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LALP-94-21

Site Development Plan

Annual Update 1994

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Los Alamos National Laboratory
Los Alamos, New Mexico 87545

The Los Alamos National Laboratory Site Development Plan-Annual Update (SDP-AU) presents issues affecting Laboratory land and facilities use or development that have arisen during the previous year and are anticipated in coming years.

> *"During the year, three major forces of change converged on the Laboratory. The geopolitical changes associated with the end of the Cold War; the changes brought about by increased public scrutiny of our activities and increased stringency of governmental regulations in matters of environment, safety and health; and the advent of the business or quality revolution."*
>
> *Sig Hecker*
> *2/25/94*
> *Newsbulletin*

This document is prepared by the Planning Group (ENG-2) and is supportive and consistent with the Laboratory's Institutional Plan and Strategic Plan.

Los Alamos National Labortory, an affirmative action/equal opportunity employer, is operated by the University of California under contract W-7405-ENG-36 for the Department of Energy.

CONTENTS

Los Alamos National Laboratory is located in north-central New Mexico, an area that is dominated by the Jemez Mountains to the west and the Sangre de Cristo Mountains to the east. The Laboratory is located on the Pajarito Plateau, a volcanic shelf on the eastern slope of the Jemez Mountains, at an approximate elevation of 7,000 feet (2,200 meters). The Pajarito Plateau is cut by a number of steeply sloped, deeply eroded drainage canyons that have formed isolated, finger-like mesas running west to east.

The Laboratory is situated on approximately 27,500 acres (43 square miles) of Department of Energy (DOE) land. There are 50 designated technical areas with locations and spacing that reflect historical development patterns, topography, and functional relationships. Presently, the Laboratory has an average daily peak work force population of about 12,100 people. Of this population, some 10,600 are housed in offices. The remaining people are not assigned to offices because they are field personnel such as protective force employees or craftspersons employed by the Laboratory's support services subcontractor.

Sixty percent of the Laboratory employees live in the adjacent communities of Los Alamos and White Rock. The remaining employees commute from Santa Fe, the Española Valley, Albuquerque, and other areas.

Although sufficient land appears to be available for future expansion at the Laboratory, most of it would be very difficult to develop given the severe and significant physical constraints; over one-half of the acreage consists of slopes whose grade exceeds 20%. In addition, security and safety buffers are required so that essential Laboratory programs can continue unhindered and without adversely affecting surrounding areas.

LABORATORY OVERVIEW

I. EXISTING MISSION, WORKLOAD, AND SITE POPULATION

A. Mission

The Los Alamos National Laboratory is dedicated to supporting the DOE's goals by applying world-class science and technology to the maintenance of the nation's security and well-being. The Laboratory will continue its special role in defense, particularly in nuclear weapons technology, and will increasingly use its multidisciplinary capabilities to solve important civilian problems.

The Laboratory's intent is to be a world-class institution solving complex problems of national importance where science makes a difference. The pursuit of this vision requires strict adherence to the guiding principles embodied in our social contract, which requires that we

- enhance the long-term welfare of society by producing things of value using science and technology;
- minimize the negative side effects of our operations; and
- treat our employees and members of the public with fairness and justice.

The Laboratory must also adhere to the principles of good business practice, so we must:

- satisfy evolving customer needs and expectations;
- set measurable goals for all our activities;
- improve cost-effectiveness; and
- continuously improve everything we do.

The National Competitiveness and Technology Transfer Act (NCTTA) of 1989 specifically includes technology transfer activities in the mission of the Laboratory. The Laboratory is committed to fulfilling the intent of the NCTTA by an active program of technology transfer. By forging partnerships with U.S. industry, the Laboratory helps maintain the technological leadership of the industrial economy, ensuring its competitive strength and meeting national needs in defense and civilian areas.

The Laboratory strives to extend its knowledge base and the fruits of its research efforts by integrating its special resources and expertise into the scientific community at large. The Laboratory's strengths complement those of the nation's research universities and those of industry. The Laboratory, therefore, best serves the nation by developing programs that typically:

- are large in scale of time, space, size, or complexity;
- require a strong science base;
- require engineering, teamwork, and special facilities;
- benefit from a multidisciplinary approach and continuity of effort; and
- benefit the public.

B. Workload

The Laboratory's multidisciplinary and multiprogrammatic workload includes hundreds of projects and programs in defense, environmental management, energy research, and more for both DOE and others, totaling more than $1 billion annually. The Laboratory's most recent actual and current budget authority (BA) workload by funding source is listed in Table 1.

TABLE 1. BUDGET PLAN*

Funding Source	$M FY93 BA	$M FY94 BA
DOE		
Defense Programs	555	498
Env. Restoration	195	242
Energy Research	65	76
Nuclear Energy	17	14
Civil. Rad. Waste Mgmt.	16	15
Conservation	13	13
Other DOE	13	14
DOE Reimbursable	61	59
Subtotal DOE	**935**	**931**
Reimbursable Work		
DoD	116	116
NRC	2	2
Federal Agencies	34	34
Non-Federal	16	17
*Subtotal R/W	168	169
Total Lab Operating	**1103**	**1100**
Capital Equipment	46	49
Program Construction	29	48
General Plant Projects	11	13
Total Lab Funding†	**1189**	**1210**

*All numbers are rounded off.

†Includes capitalization.

Source: Los Alamos National Laboratory, *Institutional Plan*, FY1994-FY1999, Dec. 1993

C. Population

Of the 12,100 workers (as of January 31, 1994) at the Laboratory, 8786 are Laboratory employees (approximately 6850 full-time equivalents [FTEs]) and some 3300 are non-Laboratory employees.

Approximately 43% of the regular Laboratory personnel are in the Technical Staff Member series, and the remaining 57% are structured series employees (i.e., Technical Support, Specialist Staff Member, Office Support, and General Support). Table II is a summary and projection table of Laboratory personnel.

TABLE II. PROJECTED PERSONNEL SUMMARY (FTEs)

	FY94	FY95	FY96	FY97	FY98	FY99
DOE effort	2899	2879	2998	3085	3128	3077
Work for others	520	515	507	501	501	501
Subtotal-Operating	**3419**	**3393**	**3506**	**3586**	**3629**	**3577**
Direct recharge	950	900	800	800	800	800
Program/Division support	1010	1000	900	900	900	900
Subtotal Direct	**5379**	**5293**	**5206**	**5286**	**5329**	**5277**
Indirect	1550	1500	1450	1450	1450	1450
LDRD*	320	320	320	320	320	320
Total Lab personnel	**7249**	**7113**	**6976**	**7056**	**7099**	**6997**

*Laboratory-Directed Research and Development

Source: Los Alamos National Laboratory, *Institutional Plan*, FY1994-FY1999, Dec. 1993

II. REGIONAL AND SITE INFORMATION

A. Regional Information

1. Technology Transfer

As the Laboratory's mission evolves to include increasing commitment to industrial partnerships and related technology transfer initiatives, the demands on the site and facilities are also changing. The Laboratory's central business district, Technical Area (TA) 3, and some other out-lying TAs require greater access, parking, and support facilities for visitors, partners and stakeholders. Additional high quality office, conference and meeting space is needed for Lab employees and related corporate partners. Security perimeters may need to be pulled back. Land may be needed for industrial or corporate facilities development. Third-party financing may be appropriate for such development on DOE land. Some or all of these actions may contribute significantly to both regional economic development and national economic competitiveness.

2. Potential Land Transfers and Related Land Use Issues

DOE and its Los Alamos Area Office (LAAO) are pursuing means to end subsistence payments to Los Alamos County and to make the transition to an independent financial relationship between the DOE and Los Alamos County. This goal is driving the investigations of land transfers to the County for technology transfer, research park, and sanitary landfill uses. A LAAO-sponsored task force is evaluating these land-use issues of joint DOE/Lab/Los Alamos County interest. Based on the increasing demands and new functions coming to Los Alamos, the Lab and DOE must carefully consider and plan so that we can continue to fulfill our changing mission both now and in the future.

3. Sanitary Landfill

The Laboratory and Los Alamos County have shared a sanitary landfill, operated by the County, on DOE property. The life of the present landfill was just recently extended to approximately 11 years at a cost of $100K. In anticipation of the waning capacity of the existing landfill, the Laboratory has been exploring sanitary waste management options. Our studies have revealed that extending the life of the existing Lab/County landfill further is extremely costly and with limited capacity gain. In addition, liability issues and DOE requirements for control of sensitive administrative materials to be disposed of in the landfill led the Laboratory to select development of a new Lab/DOE-only solid waste disposal facility as the most viable option. Thus, by locating the landfill on DOE property and by operating the landfill ourselves, factors of cost, security, and present and future liability for cleanup can be controlled.

B. Site Information

1. Security Issues

Mission changes at the Laboratory are causing a noticeable shift in the demand for more "open" facilities as opposed to secure facilities. This allows for greater interaction with the private sector in developing industrial partnerships and collaborative research relationships with other government and educational institutions as well as encouraging public interaction. This trend is evident and growing in a broad cross section of

scientific disciplines and applications at Los Alamos, including computational science, basic research, materials science, and dynamic testing.

This trend to more "open" unclassified facilities is accompanied by an increasing demand for industrial security—a level of security driven by property protection and safety rather than classification and materials security needs. Industrial security is needed to protect property and "ideas"; to ensure health, safety and environmental compliance, formality of operations, and facility flexibility; and to allow tracking and control of all on-site personnel.

Land use and facilities management will be greatly affected in the future by this shift and will require the Laboratory's plans to reflect and keep pace with these changes.

2. Facilities

The Laboratory's real property inventory includes some 950 permanent buildings (including 93 physical plant/utility structures and 73 currently approved for disposal), 535 temporary structures (trailers and transportables) and 800 miscellaneous facilities (including sheds, transportainers and tension support storage structures). These facilities total about 5,000,000 occupiable square feet. However, only about 1,160,000 square feet of this space, in 589 buildings, is designed to house personnel in an office environment. As a result, the Laboratory supplements on-site space with 13 commercial leases in the town-site to house an additional 615 people. The total current leased space is 113,000 square feet.

3. Surplus Facility Inventory and Assessment

The Surplus Facility Inventory and Assessment project is a DOE Secretarial initiative developed to formally identify and assess surplus facilities as a means to plan and budget for the transition of contaminated surplus facilities to Environmental Management. Phase I of the project was to develop accurate inventory of contaminated surplus facilities. LANL submitted a list of 61 facilities deemed surplus to the Laboratory's mission. Phase II of the project involved assessing the physical condition and contamination status of the surplus facilities; ranking the facilities for transfer to Environmental Management using a threat-based ranking system; and developing cost estimates for managing those high ranking facilities expected to transfer in fiscal year 1996. LANL is in the process of completing Phase II of the project. Phase III of the project involves developing cost estimates for input into the appropriate program office budgets for managing the lower ranking facilities expected to transfer to Environmental Management after fiscal year 1996, and performing assessments, as necessary, on those contaminated surplus facilities which may not have been assessed in Phase II.

III. MISSION PROJECTIONS AND RESOURCE REQUIREMENTS

This past year the Laboratory Leadership Council, as part of its restructuring efforts, established a "vision" for a customer-focused, unified Laboratory:

- We will creatively integrate science and technology with societal needs to enhance global security, preservation of the earth, and quality of life.
  We will exemplify a creative, learning organization that forms strategic partnerships with government, academia, and industry and values integrity, competence, and public service.

In March, the Laboratory took another step toward identifying more clearly long term staffing, facility and resource requirements. A team presented a preliminary proposal for the Laboratory's "core competencies." The following are the preliminary descriptions that are currently being reviewed/revised as appropriate.

- Theory and Computing
  - Analytic/theoretical approaches to solving complex science and engineering problems
  - Integrating theory, modeling, mathematics, programming, visualization and code validation capabilities
  - Partnering with industry for the advancement of high-performance computing
  - Analysis and management of information including large date bases.
- Complex Experimentation and Measurement
  - Experiments involving specialized sources, multidisciplinary measurement systems, and/or complex facilities
  - Specialized sources; e.g. accelerators, lasers, high-explosives, pulsed power, etc.
  - Measurement systems for extreme ranges of conditions; e.g., ultrafast, ultrasensitive, real-time, remote, single event, and hostile environments
  - Compact measurement systems for remote sensing
  - Multidisciplinary approach to measurement systems that couple sensors, transducers, instrumentation, data analysis, and modeling
  - Complex facilities involving energetic and/or radioactive materials and formality of operations
- Materials
  - Integrates science, technology, engineering, prototyping and manufacturing for radioactive, energetic and advanced materials.
  - Spans capabilities in several divisions
  - Addresses many markets; including industry, nuclear materials, weapons, and energy
  - Combination of radioactive, energetic and advanced materials makes Los Alamos distinctive; certain facilities would be very expensive and difficult to imitate

- Vertical integration of capabilities marries material research (e.g. invention of a novel composition) with prototyping of components for specific applications. Horizontal integration of capabilities is essential for execution of large programs (e.g. weapons prototyping).

- Nuclear Weapons
  - Addresses a specialized but enduring market; its historical significance is central to the founding of the Laboratory
  - Spans capabilities in several divisions
  - Competency is highly distinctive to Los Alamos and supports a continuing mission for the national defense
  - The vertical integration of physics, computation, engineering and materials/manufacturing capabilities for device design and prototyping affords access to new markets (e.g. rapid prototyping for industry).
- Analysis and Assessment
  - Involves the development of multidisciplinary physical theories and computational models
  - Integrates mechanistic, statistical, probabilistic, human factors, and other techniques
  - Validated through comparison with experimental data
  - Applied to industrial and national security policy, economics, technology integration and trade-offs, energy, industry and manufacturing, military systems, atmosphere and ocean environment, energy generation systems, and nuclear facility safety.
- Earth and Environmental Systems
  - Integration of chemical, biological, and physical processes with Earth sciences in study of dynamic systems from space through the biosphere to Earth's interior
  - Combined theory, modeling, observational programs to understand processes in the atmosphere, oceans and lithosphere that are affected by human activities particularly those of energy production
  - Collaborative research with universities, industry, and governmental institutions
  - Environmental remediation and toxic waste storage, non-proliferation, climate change, human safety and natural hazard evaluation
  - Resource development from geological media (oil and gas, minerals, geothermal energy, etc.)
  - Mineral physics, isotope dating and tracers, high pressure studies and geophysical field techniques.
- Bioscience and Biotechnology
  - *Biomedical research and technology* includes optics and imaging, sensors stable isotopes, lasers, modeling/simulation, computation and informatics, and information processing abstracted from living systems (e.g. neural networks and wavelet transforms)
  - *Cellular Analysis* includes flow cytometry, digital fluorescence microscopy and other spectromicroscopies, cell growth and cell cycle control, DNA damage and repair, cell transformation and carcinogenesis, and transgenic mouse facilities
  - *Biomolecular Structure, Dynamics and Functional Analysis* includes scanning tunneling and transition electron microscopy, X-ray and neutron scattering, high field NMR, ultrafast kinetic techniques, and optical and infrared spectroscopies
  - *Genome Analysis* includes chromosome sorting, clone libraries, robotics, genome mapping and sequencing, positional cloning, protein/DNA interactions, modeling/simulation, computing tools and databases.
- Nuclear Science, Plasmas and Beams
  - Accelerator development for nuclear science and applications
  - Intense beam physics (charged particles, neutrons, photons)
  - Nuclear physics and chemistry
  - Multidisciplinary applications in neutron scattering, transmutation of waste, plasma processing, radiography, lithography, and defense.

Resource Requirements:

The Laboratory's future workload and resource requirements are projected in Table III, which estimates the budget data in constant FY94 dollars. Construction entries include only funded line-item program construction projects. Total funded and proposed construction projects are detailed in Table V and VI.

TABLE III. FUNDING SUMMARY ($M)

	BA FY95	BA FY96	BA FY97	BA FY98	BA FY99
DOE effort	945.3	985.2	1005.6	1014.6	980.0
Work for others	167.8	165.7	163.7	163.7	163.7
Subtotal Operating	**1113.1**	**1150.9**	**1169.5**	**1177.7**	**1143.7**
Capital equipment	52.0	48.2	50.3	49.1	48.1
Program construction	81.6	95.1	90.0	78.0	69.5
General plant projects	9.1	10.0	15.0	15.0	15.0
Operations capitalization	-14.0	-14.0	-14.0	-14.0	-14.0
Total Lab funding	**1241.8**	**1290.2**	**1310.8**	**1305.8**	**1262.3**

Source: Los Alamos National Laboratory, *Institutional Plan*, FY1994-FY1999, Dec. 1993

MASTER PLAN

I. INTRODUCTION

The preceding mission and programmatic planning projections have been excerpted from the Institutional Plan and strategic planning efforts. These plans are linked to physical resource requirements by this Master Plan section that outlines the relationship of the land, infrastructure, facilities, and space as required by Los Alamos National Laboratory mission. The intent is to develop and maintain the site to accommodate ongoing and changing programmatic requirements. This intent is further defined by the listing of goals provided in this section.

These planning goals are described and tied to project proposals in both the Facility and Land Requirements section that follows and the Master Plan/Projects Matrix of construction projects (Table V). These projects will modify existing structures and also develop new ones where existing facilities are not adequate or suitable for a particular use. Requirements for land and facilities continue to evolve because the Laboratory's mission is evolving. In the meantime demand for extensions and upgrades to infrastructure systems to serve the institution continues. A continuing need exists to have DOE settle the issue of program "ownership" of multiprogram laboratories such as Los Alamos.

Following are the Laboratory's Existing Land Use and Master Plan maps. The location of construction projects for the FY1994-to-FY2000 time period are listed in the Master Plan/Projects Matrix and are shown on these maps and called out by name. Projects that are Lab-wide in scope are not shown on the maps. The Existing Land Use Map shows today's land uses. The Master Plan and Future Land Use maps represent the Laboratory's vision of the future site use. No significant changes occurred this past year at Los Alamos that required revision to the land-use depictions on these maps. Both DOE's and the Laboratory's continuing reconfiguration activities are anticipated to create a changing mission and therefore a changing land-use structure to support and implement any new or altered directions.

The Site Development Plan is a twenty-year master planning document, so projects extending beyond FY 2000 are included here as a listing in Table VI. Specific sites and TECs are not shown because these projects are currently being developed and in some instances require short-notice changes in mission and scope.

II. GOALS/FACILITY AND LAND REQUIREMENTS

Land Use - We intend to achieve the most effective use of land to fulfill the Laboratory's missions. This can be accomplished through the following objectives.

- Increase awareness of development constraints.
- Increase awareness of land-use compatibility issues during the siting and design process.
- Identify alternate locations for development and provide areas for expansion.
- Improve functional relationships between existing and future land uses by emphasizing functionally related corridors between the core area (TA-3) and other major development areas.

The major land siting activities that occurred this past year involved selection of a site for the sanitary landfill and construction of GPP buildings for the Environmental Management and Theoretical Divisions. A Master Planning effort is under way for the Laboratory's airport as well.

In Budget Year 1992, the Decontamination and Decommissioning (D&D) Master Plan was initiated to identify all excess facilities. In addition, the project management plan for the decommissioning of TA-21, Buildings 3 and 4 south, was prepared and remediation efforts began. These efforts carry over into FY94. During the five year planning period, additional D&D projects will be added to the ER/WM Master Plan, probably at TAs 3, 16, 21, 33, and 50. A detailed list and project descriptions are available in that plan.

In support of the above objectives, the Laboratory is actively involved in further development of our geographic information system (GIS) to serve as a planning tool for not only storing and displaying a variety of land use databases; but more importantly for creating a system that will allow planners and other Laboratory staff to access and dynamically query all databases for land use and facilities planning and management purposes. GIS is also serving other important needs such as Emergency Management and Response and Waste Management/Environmental Restoration.

Facilities - Implement high-quality, permanent, and flexible facility improvements in a manner consistent with the Laboratory's mission, using the following objectives.

- Emphasize quality site design and careful site planning for new Laboratory facilities.
- Provide new or renovated permanent but flexible facilities based on Laboratory programs and operations as set forth in the Laboratory's strategic plan.
- Eliminate leased buildings, trailers, and temporary facilities when feasible and cost-effective and replace them with permanent facilities.

- Continue to rehabilitate or replace obsolete structures when cost effective.
- Continue to decontaminate and decommission facilities for adaptive reuse or disposal.
- Increase scheduled maintenance efforts to enhance facility lifetimes, reduce unanticipated repair costs, and provide an environment more conducive to professional scientific work.

A majority of the planned facility construction projects shown in Table V involve the reuse and rehabilitation of existing facilities to accommodate new or expanding programs and in support of nonnuclear consolidation programs. Programmatic sponsored upgrades of major facilities at the Laboratory are aimed primarily at taking advantage of unique Laboratory facilities. These projects include the CMR Upgrades - Phases 1, 2, & 3; Sigma Building/D-38 operations - ES&H Upgrades at TA-3; and the renovation of the Nuclear Materials Storage Facility at TA-55.

A number of near-term and out-year major facility projects are included in the matrix and described more extensively in the Laboratory's Capital Assets Management Process (CAMP)/Construction Plan and ER/WM Five Year Plan.

Transportation/Circulation - Develop and improve site circulation for efficient transportation, improved operations, reduced energy costs, and increased safety and security. The objectives for meeting this goal include the following.

- Design technical areas and building sites for efficient circulation and parking to minimize pedestrian/vehicle conflicts and to maximize operational efficiency.
- Improve connections between Laboratory technical areas.
- Improve methods and routes for transporting hazardous materials.
- Encourage safe and efficient multimodal transportation options for Laboratory employees.
- Promote improved connections between the Laboratory and surrounding communities.

Two traffic studies completed this past year define or identify current and future circulation and access improvements at TA-59 and TA-63. The TA-63 study looked at planned developments and land-use expansion proposals in order to plan for transportation/circulation improvements required to accommodate new growth in this area. The TA-59 traffic study looked at the need for intersection improvements required to serve a parking lot in a congested area of the Laboratory in great need of additional parking.

The proposed Traffic Safety Upgrades Project will improve the geometrics of roadways including turn lanes and acceleration/deceleration lanes. Dedicated roads for explosives transportation would also be added. This project is intended to improve life-threatening roadway situations for both vehicular traffic and pedestrians identified by the ES&H reports and by employee complaints.

Delays associated with road closures required during the movement of hazardous materials on some roads within the Laboratory are affecting most employees at one time or another. Over the past few years a number of suggestions and alternatives have been considered to address this issue.

The Laboratory is now proposing a comprehensive study of this issue. A number of short-term solutions, ranging from constructing certified packaging devices that permit transport of these materials over public access roads to other management alternatives need to be considered. A number of long-term solutions, identified in the Laboratory's SDP for co-locating hazardous material generating facilities or constructing alternative bypass roads need to be revisited or reevaluated.

Security/Safeguards - Maintain and strengthen security protection through long-term site development planning. This goal is accomplished through the following objectives:

- Consolidate secure functions and interests to the extent permitted by other Laboratory functional and technical requirements. Create industrial security as an option throughout the Lab;
- Limit public access to, and visibility of, limited-security and category I & II special nuclear materials (SNM) areas;
- Minimize public proximity to secured areas by locating public interface functions at the perimeters of the sites; and
- Establish buffer zones to protect limited-security and category I & II SNM areas from unauthorized access.
- Surround or buffer higher-security functions with lesser-security functions to protect and insulate these functions from security threats.

A GPP expansion of an existing guard station at TA-55 is anticipated to be completed this year. The expansion will improve security, ease employee passage, and allow adequate space for required security items.

Utilities - Improve and develop utility systems efficiently and cost-effectively to support program operations. This goal can be accomplished through the following objectives.

- Define, develop, and reserve utility corridors to minimize costs and conflicts with other site improvements;

- Modernize utility systems to provide safe, reliable, and cost-effective services for Laboratory facilities.
- Develop stable funding sources that can be used to modernize Laboratory utilities; and

Table IV summarizes existing capacities, future demand, and shortfalls over 30 years, followed by a listing of proposed construction projects.

TABLE IV. 30-YEAR UTILITY LOADS AND DISTRIBUTION / COLLECTION SYSTEMS

Utility	Existing Capacity	FY2022 Demand	Shortfall
Water System	10 Mgd firm	12 Mgd firm	2 Mgd
Electric system	62 MW	90 MW	128 MW
Nat. Gas System	12 MM cfd	17-18 MMcfd	5-7 MMcfd
Steam System	457,500 Klb/Hr	390,500 Klb/Hr	0-
San. Wastewtr. Sys.	1.0 Mgd	1.0 Mgd	-0-
San. Landfill	300,000 yd^3	9000,000 yd^3	6000,000 yd^3

Source: LANL, Facilities, Security & Safeguards Division, Utilities Project Office January 1994

The following is a listing of proposed, line-item projects for the next 20 years (1992 dollars):

Water System

- Pajarito well #1 Replacement and others ($15.3M).
- Transmission line replacement (10 miles—$10 million).
- Tank Replacements (four tanks—$8 million).

Gas System

- Replace miscellaneous sections of a 12-inch DOE main line and install compression on 12-inch DOE main line between Lybrook and Cuba, New Mexico ($12 million).
- Install one transmission line border station as well as 24 each 100- to 60-pound district regulator stations ($3 million).
- Enlarge, replace, upgrade, and extend gas distribution system - 17 miles ($14 million).

Electrical System

- Static VAR compensator ($9.3 million) (FY93).
- West technical area substation—Ojo Line Extension participation ($26 million).

Steam/Condensate System

- Upgrade, replace or decommision steam plants ($20 million).
- Replace, upgrade, and extend steam distribution system ($10 million).
- Install effluent softener for reuse of water ($3 million).

Solid Waste System

- Sanitary Landfill ($9.5 million) (FY97).

Environment, Safety and Health - Continue to improve the protection of the environment, the public, and Laboratory personnel and facilities. This goal can be accomplished through the following objectives.

- Minimize the effect of Laboratory operations on the environment.
- Minimize safety risks to protect Laboratory personnel and the public.
- Minimize the amount of waste being generated by the Laboratory.
- Continue Laboratory health monitoring and regulatory compliance efforts.

Corrective Activities and Environmental Restoration (ER) Operable Units are located throughout the Laboratory and adjacent areas and are remediated on an as-needed basis. Environmental programs include waste management, environmental restoration, and environmental protection and preservation.

A part of the Laboratory's ER program is to retain waste on-site so that wastes would remain on DOE property under federal institutional control, worker exposure would be minimized, and the total program would be more cost-effective. With a permit issued under the Resource Conservation and Recovery Act, the Laboratory proposes to construct and operate a Mixed Waste Storage and Disposal Facility to receive this waste. Ongoing construction projects include the Hazardous Waste Treatment Facility, Industrial Waste Systems and Air Exhaust Modifications.

Additonal activities of the waste management group include the development, design and construction of new facilities, which will enable these functions to operate more efficiently within regulatory guidelines. Facilities being developed include the Radioactive Liquid Waste Treatment Facility, Ash Immobilization Facility, and the TRU-Waste (transuranic waste) Treatment Facility.

A TA-63 Master Development Plan was completed this past year. TA-63 is a relatively undeveloped area that is proposed to be developed for waste management functions. The purpose was to improve coordination of new projects given existing constraints and to maximize an efficient layout of space at TA-63. The plan identified functional relationships between TA-63 waste management projects and other waste management technical areas (TAs-50 and 54). It also addresses design relationships and responsibilities to the adjacent technical areas and the Laboratory. The plan identifies phases in construction and time constraints to tie projects together as a developing functioning site and provides solutions to implement phasing for current and proposed future waste management projects funded by General Plant,

Line Item, and Expense funded projects for Waste Management.

The long-range goals of the Master Development Plan for TA-63 are listed below:

- Maximize opportunities for consolidation to centralize activities
- Maximize opportunities for better circulation between waste management facilities
- Establish expansion areas for proposed and future projects
- Maximize public safety and improve the public image of waste management facilities
- Maximize the dual use of the existing utility corridor for centralized parking and traffic circulation
- Provide shared infrastructure between projects such as parking, roads, utilities corridors, and support services to minimize construction and maintenance cost
- Limit to one the number of additional intersections and curb cuts accessing Pajarito Road for improved safety and traffic efficiency
- Develop a frontage road system for waste transportation to eliminate road closures between waste management facilities
- Restrict public accessibility to support service areas
- Maximize design opportunities for positive visual impact, development of site amenities, and sensitive environmental planning.

SPECIAL CONSIDERATIONS

I. POTENTIAL LAND TRANSFERS AND RELATED LAND-USE ISSUES

In the past year, DOE/LAAO and Los Alamos County have discussed the possible transfer of DOE/Lab land in exchange for the elimination or reduction of DOE assistance payments to the County. The parcels will be subject to deed restrictions (limiting use of land to uses benefiting DOE or the property would revert back to DOE after 10 years.)

Complex-wide DOE initiatives affecting present and future land use are interwoven with this local assistance payment issue. The outcome of the complex-wide nonnuclear and nuclear reconfiguration is uncertain at this time and therefore, land and facilities requirements at the Laboratory are also uncertain. While encouraging development opportunities at the county level is certainly an important local economic objective, the Laboratory must not lose sight of its primary goal—to be responsive to national needs. In this context that means making land-use decisions that are consistent with current and potential programmatic directions and plans. Thus, complex-wide DOE needs must be weighed against local economic issues to produce decisions that are mutually beneficial yet will not potentially restrict or eliminate the Laboratory's current or future programmatic viability.

Solutions

Potential Land Transfers - Coordinated planning and participatory decision making processes involving DOE, the Laboratory, and Los Alamos County are the key to finding workable solutions to the land transfer and related land-use issues, specifically.

- Actively involve Laboratory management in land transfer discussion and proposals.
- Based on the Laboratory Leadership Council's strategic planning guidance, evaluate programmatic and land-use impacts on the Lab before proposed land transfer, and follow prescribed DOE planning process.
- Los Alamos County, in conjunction with DOE, should prepare a plan which shows their strategy for obtaining self-sufficiency. It should address issues such as existing land use, master planning, better utilization of existing private lands, and increased revenue streams from private sources.
- At the same time, the Laboratory must continue to have a current, realistic, SDP that demonstrates what lands are needed to support current and proposed missions over the long term (20 year horizon) and what lands could either be excessed or made available to the County under the County's self sufficiency plan.
- The Laboratory and DOE during the next year will study and determine what land and facilities may be appropriate for conditional transfer to Los Alamos County.
- Prior to any land transfer the Laboratory would need to ensure that all Solid Waste Management Units' (SWMU) characterization/schedule/corrective measures studies have been completed, and SWMU remediation/schedule/corrective measures have been implemented.
- Incorporate deed restrictions to ensure present and future compatibility with DOE/Lab and/or the County's self sufficiency plan. Until there is an ultimate end use identified, the property remains in DOE ownership, though noted as land for community self-sufficiency in the SDP.
- Follow government process for land transfer proposals (DOE Order 4300.1C Real Property Management, Ch. II, and the Federal Property and Administrative Services Act of 1949, as amended, 40 U.S.C. 471).

TABLE VI. POST FY 2000 PROJECTS

Program	FY	Title	TEC ($M)
WRD&T - Weapons Research, Development & Testing			
	01	Weapons Comp. and Test. Dev. Lab	50
	02	Technology Transfer Conference Ctr.	30
	03	CAD/CAM Robotics Lab	12
	03	Electrical Power Systems Upgrade	26
	03	Nuclear Envir. Sim. Test Fac.	150
	04	Liquid & Compressed Gas Facility	15
	04	SM-40 Refurbishment	30
	04	Transportation System Upgrades	33
	04	Central Computing Fac. Refurbishment	50
	05	Special Experiment Assembly Facility	10
	05	Wellness & Child Development Center	10
	05	SM 43 Infrastructure Refurb.	50
	05	Explosive Pulsed Power Facility	70
	06	SM-123 Refurbishment	20
	06	Safeguards and Security, Phase III	33
	06	Adminstrative Support Complex	50
	06	Field Test Support Complex	75
	07	Equipment Services Bldg.	15
	07	Support Services Complex	75
	07	Robotics Lab Development Facility	100
	08	Renovation of Otowi Bldg.	18
	08	Laser Science & Technology Building	56
	09	Weapons Plastics Materials	25
	09	Technical Support complex	54
	10	Mechanical & Electrical Eng. Fac.	11
	10	Dynamic Testing Laboratory	20
	10	Study Center Modernization	25
	11	Transportation Network Expansion	30
	11	Pressing Facility	45
	11	SM-31 Refurbishment	50
	12	Satallite Support Complex	5
	12	Exp. Physics Weapons Supp. Comp.	277
	13	Secure Radio Station	5
	13	High Explosives Laboratory	45
	13	SM-39 Refurbishment	50
	14	Renovation of SM-38	30
	15	Device Fabrication R&D Facility	75
	15	Nuclear Weapons Design Lab.	150
SS - Stockpile Support			
	01	Nuclear Safeguards Technology Lab	20.4
	02	Sigma Building Renovation	45
	02	Enriched Uranium Facility	160
	04	LiH/LiD Component R&D Facility	10
	07	PF-4 Rehabilitation	80
	11	Plutonium R&D Facility	75
EM - Environmental Management			
	02	Condensate Systems Upgrades	4
	05	Effluent Revitalization Plant	5
IS - International Security			
	05	SCIF Refurbishment/Expansion	20

Source: *CAMP/Construction Plan*, FY1996

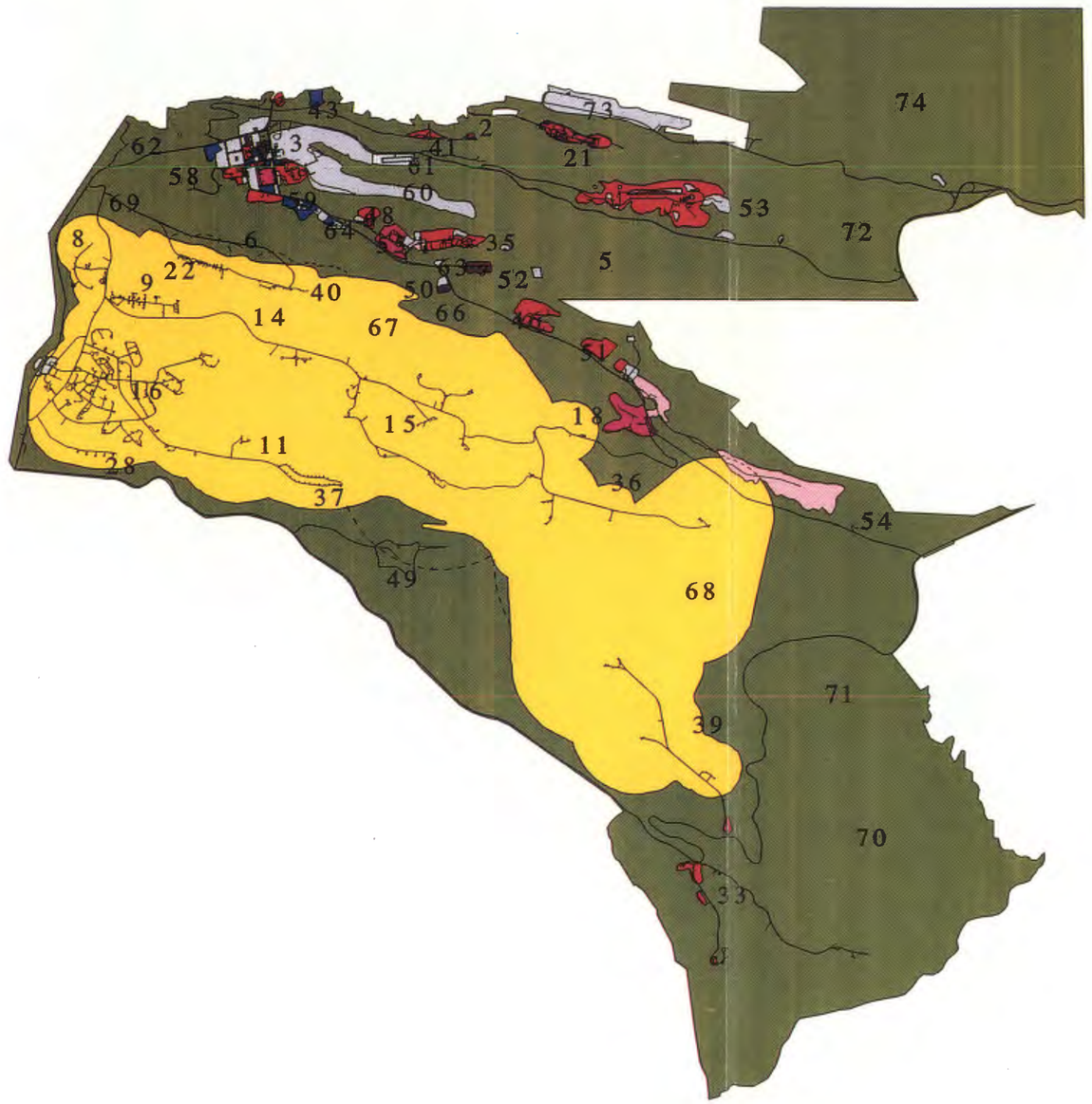
TABLE V. MASTER PLAN/PROJECTS MATRIX

Strong Ties ● Moderate Ties ◒ No Ties ○

FY	Sponsor	Project Title	TEC ($M)	Land Use	Facilities	Transportation/ Circulation	Utilities	ES&H
1988	WRD&T	DARHT	81.4	◒	●			
1992	WRD&T	CMR Upgrades (Phase 1, 2, & 3)	194.8		◒			●
1996	WRD&T	Static VAR Compensator	9.3	◒			●	●
1996	WRD&T	Water Well Replacements	15.0	◒			●	◒
1996	WRD&T	Fire Protection Improvements	14.6	◒	◒		●	◒
1996	WRD&T	ATLAS (Agex II Facilities)	34.5		●			
1997	WRD&T	DARHT Second Axis	30.2	◒	●			◒
1998	WRD&T	Traffic Safety Upgrades	12.5	◒		●		
1998	WRD&T	TA-3 Centralized Cooling Network	14.9				●	◒
1998	WRD&T	Contained Explosives Test Comp.	26.6	◒	●			
1999	WRD&T	Central Health Physics Cal. Fac.	5		●			
2000	WRD&T	Weapons Comp. Surveillance Lab.	50	◒				
2001	WRD&T	Nuclear Env. Simul. Test Fac.	150	◒	●			
2002	WRD&T	Advanced Hydrotest Assemby Fac.	422.0		●			
2009	New Prod. Reac.	Accelerator Produced Tritium R&D Facility	30	◒	●			
1984	Stockpile Support	Nuclear Materials Stor. Fac. Reno.	44.98	◒	●			
1994	Stockpile Support	Consolidated Tritium Comp.	50.0	◒	◒			
1994	Stockpile Support	High-Power Detonators	9.93		◒			
1994	Stockpile Support	Neutron Tube Target Loading	5.1		◒			
1995	Stockpile Support	Calorimetry	0.9		◒			
1996	Stockpile Support	Beryllium Technology	11.1		◒			
1996	Stockpile Support	Pit Support Functions	3.13		◒			
1998	Stockpile Support	Radiographic & Stockpile Sup. Fac.	22.5	◒	●			
2001	Stockpile Support	Nuclear Unit Eval. Fac.	5	◒	●			
1990	EM	Hazardous Waste Treatment Fac.	12.5	◒	◒			●
1990	EM	Industrial Waste Systems	1.6				●	◒
1992	EM	Air Exhaust Mods.	3.5		◒			●
1993	EM	Mixed Waste Receiving & Storage Fac.	9.6	◒	◒	◒		●
1994	EM	High Explosives Wastewater Treat.	6.4	◒			◒	●
1995	EM	RCRA Mixed Waste S&D Fac.	40.7	◒	◒	◒		●
1996	EM	Radioactive Air Emissions	141.3		◒			●
1997	EM	Radioactive Liquid Waste Treat.	110.0	◒			◒	◒
1997	EM	Sanitary Landfill	9.5	◒			●	◒
1999	EM	TRU-Waste Treat. Fac.	64	◒	◒			●
2003	EM	Ash Immobilization Fac.	6	◒	◒			●
1998	Energy Research	National Ctr. for Neutron Research	782.8	◒	●			
1999	IS	Nonproliferation Arms Ctrl. Ctr.	20.0		●			
2001	IS	Sigma/D38 Ops. ES&H Upgrades	12		◒			◒
1997	Safeguards/Sec.	LiH/LiD Component R&D Fab. Fac.	10	◒	●			
2001	Safeguards/Sec.	Nuclear Safeguards Tech. Lab	20.4	◒	●			
1995	Other	National Biomedical Tracer Fac.	65.5	◒	●			

***Project List Current as of February 11, 1994**

Source: *CAMP/Construction Plan*, FY1996



LANL EXISTING LAND USE (LABWIDE)

PREPARED FOR:
SITE DEVELOPMENT PLAN
ANNUAL UPDATE, 1994

LEGEND

- ENVIRONMENTAL RESEARCH /BUFFER (ER)
- PHYSICAL SUPPORT AND INFRASTRUCTURE (PSI)
- EXPERIMENTAL SCIENCE (EX)
- HIGH EXPLOSIVES R&D AND TESTING (HE)
- SPECIAL NUCLEAR MATERIALS R&D (SNM)
- PUBLIC AND CORPORATE INTERFACE (PC)
- ADMINISTRATIVE AND TECHNICAL SERVICES (ATS)
- WASTE MANAGEMENT (WM)
- THEORETICAL AND COMPUTATIONAL SCIENCE (TC)
- NON-DOE LAND : POTENTIALLY PSI
- HIGH EXPLOSIVES ADMINISTRATIVE AND TECHNICAL SUPPORT AREA
- 03 TECHNICAL AREA NUMBERS
- PAVED ROADS
- BUILDINGS

PREPARED BY:
LOS ALAMOS NATIONAL LABORATORY
PLANNING GROUP, GIS TEAM
DATE: 02-16-94 **PHONE: 505-667-4711**

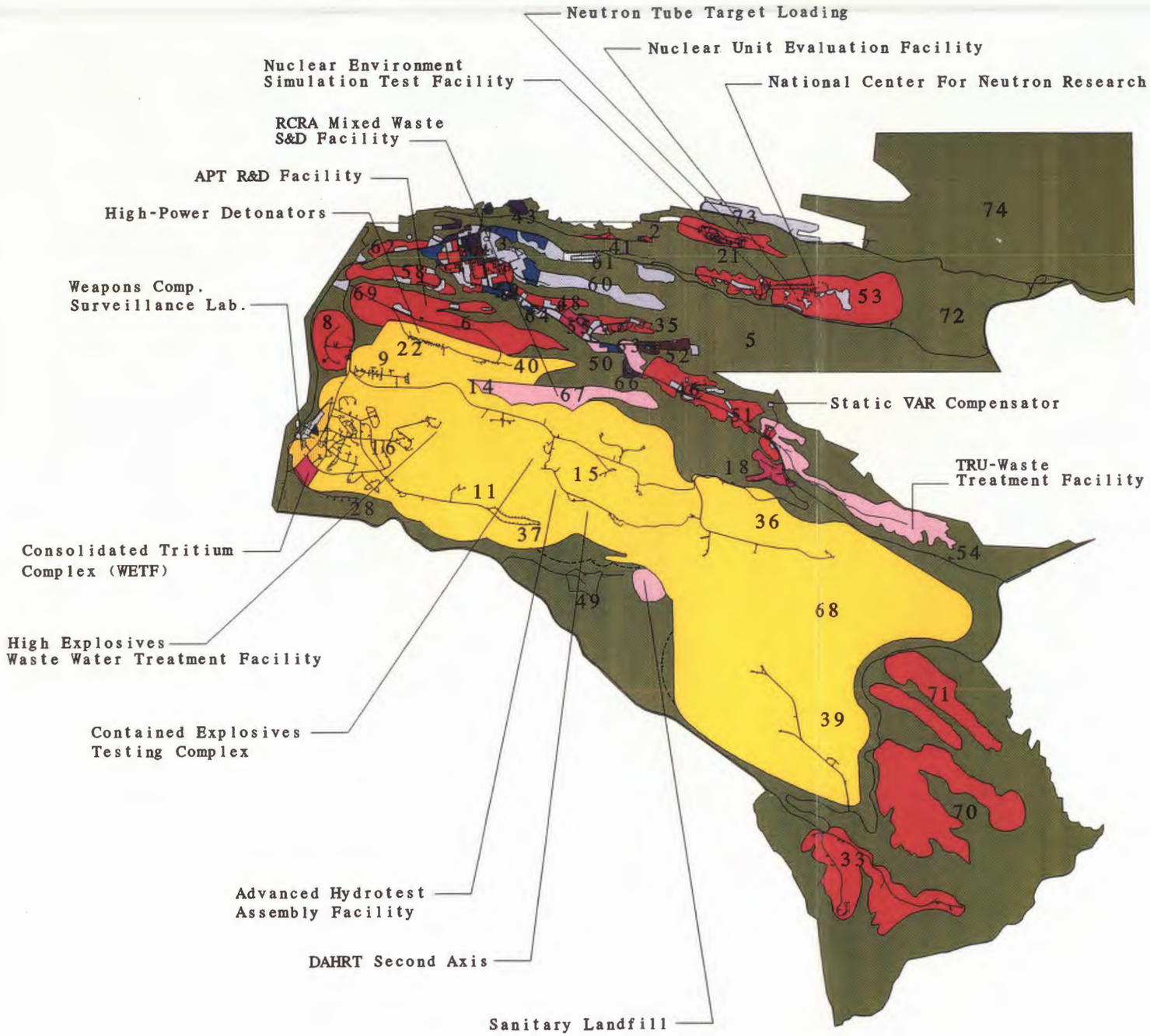
3000 0 3000 6000 FEET
914 0 914 914 METERS

N

NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE)
1927 NORTH AMERICAN DATUM

LANL FUTURE LAND USE (LABWIDE)

PREPARED FOR :
SITE DEVELOPMENT PLAN
ANNUAL UPDATE, 1994



LEGEND

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914 0 914 914 METERS

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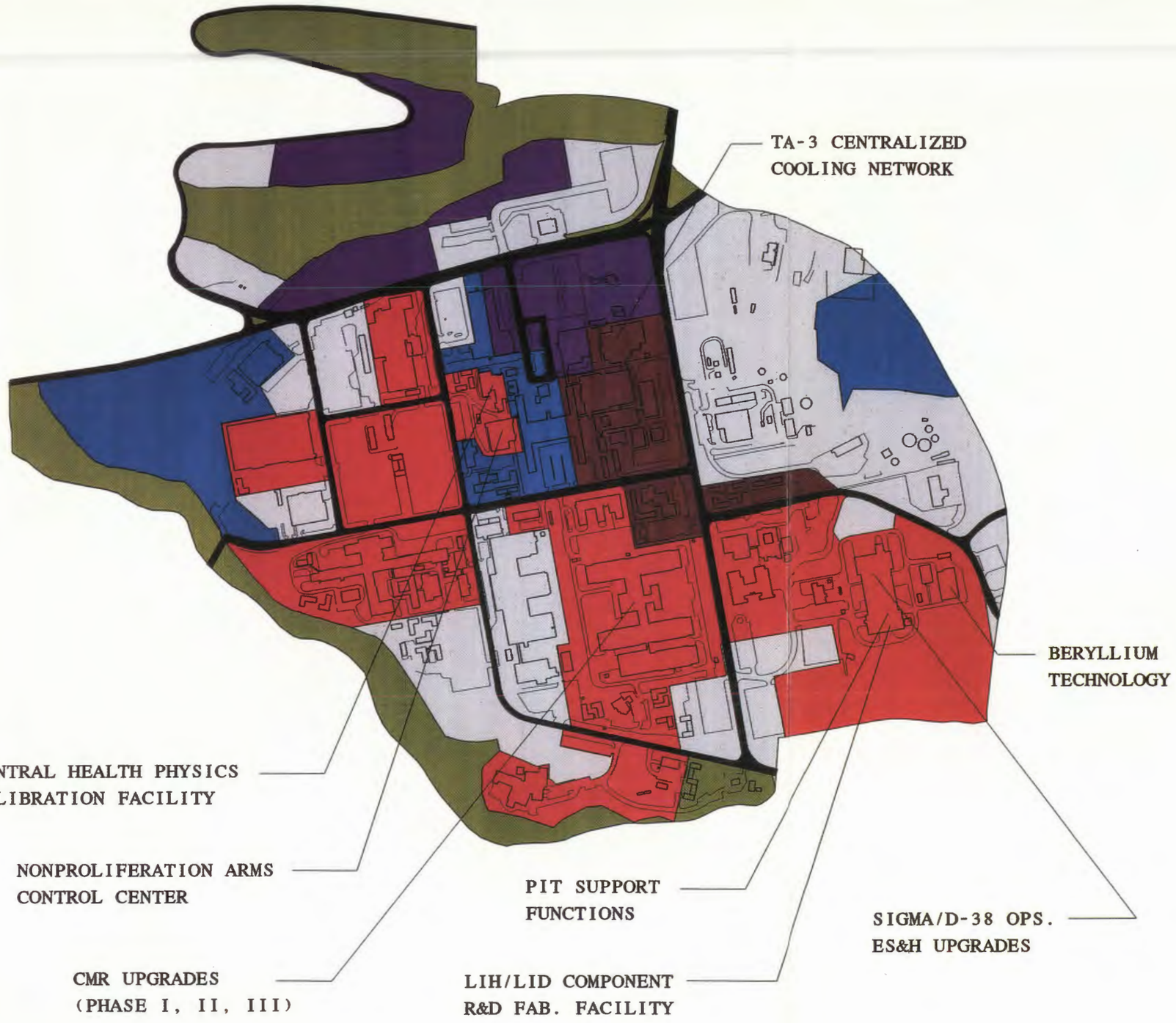

LANL
FUTURE LAND USE
TA-3, CORE AREA

PREPARED FOR
SITE DEVELOPMENT PLAN
ANNUAL UPDATE, 1994

LEGEND

- ENVIRONMENTAL RESEARCH /BUFFER (ER)
- PHYSICAL SUPPORT AND INFRASTRUCTURE (PSI)
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PREPARED BY:
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PLANNING GROUP, GIS TEAM
DATE: 02-16-94 PHONE: 505-667-4711

FEET
275 0 275 550
METERS
84 0 84 168

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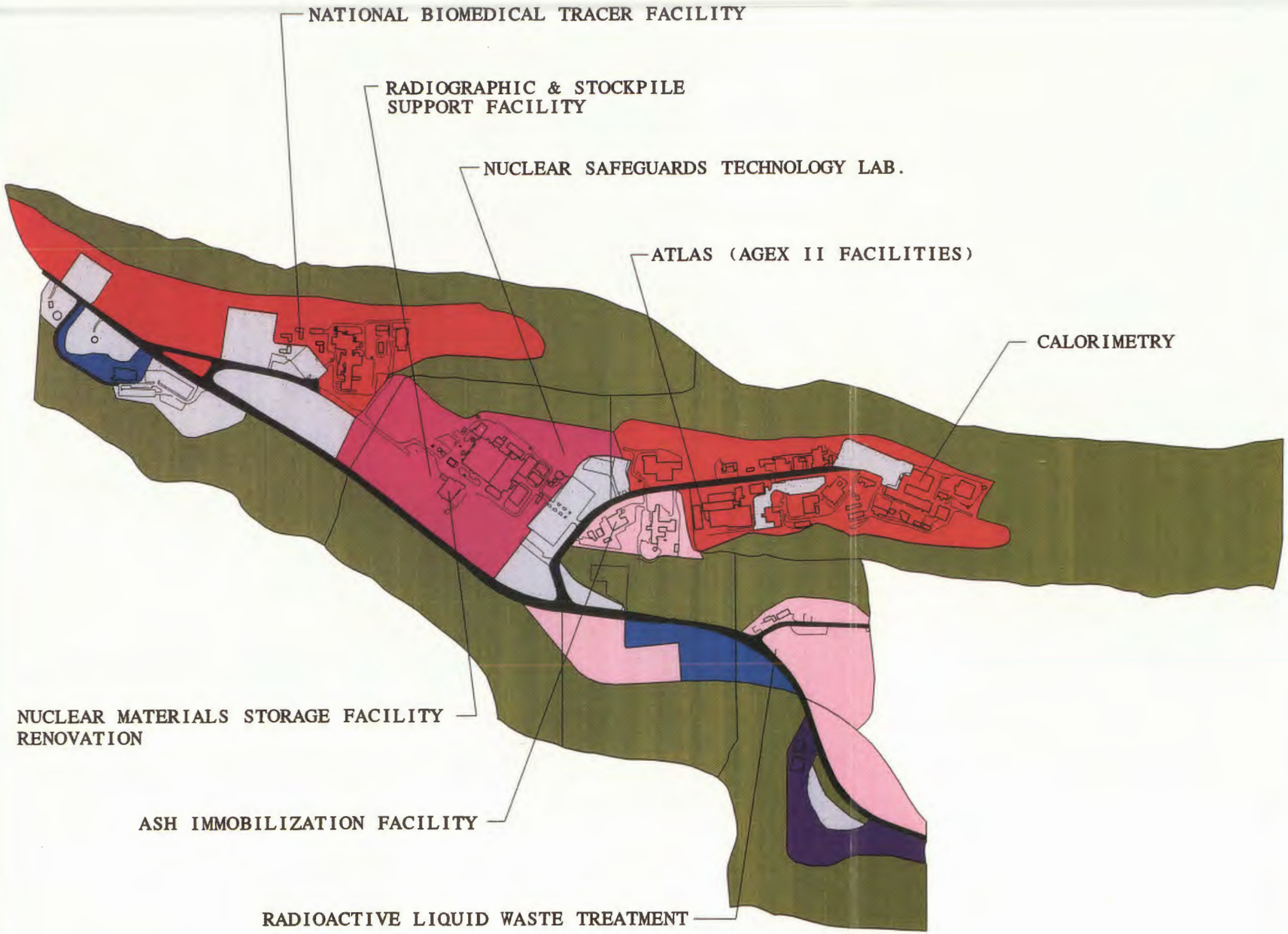
NEW MEXICO STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE)
1927 NORTH AMERICAN DATUM



LANL FUTURE LAND USE PAJARITO CORRIDOR

PREPARED FOR:
SITE DEVELOPMENT PLAN
ANNUAL UPDATE, 1994

LEGEND

- ENVIRONMENTAL RESEARCH /BUFFER (ER)
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400 0 400 800 FEET
122 0 122 244 METERS

N

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1927 NORTH AMERICAN DATUM