90,000	90,000	105,000	105,000	105,000	105,000	1,315,923

Source: Project Baseline Summaries, Section A.2.15

Costs: Estimates in 1998 dollars

Do not reflect national programs

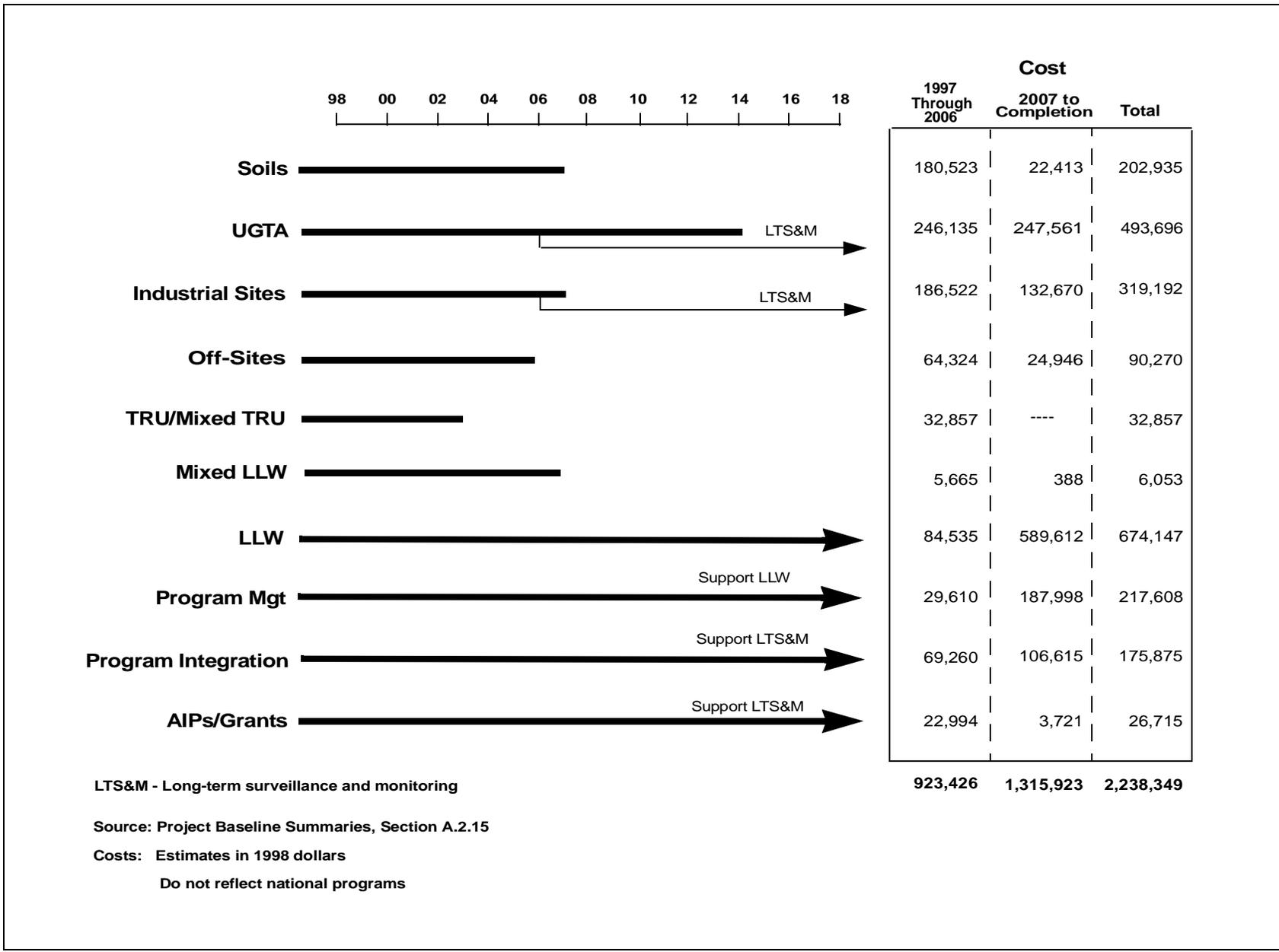


Figure 4-1
Completion Profile

data, bottoms-up estimates, commercially available databases, engineering and professional judgment, and bids from external vendors. Projected costs are non-escalated and based on current year dollars, with escalation being applied external to the cost estimating process.

Contingency is identified in the cost estimates where appropriate, and is applied in a manner which is consistent with the DOE/NV Cost Estimating Guide. Engineering studies, continuous process improvement efforts, value engineering studies, and alternative analysis are all used to identify areas where improvements and operational efficiencies can be implemented.

A team of independent evaluators determined that work scopes, schedules, and cost estimates for the DOE/NV EM Program were well-defined, credible, and customarily supported by reliable and traceable data. Work is scope-based and subject to fiscal, regulatory, and land-use decisions which could impact the project completion date. These future decisions are well beyond the influence of the parties responsible for project execution.

The EM program at DOE/NV uses a formal baseline change control methodology which incorporates a system for description, evaluation, approval and implementation of necessary changes; requires sufficient documentation to provide a valid link from the original planning baseline; timely submittal and review; consistent definition for changes especially as related to efficiencies or enhanced performance; appropriate approval authority; and evaluation of implications of change on other projects or programs. DOE/NV has implemented a series of hierarchical procedural documents for change control. These procedures provide uniform requirements to change baseline elements of scope, budget and/or schedule for DOE/NV, contractors, national laboratories, and other customers. Any changes to the PBS structure would be subject to the Headquarters change management process.

4.4 Enhanced Performance Strategy

For *Accelerating Cleanup* to be successful, the DOE Office of Environmental Management should focus on mission completion, reduction of costs, and elimination of its environmental liabilities. The preferred strategy for implementing the National and DOE/NV Draft plans is an approach based on improving productivity through enhanced performance. In order to meet the overall goal of completing as many applicable EM activities as possible by the year 2006, the DOE/NV goal of site completion is based on receiving funding allocations as currently

submitted. This strategy incorporates the DOE/NV priority of compliance with applicable environmental laws, remediation agreements, settlement decisions, and DNFSB recommendations.

Efficiency targets are a critical component to this effort. DOE/NV efficiency targets are based on a shift in resources from support activities to direct work and continuous improvement in direct work. DOE/NV will focus on increasing its efficiency in several areas:

- Continue to maintain support costs below 30 percent;
- Achieve annual productivity improvements of 3.5 percent for projects; and
- Achieve annual productivity improvements of 6 percent for operations.

A key factor in determining the extent of restoration activities is completion of the NTS Resource Management Plan, which will clarify the proposed land uses for the NTS and allow development of appropriate remediation levels compatible with the proposed land use. Establishing remedial action levels will allow DOE/NV to determine more accurately the number of sites requiring remediation and the extent of remediation required. Development of the Resource Management Plan has been initiated and the DOE/NV EM program has committed personnel, funding, and technical expertise to the effort. As results of this effort become available in the future, the DOE/NV strategy will be adjusted to reflect the possible efficiencies resulting from future land use determinations.

Negotiation of the FFACO was completed in March 1996, and implementation of the agreement is underway. Based on agreements in the FFACO, DOE/NV cannot arbitrarily change the approach for restoration activities unless renegotiated with the State. As work proceeds under the agreement, DOE/NV will actively work with the regulator to demonstrate areas where potential efficiencies in approach can result in an increased number of closures while remaining in compliance with regulatory requirements. One potential development is the state's offer to consider risk-based closures in certain cases, which potentially could result in accelerating decisions on closures of some sites.

Another activity that will increase efficiencies is the investigation of other DOE and DOD sites with similar activities to seek innovative approaches and benchmark against. New approaches and technologies will also be pursued to more

effectively characterize sites, excavate contaminated soils, reduce potential volumes of contaminated soils, enhance deep well sampling, and provide real-time radiation monitoring in boreholes.

4.5 Enhancements/Efficiencies Already Achieved at DOE/NV

Performance enhancements have already been achieved in the Soils Project through a cost avoidance in the packaging, transport, and disposal of contaminated soil. A 45 percent cost reduction per cubic meter was realized when “burrito wraps” were substituted for “super sacks” for soil packaging and a dedicated crater was used for disposal. At Offsites, the “direct push” versus auger method for hole drilling reduced costs and saved time. A competitive bidding process led to a contract that saved 30 percent (to date) in well-drilling costs for the UGTA Project, with projected ongoing savings between 20-30 percent.

As stated in the Contracting Strategy, the M&O contractor consolidation in January 1996 (from three contractors to one) has reduced support costs.

In the MLLW Project in 1997, the Cotter Concentrates were redesignated from waste status to a feedstock material and shipped to a uranium processing facility known as International Uranium Corporation located in southeast Utah. The benefit to DOE/NV was a cost avoidance of approximately \$3M due to this reprocessing rather than having to perform treatment and disposal. In addition, the material was recycled and used as resource instead of being discarded as a waste.

In the TRU/MTRU Project, the Waste Examination Facility utilized an existing building fabricated in 1966 and relocated to its present location in 1997, thus avoiding the cost of purchasing and constructing a new facility.

Consistent with the national *Accelerating Cleanup Document*, DOE/NV invites stakeholder comments on the enhanced performance strategy contained in this document. DOE/NV is also interested in stakeholder views on options described in the national document as these may apply to the site.

5.0 Regulatory Compliance

DOE is committed to the goal of compliance with environmental laws, regulations, agreements, standards, nuclear safety rules, and other applicable requirements. Site Plans also reflect this philosophy as a standard for doing business. Nevertheless, compliance will be a continuing challenge in meeting the 2006 vision. Each project PBS identifies regulatory drivers specific to its activities. Also, the PBSs identify the enforceable agreement milestones and associated budget dollars tied to compliance drivers.

As implementation of the strategy proceeds, DOE/NV remains committed to maintaining full compliance with environmental laws and other requirements, including all activities required by applicable federal, state, and local statutes and regulations as well as activities required under the terms of permits, administrative orders, or judicial decrees, and enforceable milestones or schedules contained in agreements negotiated between DOE/NV and regulators. Additionally, DOE/NV intends to meet commitments to the DNFSB.

6.0 Stakeholder Involvement Plan

6.1 Overview

Accelerating Cleanup: Paths to Closure, formerly known as the Ten-Year Plan, guides the Environmental Management (EM) program of the U.S. Department of Energy (DOE) in a comprehensive approach for planning, budgeting, and management strategy. This document will focus on the overall vision and strategy for accelerating Environmental Management activities at all DOE sites.

6.2 Public Involvement Expectation

The DOE Nevada Operations Office (DOE/NV) is committed to inform stakeholders and seek their involvement throughout the development of the subsequent final national document. Frequent and candid discussions with stakeholders are important in developing a document that is not only implementable, but acceptable to local stakeholders. This Stakeholder Involvement Plan outlines how DOE/NV will continue to include stakeholders through its development. The plan will provide specific details on how and when stakeholders will be involved. Because of the dynamic nature in the development of *Paths to Closure*, stakeholder activities have the potential to change, based on public input and future direction. Additional public involvement activities, such as scheduling guest speakers, exhibits, and Community Advisory Board activities, can be found in the DOE/NV Public Involvement Plan for Environmental Management which is available in the DOE Public Reading Room. The Public Reading Room is located at 2621 Losee Road, North Las Vegas, Nevada 89030.

6.3 Public Involvement Mechanism

Stakeholders will continue to be involved with development of the final strategy through interactive workshops that address topics such as planning assumptions, budget and schedule concerns, cleanup levels, etc. Updates will be provided to the Community Advisory Board for Nevada Test Site Programs at its monthly meetings. The Community Advisory Board's budget subcommittee, which is open to the public, will continue to be briefed on budgeting issues. News releases and articles will be prepared to provide the public with information and changes affecting the development of the document as necessary.

6.4 Key Stakeholders

Key stakeholders were identified during the initial stages of informing the public of DOE's intent to develop *Paths to Closure*. Local Tribal Governments have been informed providing them with the opportunity for input through the established channels of communication. A mailing list of those interested has been developed and continues to be updated. To add your name to the mailing list or for more information on DOE/NV stakeholder involvement activities, please contact Kevin J. Rohrer, DOE Nevada Operations Office, Environmental Management, P.O. Box 98518, Las Vegas, Nevada 89193, (702) 295-0197 or e-mail to rohrer@nv.doe.gov.

6.5 Public Comment Period

The 2006 vision clearly recognizes EM's need to work with stakeholders and Tribal Nations in developing this strategy. The Department encourages Tribal Nations and stakeholders to continue to actively participate in the planning process. DOE is committed to ensuring that the viewpoints of concerned citizens and groups are fully and accurately represented. In support of this objective, DOE Operations/Field Offices have engaged stakeholders and Tribal Nations in the planning process, including the development of Project Baseline Summaries (PBSs), integrated priority lists (IPLs), and site strategies.

A 60-day public comment period was held following the release of the Draft national and site documents, ending on April 28, 1998. Throughout the comment period, site personnel held public meetings, interactive workshops, and/or briefings to help Tribal Nations and stakeholders examine the Draft documents and to elicit comments from the public. National and site documents are scheduled to be released to Congress and the public in early summer 1998. The comment process is designed to give Tribal Nations and stakeholders the opportunity to participate in the planning process and the means to affect EM's long-term priorities and objectives.

Comments focusing on issues related to the national strategy or comments concerning cross-site or policy issues should be submitted directly to EM Headquarters at the following address:

U.S. Department of Energy
Mr. Gene Schmitt
P.O. Box 44820
Washington, DC 20026-4820
FocusOn2006@em.doe.gov

Comments on individual site strategies should be provided directly to Kevin Rohrer at:

Nevada Operations Office
Mr. Kevin Rohrer
232 Energy Way
North Las Vegas, NV 89030-4134
702/295-0197

Note: Comments have been received as of the end of the comment period and are contained in [Section 7.0](#)

Requests for additional copies of the national document should be directed to the Center for Environmental Management Information (CEMI) at 1-800-736-3282. EM will make available on the World Wide Web (<http://www.em.doe.gov>) all eleven Draft site documents and the Draft national document, as well as the supporting data (e.g., Project Baseline Summaries, waste/material disposition maps).

6.6 Stakeholder Involvement History

1996 Activities

- June 17 - 28** Called key stakeholders - informed of Ten-Year Plan - distributed guidance
- June 26** National Stakeholder Video Conference
- July 3** Briefed Community Advisory Board (CAB) regarding publicized CAB Agenda featuring Ten-Year Plan
- July 3** Distributed invitational letter to Stakeholder Workshop participants (including latest version of guidance)
- July 18** First Ten-Year Plan Stakeholder Workshop
- July** Published DOE/NV *EM Update* article on Ten-Year Plan
- July 19** Issued press release
- August 7** Distributed Nevada Draft Ten-Year Plan/Invited stakeholders to August 21 Stakeholder Workshop participants
- August 7** Briefed/updated CAB on Draft Ten-Year Plan for DOE/Nevada submittal
- August 21** Second Ten-Year Plan Stakeholder Workshop
- August 23** Al Alm visited with key stakeholders in Nevada

- September 4** Briefed/updated CAB on Ten-Year Plan Status
- September 9** Distributed invitational letter to September 17 Stakeholder Workshop
 - Sept. 17** Third Ten-Year Plan Stakeholder Workshop
 - Sept. 25** Fourth revision of Ten-Year Plan to DOE Headquarters-Draft made available to stakeholders
- October 1** Distributed invitational letter to October 23 Stakeholder Workshop
- October 2** Briefed/updated CAB on Ten-Year Plan Status
- October 21** Briefed CAB Budget Subcommittee on Ten-Year Plan Project Baseline Summary (PBS) Guidance
- October 23** Fourth Ten-Year Plan Stakeholder Workshop
- November 6** Briefed/updated CAB on Ten-Year Plan status
- November 25** Briefed CAB Budget Committee on details of Project Baseline Summary (PBS) elements
- December 4** Briefed/updated CAB on Ten-Year Plan Status
- December 11-12** National Governors Association Meeting
- December 16** Updated CAB Budget Subcommittee on Ten-Year Plan (status of new guidance and Corps of Engineer findings)
- December 30** Distributed/updated guidance and initial Action Plans to stakeholder list; distributed invitation to January Stakeholder Workshop

1997 Activities

- January 29** **Fifth Stakeholder Workshop** (Focus on Planning Assumptions, Issues, and Action Plans)
- February 5** CAB Meeting; Ten-Year Plan Update
- February 28** NV Ten-Year Plan submittal to DOE Headquarters (HQ); HQ directed Operations Offices to embargo information pending Secretary's approval
 - March 5** CAB Meeting - Ten-Year Plan Update
- March 25-26** DOE/HQ Corporate Forum
 - March 27** CAB Environmental Management (EM) Subcommittee meeting to discuss Ten-Year Plan Action Plan issue statements

- April 2** CAB Meeting; Ten-Year Plan Update
- April 4** CAB EM Subcommittee meeting to discuss Action Plan stakeholder involvement for issue resolution
- April 9** DOE/NV **FY 99 Budget Priority Workshop** (input to FY 99 info on Project Baseline Summary)
- May 2** CAB Meeting; Ten-Year Plan Update
- May 21** SSAB National TeleVideo Conference; Update on Status of Ten-Year Plan
- June 4** CAB Meeting; Discussion Draft Update
- June 12** Release Accelerating Cleanup: Focus on 2006 Discussion Draft, and Executive Summary of Nevada Discussion Draft; Start of 90 Day Comment Period
- June 13** Mail Discussion Draft and Nevada Executive Summary to Stakeholders: Complete Nevada Discussion Draft Available on Request
- July 1** CAB Budget Subcommittee to Discuss FY 99 Budget as Presented in Project Baseline Summaries (PBS), Public Invited
- July 2** CAB Meeting; Discussion Draft Update
- July 23** National Conference Call to Answer Stakeholder Questions on Discussion Draft and FY 99 Budget Information, downlink in Nevada.
- July** CAB EM Subcommittee Meeting to Discuss 2006 Plan
- August 6** CAB Meeting; Discussion Draft Update
- August 6** Invitation to August 6 Workshop Distributed
- August 20** **Sixth 2006 Plan Stakeholder Workshop/Meeting with Al Alm** (Discuss comments during workshop and present issues to Al Alm during the evening session).
- September 9** Comments Period on Discussion Draft Closed
- September 23** Comment disposition letter distributed to stakeholders who submitted formal comments
- December 3** Initial submittal of Draft 2006 Draft Plan available to Stakeholders which includes PBS development and 2006 Plan Narrative

- December 18** Revised Draft 2006 Plan submitted to HQ and distributed to stakeholders (includes stakeholder comments)
- 1.) Database is frozen, allowing the formulation of the National and Site 2006 Plans. Initial submittals will be refined based on dialogue between Headquarters, the field, and stakeholders.
 - 2.) Stakeholders should begin to focus on the formulation of the Sites' FY 2000 Integrated Priority Listings which are due to Headquarters in March, 1998.

1998 Activities

- January 7** Community Advisory Board (CAB) meeting; provided update on Draft 2006 Plan
- March 4** Community Advisory Board (CAB) meeting; provided update on Draft 2006 Plan
- March** Distributed *Accelerating Cleanup: Paths to Closure Draft (February 1998)* to stakeholders
- March 27** Conducted Environmental Management Prioritization Workshop during which stakeholders were provided with an opportunity to reach consensus in the prioritization of key Nevada activities.

7.0 Disposition of Stakeholder Comments

Stakeholder comments and responses will be provided at a later date.

8.0 Glossary

Area 3 RWMS	Radioactive Waste Management Site used for disposal of low-level waste in bulk or packaged form, utilizing subsidence craters formed from past underground nuclear tests as disposal cells.
Area 5 RWMS	Radioactive Waste Management Site consisting of excavated shallow land pits and trenches used for low-level radioactive waste, classified waste, and low-level radioactive mixed waste disposal, transuranic waste storage, and hazardous waste accumulation for off-site disposal.
As Low As Reasonably Achievable (ALARA)	An approach to radiation protection designed to manage and control individual and collective radiation doses to the work force and the general public and to ensure that exposure is kept to the lowest level reasonably achievable. The ALARA approach considers aspects of the social, technical, economic, practical, and public impacts.
Composite Analysis (CA)	Study conducted for radionuclides from all sources interacting with a disposal site, regardless of the date of disposal. (Both Performance Assessments and CAs assess risk by comparing dose to persons with established performance objectives; both studies are conducted so that all wastes are included in the analysis.) A CA is conducted with relatively simple screening models and is considered to be primarily a management tool.
Classified waste	Weapons components and assemblies designated by the U.S. Government (pursuant to Executive Order, statute, or regulation) that require protection against unauthorized information or material disclosure for reasons of national security. Additional security and safeguards management activities are required in the handling of these materials.
Curie (Ci)	A unit of radiation that describes the number of atoms undergoing nuclear transformations per unit time (i.e., 3.7×10^{10} disintegrations per second).
Deactivation	Removing from use.
Decontamination and Decommissioning (D&D)	The actions taken to reduce or remove substances that pose a substantial present or potential hazard to human health or the environment, such as radioactive contamination from facilities, soil, or equipment by washing, chemical action, mechanical cleaning, or other techniques, and then removing such from operation.

Environmental Impact Statement (EIS)	A detailed written statement that helps the Agency make decisions that are based on understanding of environmental consequences and to take actions that protect, restore, and enhance the environment.
Fiscal year (FY)	A 12-month period of time to which the annual budget applies and at the end of which its financial position and the result of its operations are determined. (Clark County, the city of Las Vegas, the city of North Las Vegas, Nye County, the towns of Tonopah and Pahrump, and the Clark and Nye Counties School District fiscal years run from July 1 through the following June 30.) Federal fiscal years are from October 1 through the following September 30.
Generator fee	Charges applied to the generating site to cover the cost related to disposal activities performed by the site accepting waste for disposal.
Geologic	Any natural process acting as a dynamic physical force on the earth (i.e., faulting, erosion, and mountain-building resulting in rock formations).
Groundwater	Subsurface water within the zone of saturation.
Hazardous waste	Wastes that are designated as hazardous by the EPA or state of Nevada regulations. Hazardous waste, defined under RCRA, is waste from production or operation activities that poses a potential hazard to human health or the environment when improperly treated, stored, or disposed. Hazardous wastes that appear on special EPA lists possess at least one of the four following characteristics: (1) ignitability, (2) corrosivity, (3) reactivity, and (4) toxicity.
Hydrology	A science dealing with the properties, distribution, and circulation of water on and below the earth's surface and in the atmosphere.
Iterative	To say or do repeatedly; involving repetition or revision/update.
Landlord	For the purposes of this document, the Department of Energy Defense Programs is the landlord, essentially the owner of the facilities, on the Nevada Test Site.
Lifecycle	A time period to include the initiation of a project through completion.
Long-term	Extending over a long period of time (more than a few years).

Low-level waste (LLW)	Radioactive waste not classified as high-level waste, transuranic waste, or spent nuclear fuel, or the tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as LLW, provided the concentration of TRU elements is less than 100 microcuries (mCi) per gram.
Mitigation	Actions and decisions that (1) avoid impacts altogether by not taking a certain action or parts of an action; (2) minimize impacts by limiting the degree or magnitude of an action; (3) rectify the impact by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; or (5) compensate for an impact by replacing or providing substitute resources or environments.
Mixed low-level waste (MLLW)	Low-level waste that also includes hazardous components, as identified in Title 40 CFR Part 261, Subparts C and D.
Mixed waste	Waste containing both radioactive and hazardous components, as defined by the Atomic Energy Act of 1954 (as amended) and RCRA, respectively. Mixed waste intended for disposal must meet the Land Disposal Restrictions as listed in Title 40 CFR Part 268. Mixed waste is a generic term for specific types of mixed waste such as mixed low-level waste and mixed TRU waste.
Mixed Transuranic waste (MTRU)	Waste containing both TRU and hazardous components, as identified in Title 40 CFR Part 261, Subparts C and D.
Moratorium	A waiting period set by an authority; a suspension of activity.
National Priority List	A list of sites (federal and state) that contain hazardous materials that may cause an unreasonable risk to the health and safety of individuals, property, or the environment.
Nuclear testing	An underground nuclear weapons test of either a single underground nuclear explosion or two or more underground nuclear explosions conducted at the NTS within an area delineated by a circle having a diameter of 2 kilometers and conducted within a total period of 0.1 second. The yield of a test shall be the aggregate yield of all explosions in the test.
Performance Assessment (PA)	A systematic analysis of the potential risks posed by a waste management system (a disposal site) to the public and to the environment - and a comparison of those risks to established performance objectives. The purpose of the PA is to provide

reasonable assurance of compliance with the performance objectives for a period of time after closure, now 1,000 years. The PA is required in accordance with DOE Order 5820.2A, and covers LLW disposal after September 26, 1988. (Both PAs and CAs assess risk by comparing dose to persons with established performance objectives; both studies are conducted so that all wastes are included in the analysis.) A PA is conducted with complex, relatively realistic models and is considered to be a compliance document.

Perpetuity	Indefinitely; an unlimited period of time.
Pollution Prevention (P2)	The use of materials, processes, and practices that reduce or eliminate the generation and release of pollutants, contaminants, hazardous substances, and waste into land, water, and air. For DOE, this includes recycling activities.
Pollution Prevention Opportunity Assessment (PPOA)	A tool for participants to identify the nature and amount of wastes and energy usage, stimulate the generation of pollution prevention and energy conservation opportunities, and evaluate those opportunities for implementation. The resulting baseline assists in measuring P2 progress and is, therefore, an integral part of a successful P2 program.
Radiation	The emissions, either electromagnetic or particulate, resulting from the transformation of an unstable atom or nucleus.
Radioactive waste	Solid, liquid, or gaseous material that contains radioactive nuclides regulated under the Atomic Energy Act of 1954 (as amended), and of negligible economic value considering costs of recovery.
Radioactive Waste Management Site (RWMS)	Designated location where radioactive waste handling, storage, or disposal operations are conducted under management control.
Record of decision (ROD)	Public document, developed subsequent to an EIS, that explains which of the proposed alternatives, outlined in the EIS, will be selected for implementation.
Remediate	The process, or a phase in the process, of rendering radioactive, hazardous, or mixed waste environmentally safe, whether through processing, entombment, or other methods. Also an alternative definition of “cleanup”.
Stakeholder(s)	Interested and/or affected people or groups.
Storage	The collection and containment of waste or spent nuclear fuel in such a manner as not to constitute disposal of the waste or spent

	nuclear fuel for the purposes of awaiting treatment or disposal capacity.
Transuranic waste	Radioactive waste containing alpha-emitting radionuclides having an atomic number greater than 92 and half-lives greater than 20 years, in concentrations greater than 100 nanocuries (nCi) per gram.
Tritium	A radioactive isotope of the element hydrogen, with two neutrons and one proton in its nucleus; half-life of 12 years.
Waste acceptance criteria (WAC)	The requirements specifying the characteristics of waste and waste packaging acceptable to a waste receiving facility and the documents and processes the generator needs to certify that waste meets applicable requirements.
Waste management	The planning, coordination, and direction of those functions related to generation, handling, treatment, storage, and disposal of waste, as well as associated surveillance and monitoring activities.
Waste management facility	All contiguous land, structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of waste.
Waste Management Programmatic Environmental Impact Statement (WMPEIS)	A document developed by DOE, under the guidelines of the National Environmental Protection Act, which presents the various alternatives for the management and disposition of the Department's radioactive waste.