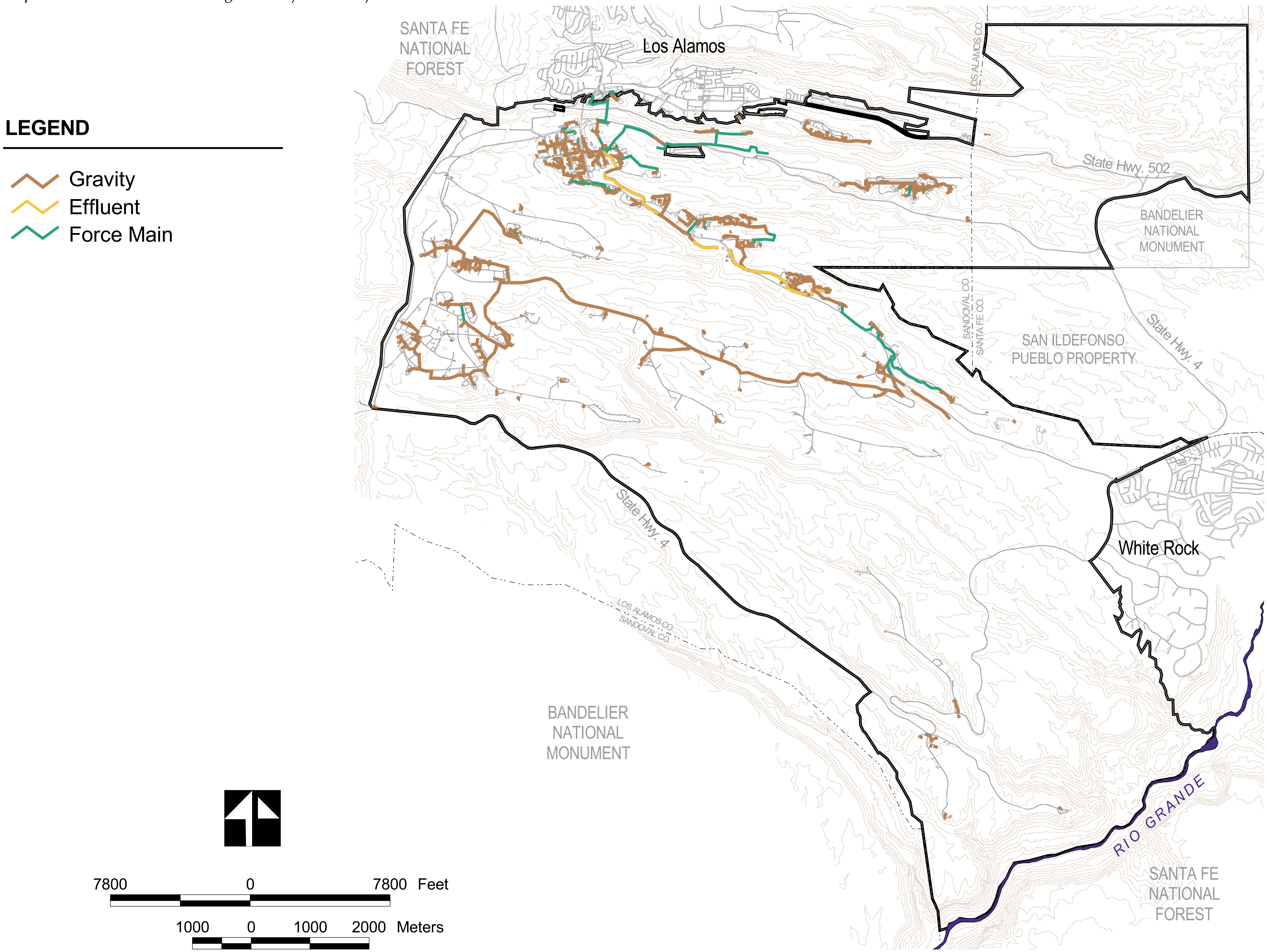
Map IV-A10: Site Wide Existing Sanitary Sewer System



d. Radioactive Liquid Waste Collection and Treatment

Radioactive liquid waste is generated from a variety of chemistry laboratories and from production activities conducted at many Technical Areas throughout the Laboratory. Generator source activities include those that deal with weapons, radiobiology, laser technology, energy, safeguards, and waste management. The system is monitored constantly for leakage by electronic surveillance equipment that also tracks flow level and pH levels from the waste sources.

The majority of the liquid waste streams are transferred by direct pipeline between the generator and treatment facilities-the Radioactive Liquid Waste Collection System (RLWCS). The remaining liquid waste streams from a few facilities are transferred via truck transport to the main treatment facility at TA-50. Trucked liquid waste averages one truck per month at 700-800 gal.

Radioactive liquid waste currently is treated at three onsite facilities:

1. TA-50

The RLWTF at TA-50 Building 1 provides waste treatment services for organizations throughout the Laboratory, including concentrating radioactive components and removing them from liquid waste. TA-50 is located near the physical center of the Laboratory. The facilities support the Laboratory's waste management activities for several types of waste, including storing or disposing of solid and liquid, low-level radioactive waste (LL-RLW), low-level mixed waste, transuranic (TRU) waste, and hazardous waste.

The major facility at TA-50 is the Radioactive Liquid Waste Treatment Facility (RLWTF), operated by Facilities and Waste Operations (FWO) Division. Other waste management facilities include the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), operated by Environmental Science and Waste Technology (E) division and the Radioactive Materials Research, Operations, and Demonstration (RAMROD) Facility, also operated by E-Division.

The 40,000-square-foot RLWTF is composed of areas for radioactive liquid waste treatment, wastewater analytical laboratories, environmental chemistry laboratories, decontamination operations, several holding tanks, and offices. Approximately 110 persons perform activities that include treating radioactive liquid waste, decontaminating respirators, reducing the size of transuranic wastes, and characterizing transuranic wastes.

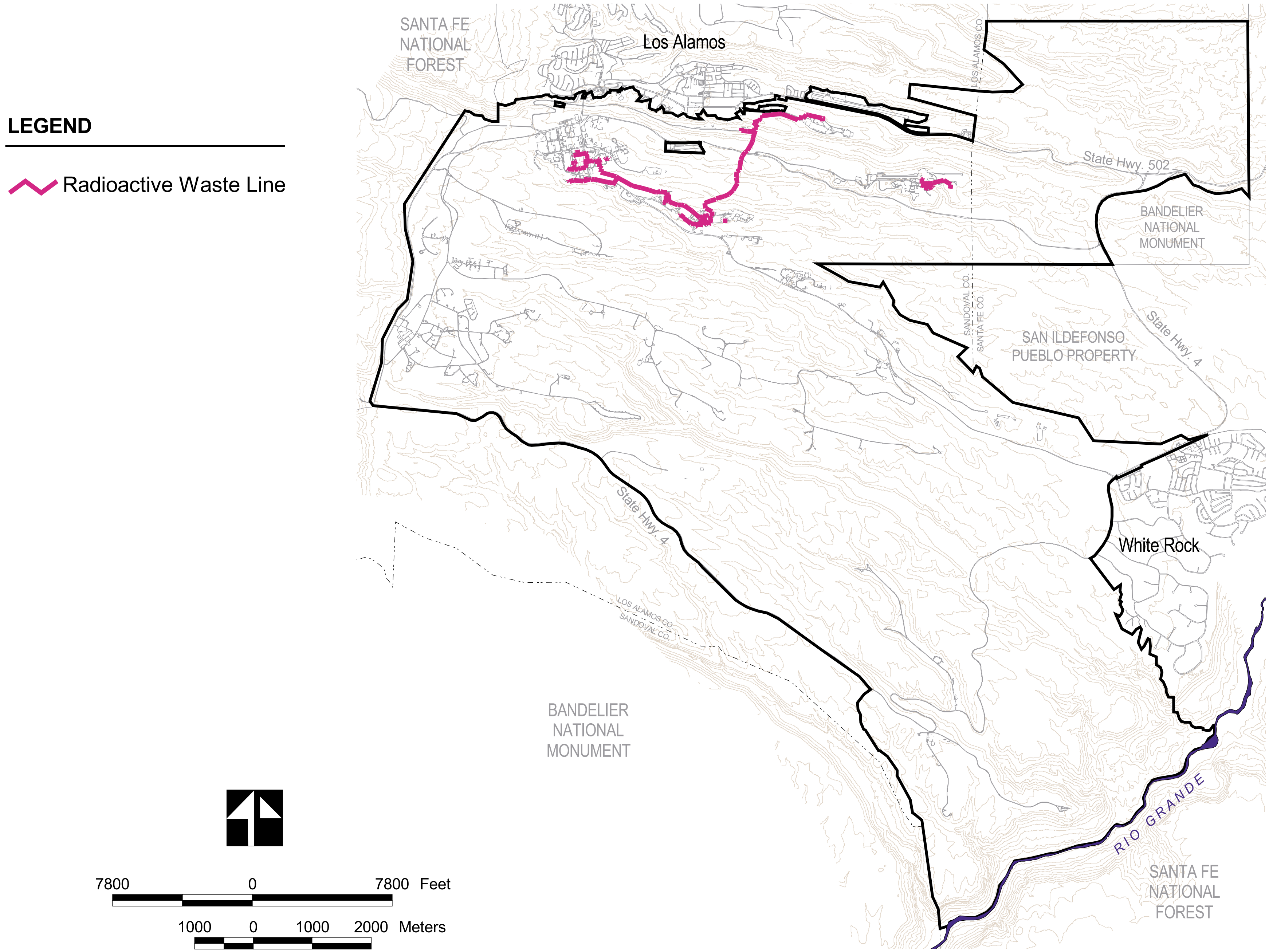
2. TA-21

A second treatment facility is located at TA-21 and treats limited quantities of RLW on an as-needed basis from buildings located within TA-21, in which chemistry laboratory, and decommissioning and decontamination activities are conducted. TA-21 stores and can provide very limited pretreatment. The treated effluent from TA-21 is transferred via pipeline to TA-50 for additional treatment in the RLWTF. The existing satellite treatment facility at TA-21 Building 257 will be converted into a holding station for tritiated aqueous TSTA waste prior to transport to TA-53 evaporation basins. It is anticipated that this capability will be required until the termination of TSTA operations in 2-5 years.

3. TA-53

A third treatment facility is located at the TA-53 radioactive liquid waste evaporative basins and handles evaporation of accelerator-produced, tritium-contaminated waste. The wastewater treatment system consists of three 30,000-gal. storage tanks, and two solar-evaporative basins 150 feet x 75 feet each. This system is dedicated to TA-53 operations and tritiated wastewater trucked in from other Laboratory facilities.

Map IV-A11: Site Wide Existing Radioactive Waste Utilities



e. Natural Gas System

Natural gas is delivered to the site at a pressure of 500-600 PSIG. Pressure is reduced to 88 PSIG at Tech Meter One, and is further distributed throughout the site. A second metering station is a cross connection between the Laboratory and Los Alamos County. It can receive gas from Los Alamos County or in emergency situations can be redirected to deliver natural gas to the county. A third meter, East Station (Tech Meter Three), can receive gas from PNM on the east side of town near the airport, but cannot deliver full peak load flow. It is in standby status, and can only provide less than 20% of peak use requirements.

The gas system is well maintained. Leak detection surveys are conducted annually to identify problem areas and a very effective reporting system is in place. If problems are found they are classified and repaired on a priority basis. Follow-up screenings are performed to monitor the condition of the system. Despite the Laboratory's best efforts, some specific problems that still exist are areas that are inaccessible due to radiation escape caused by valve or fitting leaks, inadequate pressure and deficient flow.

1. Natural Gas System Condition

In general, the Laboratory's gas system is old. Almost one-half of the gas system was installed in the 1950s and another one-third in the 1960s. Currently, most natural gas systems problems are Class Three in nature. This class is not considered a danger; routine monitoring occurs but immediate repairs are unnecessary for the most part. Present long-term maintenance plans are limited to monitoring leak location and frequency, with repairs being performed on an as-needed basis.

One major repair project is in the planning stage. It is a 10-inch steel pipe, which connects Tech Meter Two to the gas grid system on East Jemez Road. Short-term plans are to slip-line it with an 8-inch PE sleeve. Long term plans include replacement of the pipe.

The natural gas main line which was installed in the 1950s and consists of 10-inch and 12-inch uncoated steel is being considered for replacement within the next ten years.

2. Natural Gas System Materials

At present, site distribution is via approximately 62 miles of pipe. Ninety-five percent of this pipe is made of carbon steel while the remaining 5% is composed of polyethylene. Carbon steel pipe is susceptible to corrosion through cathodic attack. The Laboratory has a corrosion control program in place to address this problem. A small percentage of the steel pipe is now "slip lined" with polyethylene plastic due to repairs for leaks. Since direct burial polyethylene (PE) piping is more cost effective than steel, and can be maintained without cathodic protection, future natural gas lines will utilize PE piping if size, pressure and location requirements meet polyethylene pipe capabilities.

3. Natural Gas System Capacities

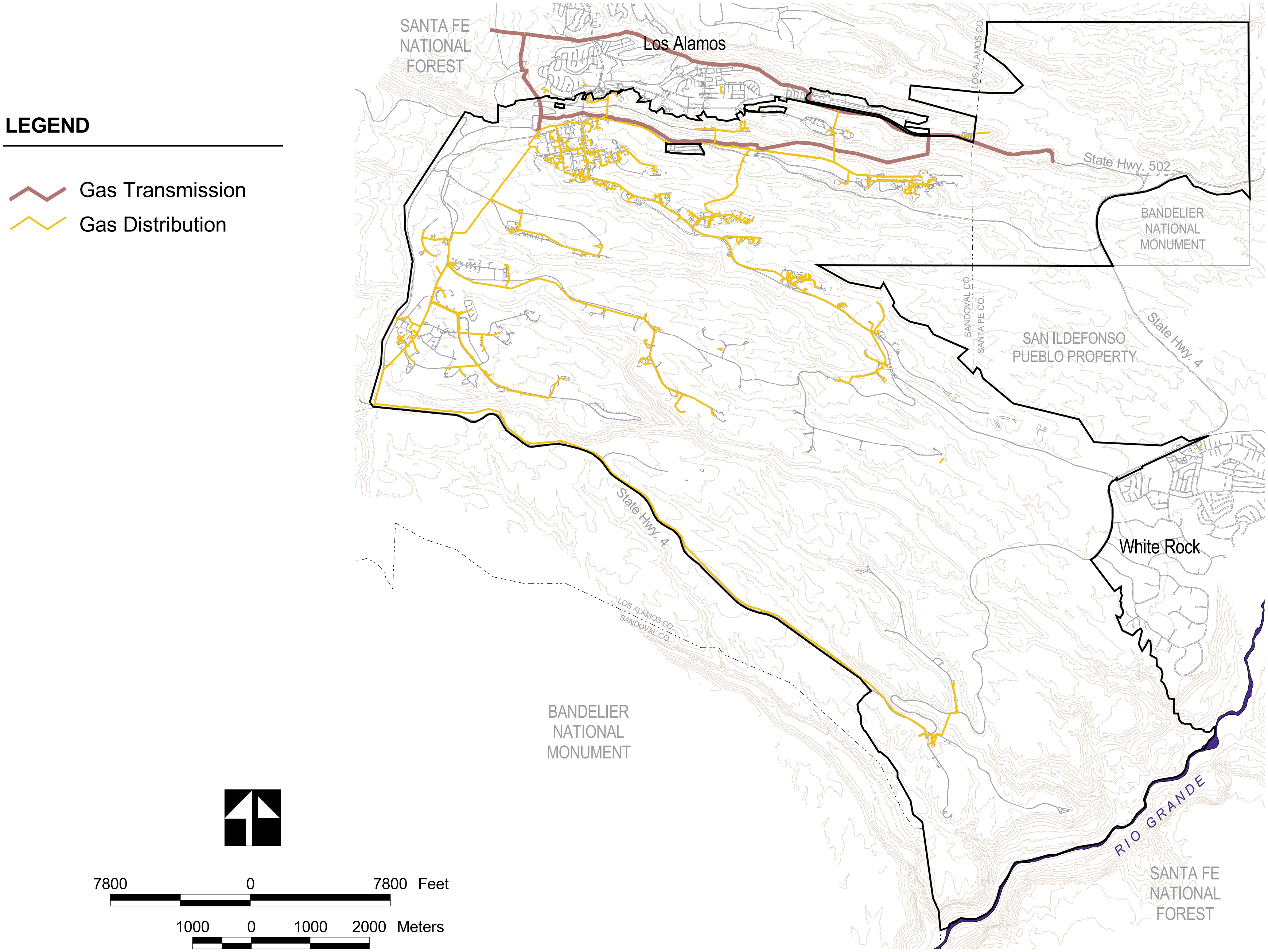
Utilizing computer modeling and empirical methods, the Laboratory has identified three areas of known concern. These issues include:

a. At present, no redundant border metering station capable of supplying full capacity gas demand exists. This is necessary due to the fact that the failure of Tech Meter One could curtail a large percentage of Laboratory operations. Funding for this addition is being pursued for FY 2000.

b. The 3-inch gas pipe running from Diamond Drive east on Pajarito Road, serving TA-55, is too small to carry peak load capacity. Current plans are to upgrade this pipe to a 6-inch line. This project is tentatively scheduled for design in FY 2000.

c. A restriction of unknown origin exists in the 6-inch pipe along East Jemez Road east of the Royal Crest Trailer Court. Specific plans for this pipe have not yet been developed.

Map IV-A12: Site Wide Existing Natural Gas Utilities



f. Steam System

Los Alamos National Laboratory has two primary sources of steam: the power plant in TA-03 and the TA-21 steam plant. The power plant has a capability of producing 360,000 pounds per hour, while the TA-21 steam plant can produce 36,000 pounds per hour. Additionally, TA-16 has "stand alone" steam systems that are considered part of their facilities but are not covered in this document.

Steam distribution is primarily underground in welded and wrapped steel piping. The mains are well maintained and in good condition. A dedicated maintenance staff ensures continued facility heating with minimal downtime.

The return condensate system, however, has had continued maintenance problems, and is in need of replacement. The steam condensate return system uses various materials. These are bare steel, insulated steel, coated steel, and fiberglass. Wrapped steel condensate pipe is cathodic protected; however, deterioration is rapid in certain areas. This could be attributed to surface and soil conditions. Currently, repairs are made after leaks are detected, but this method often causes consequential damage and can compromise a complete run of pipe. Proactive methods such as infrared investigation could provide invaluable benefits for the condensate system and improve its rate of return.

1. Steam System Condition

The steam system supply is in good condition and well maintained. Steam system return or condensate lines have been a continuing maintenance problem. The system is being gradually upgraded by replacing fiberglass piping with steel. "Poly" wrapping operations over the last several years has been implemented on new steel condensate piping. Currently, about 10-15% of the condensate system is protected in this manner. Also, cathodic protection is substantial and evenly distributed.

A "totaling" flow meter was installed in the condensate return line about two months ago. Preliminary readings show a measured return rate of 85-95%. However, conductivity ratios suggest that a substantial amount of this is a result of city water leaking into the system from heat exchangers. That problem has been recently addressed and rectified. A more realistic return rate is about 60-75%. A certain amount of the loss is from consumption in humidifiers and in the cafeteria. The rest is lost to evaporation, minor seepage, and underground leaks. Most of the loss is conditioned system water lost somewhere subsurface. Condensate repairs are reactive when leaks become apparent.

This analysis is based ona review of repair logs of 1997, 1998, and 1999. We have identified areas of "high repair density." Those are areas that have had over 5 major leaks in one section between manholes. Poor initial installation, substandard pipe material, or unique site conditions could cause these failures. In any case, these areas support complete replacement projects.

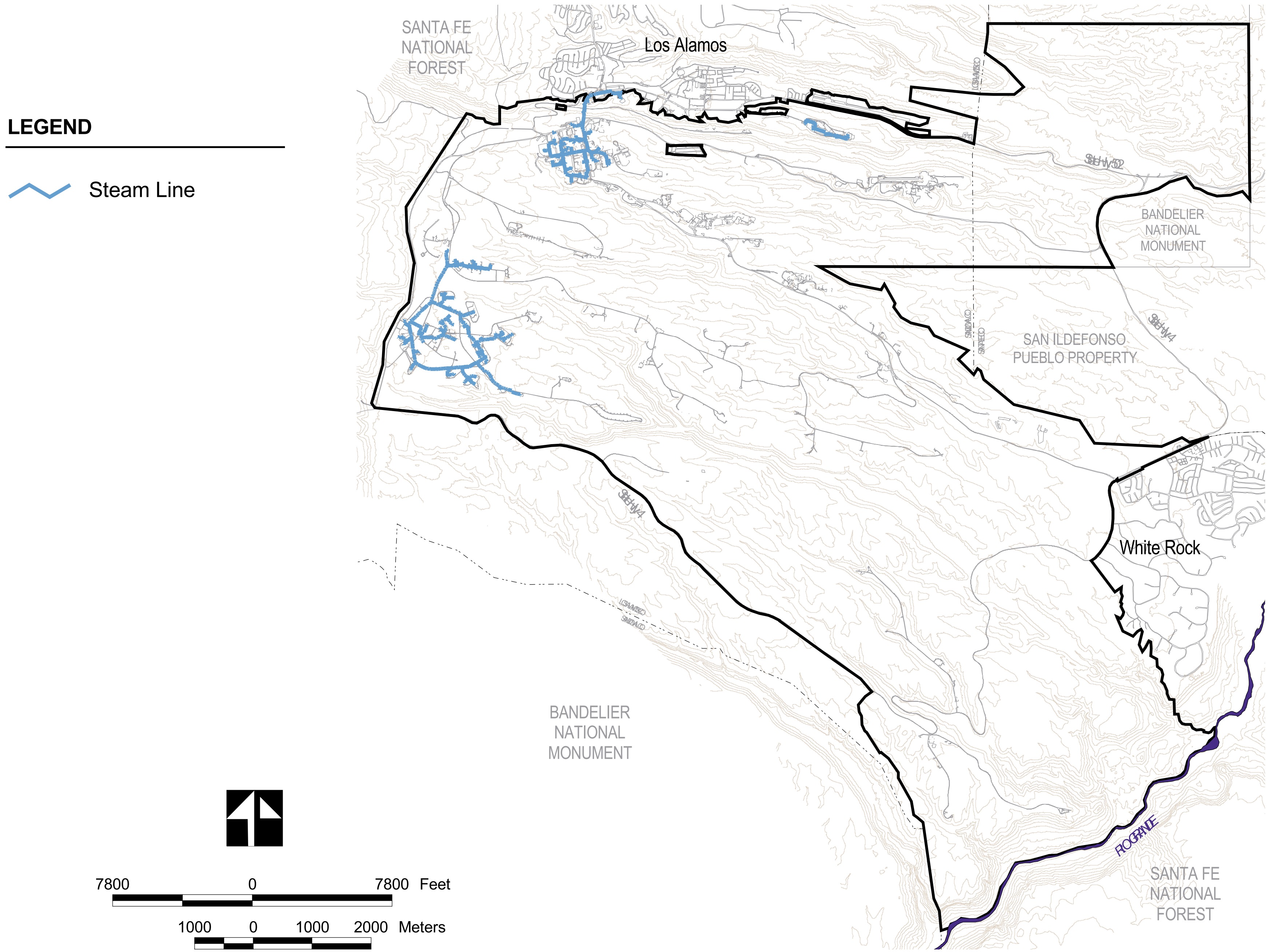
2. Steam System Materials

In order to solve earlier leak problems, a synthetic, fiberglass condensate was installed in the 1980s. This material does not blister or corrode; however, it does not withstand high steam temperatures when steam traps are inoperable and stick open. When steam enters a "Bondstrand" pipe section, it cracks and shatters. This analysis has located areas of "Bondstrand" condensate pipe and defined projects. Synthetic pipe replacement will substantially increase average return percentage.

3. Steam System Capacities

The power and generation plants have the capacity to deliver three times current demand. TA-03 development could increase that demand; however, that is unlikely. Central steam is an obsolete system but is too costly to change in this developed area. Analyses have been done showing the installation of centralized hot water distribution systems to be undesirable. Facility gas heating should be considered as a viable replacement or substitute for this steam system, where feasible in new buildings.

Map IV-A13: Site Wide Existing Steam Utilities



g. Communications

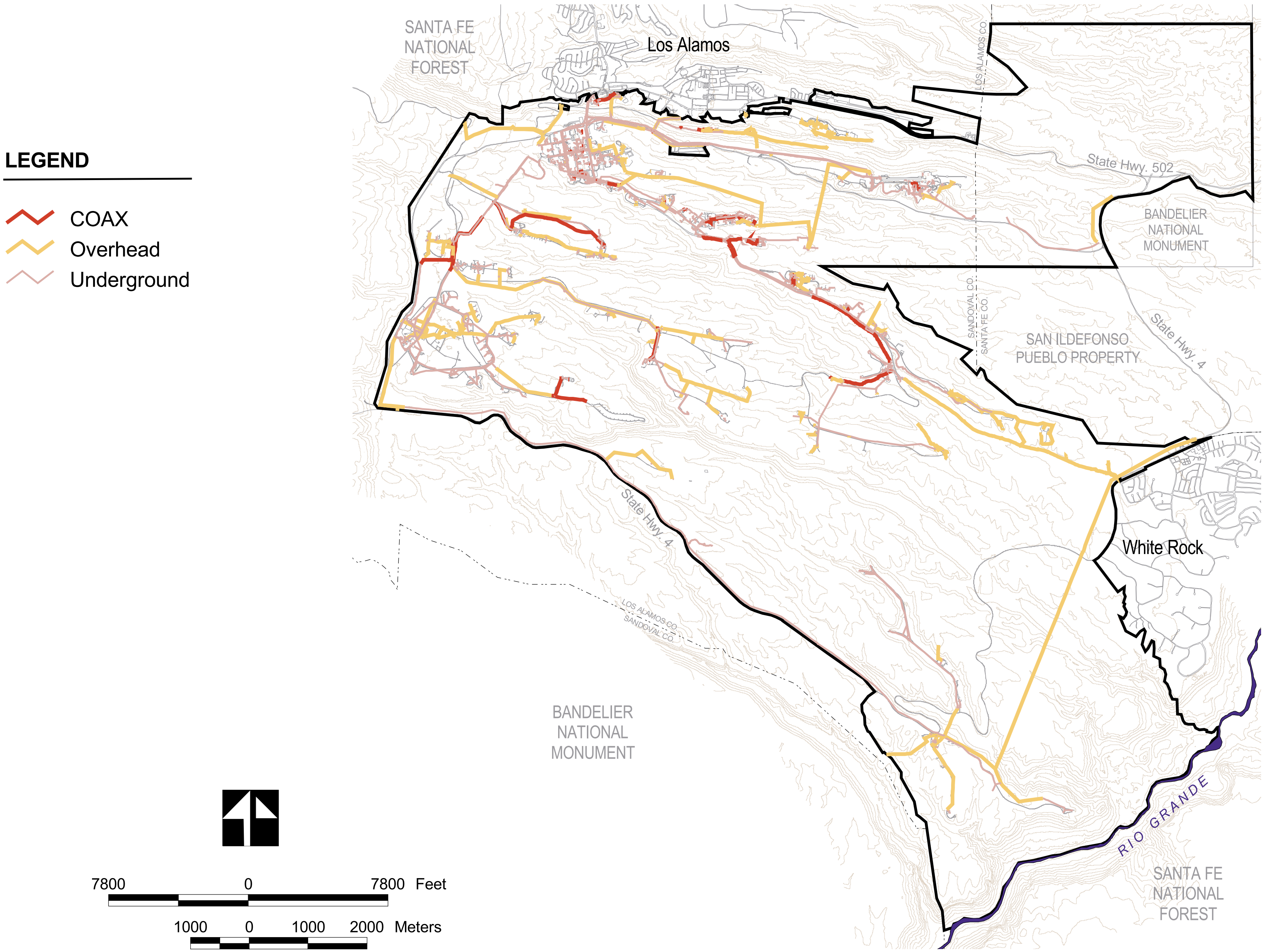
The central goal of voice, data, and video communications planning at the Laboratory is to provide an effective, secure, and economical communications system that helps maximize the productivity of employees in accomplishing the Laboratory's missions. A key factor for providing effective communication service is staying abreast of and applying new technologies.

The Laboratory's telecommunications system has undergone a major change with the completion of the Los Alamos Integrated Communications System (LAICS) that provides analog and digital switching now and well into the next decade. Currently telephone service consists of 17,000 lines provided by a Lucent #5 Electronic Switch located in the new TA-03-1498 Laboratory Data Communications Center and remote nodes at TA-16-1374, TA-50-184 and TA-53-1. The remote switch nodes are linked by finer cables in duct banks from the #5ESS at TA-03-1498. Offsite service is provided via fiber cable from the #5ESS in TA-03-1498 to the US West Central Office in the Los Alamos town site. Telephone service to remote technical areas in the Laboratory is provided on subscriber carrier over copper or fiber cables.

The fiber infrastructure consists of 74 miles of fiber cable and 34,000 terminated fibers. This provides a flexible, fiber-optic distribution system for routing connections to the campus-wide high performance switching fabric for 624 buildings. The copper infrastructure consists of 62,600 outside plant copper cable pairs distributed throughout the Laboratory. The supporting infrastructure for the copper and fiber feeder and distribution system is provided through the use of a combination of direct buried, aerial and 21 miles of underground duct bank.

US West provides maintenance and upgrades to the #5ESS telephone switch, associated transmission equipment and equipment outside the plant through a dedicated services contract.

Map IV-A14: Site Wide Communication Utilities



h. Electrical System

Currently, the electrical power for Los Alamos National Laboratory is supplied from DOE/LAC Power Pool through 115 kilovolt (kV) transmission lines. The Laboratory's on-site generation capabilities consist of three natural gas fired boilers, which supply three turbine generators operating at 13.8 kV. Two of these turbine generators are rated at 5 megawatts (MW) while the third is rated at 10 MW, for a total generating capacity of 20 MW. They are also used for emergency power during shortages and as spinning reserves for the power pool.

The Laboratory's distribution and utilization network consists of 59.5 miles of underground 15 kV cable, 105.4 miles of overhead wire, 594 pole mounted transformers, and 329 pad mounted transformers. The system has a total connected capacity of 299.4 MVA. In addition, this system contains 3,113 poles, 47 MVA of capacitors, numerous fuses, lighting arrestors and 11 switchgear lineups.

To provide adequate maintenance and construction support the Laboratory has two programs in place and is developing a pilot program. The first method is a computerized preventative maintenance program (PMP). A 15-member JCNNM crew performs both maintenance and construction. Crew members inspect all parts of the 115kV and 15kV overhead systems, perform necessary tree trimming, tighten connections, test poles, clean and check manholes, and de-energize transformers and pad-mount switches. The second program is the breaker maintenance. This group removes circuit breakers from the switchgear for cleaning, inspection, and relay testing on a programmed schedule. Lastly, the Laboratory has a metering network pilot program that will monitor power usage and log events that occur in the utilization systems.

1. Electrical System Condition

Although the Laboratory's electric system is generally in good operating condition, specific concerns require attention. Several of these issues are addressed below:

The 13.8kV switchgear and oil circuit breakers (OCB's) at several locations are 30 to 40 years old and obsolete for the current system. Replacement parts are often no longer available. A budget item must be placed in each fiscal year business plan to continually replace inadequate switchgear with the latest vacuum interrupter or SF_6 equipment until all have been replaced. Hazardous failures have already occurred, and will continue unless corrective action is taken.

Five 115kV/13.8kV step-down transformers provide all the electric power delivered to the Laboratory and the Los Alamos town site. The transformers were installed in 1957, 1964, and 1969 and should be on a program for replacement. Further, transformer capacity redundancy is presently inadequate. Consideration should be given to adding additional units prior to replacing the older units so that shortfalls in redundancy are corrected as soon as feasible.

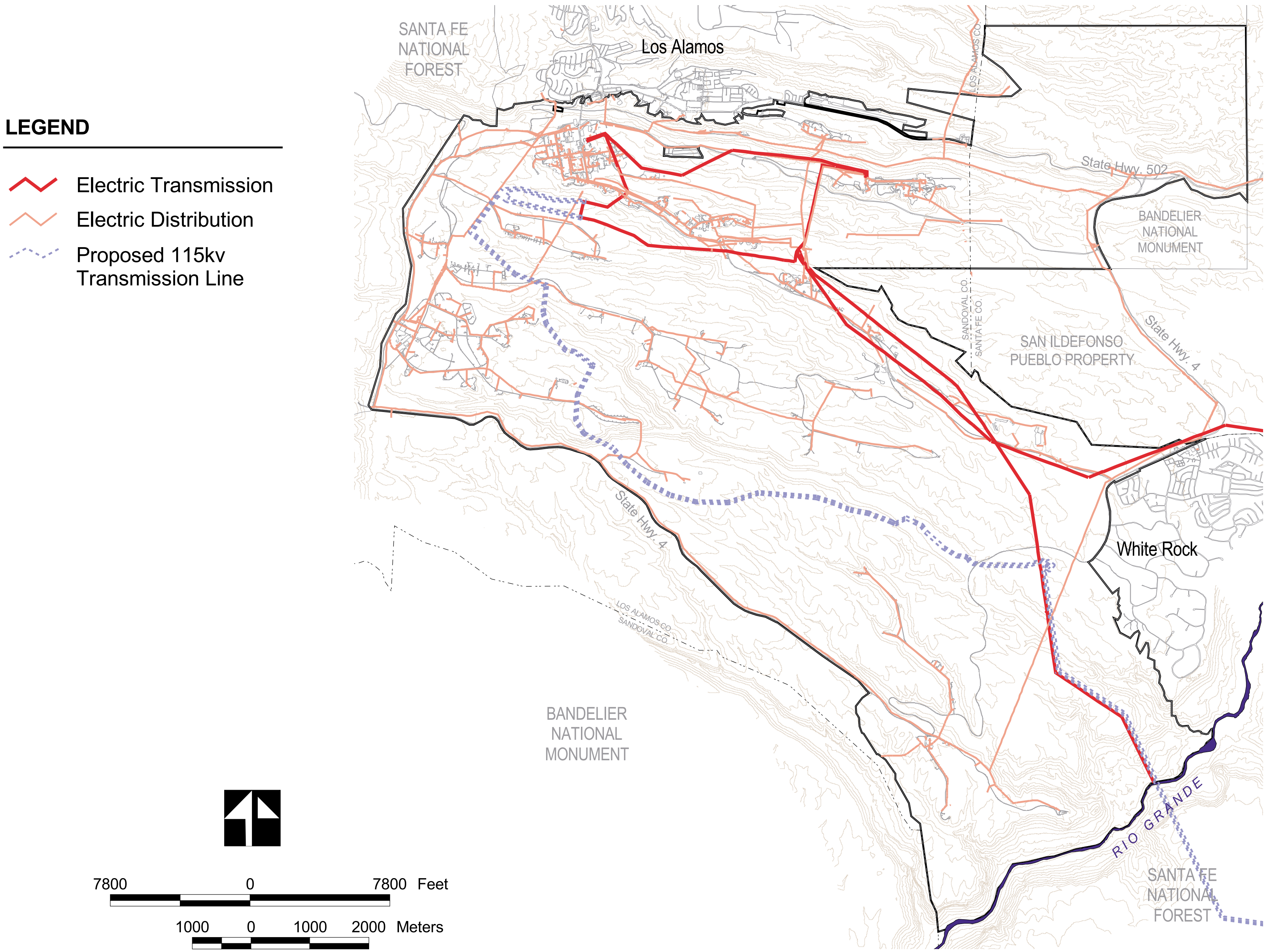
Presently, two 115 kV transmission lines carry all the bulk electric power for the Laboratory, the Los Alamos town site and White Rock. Both lines terminate on a common bus. A third 115kV transmission line is planned to interconnect PNM with the Laboratory's power system at a new and physically separate 115 kV switchyard from the termination point of the original two lines. This will provide for redundancy and increase reliability and security.

Two-thirds of the Laboratory's 13.8kV distribution system is run overhead. Where feasible, such distribution lines should be relocated to underground ductbanks to improve reliability and increase the security of the system.

One-third of the lightning-caused interruptions occur on the single S-17 13.8kV distribution circuit. Improved insulation coordination on this circuit, the Laboratory's longest aerial circuit, is a typical example of specific upgrades that can improve distribution system reliability for the entire site.

The Laboratory has a metering network pilot program that monitors usage and power quality and logs events in the utilization systems from a central computer. Currently this pilot program only monitors two buildings. This system should be expanded to cover at least the mission-critical areas.

Map IV-A15: Site Wide Existing Electrical Utilities



The installed 13.8kV to 480 volt transformation capacity is approximately 300MVA. Considering a typical peak load of 60MW this indicates a significant and chronic over-design of low voltage delivery facilities. This also represents a major continuous loss of electrical energy due to the core and coil losses. Mitigation would involve replacement of old and poor equipment with properly sized modern equipment, and could include a program to relocate serviceable equipment to sites more befitting their sizing.

2. *Electrical System Materials*

Since 1982 the Laboratory has been replacing the old and outdated 15kV underground cable with modern ethylene-propylene-rubber (EPR) insulated cable. There remains over 90,000 linear feet of old cable that must be replaced before the increased end-of-life failure rates become disruptive.

There are 31 remaining transformers spread across the Laboratory that are PCB contaminated, some of which also contain perchloroethylene – a RCRA listed material. These transformers should either be replaced or refilled with a suitable dielectric fluid to mitigate the PCB and RCRA concerns.

3. *Electrical System Capacities*

Portions of the 13.8kV aerial distribution lines are not adequate to carry the anticipated loads. Reconductoring existing circuits and adding new circuits to accommodate the heavier conductor are essential to carrying the additional distribution loads.

The 115kV Norton transmission line is limited to 120MVA in its present configuration. With the SVC exporting VARs to maintain system voltage, the Norton line is not adequate to carry electrical loads greater than 75MW if the TA-03 power plant and the PNM-Reeves line were out of service. The Norton line can be reconductored to a capacity of over 200MVA, so that it could carry existing and future loads alone, but with reliability solely dependent upon its integrity.

Enhancement of load-serving capability (lowering of the bulk system impedance) either through increased transmission/transformation capability or through the addition of on-site generation capability will increase the fault-duty of the Laboratory's power distribution system. This could result in exceeding the fault-duty rating of a significant amount of Laboratory low-voltage systems at the building-wiring level and must be included in the planning for future system upgrades.

D. Facilities

As of January 1999, Los Alamos National Laboratory had approximately 7.8 million gross square feet of space contained in 1,476 buildings. The estimated replacement value of these buildings is roughly $3.5 billion.

The greatest gross square footage of all Laboratory facilities is in the Core Planning Area, which includes TA-03, -58, and -59. This area contains approximately 41% of the Laboratory's gross square footage. The second largest cluster of facilities is located along the Pajarito Corridor, and the two planning areas here contain about 23% of the Laboratory's gross square footage.

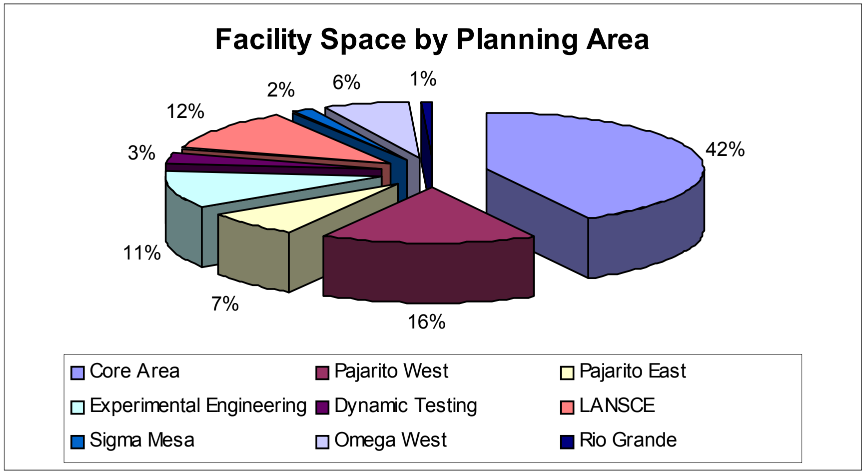
a. Facilities Size and Age

There are 417 buildings at the Laboratory that exceed 2,000 square feet in area. These major buildings account for 7.3 million square feet, or 90% of all Laboratory gross square footage.

One hundred fifty-four buildings in this group exceed 10,000 gross square feet in space and compose 76% of all Laboratory facility space. The average size of the major buildings (> 2,000 square feet) is about 17,700 gross square feet. Of the remaining buildings, approximately 1,100 are small and less than 2,000 gross square feet in size. Over half of these are either temporary or transitional and include both owned and leased buildings. The average size of these buildings is 675 square feet, the area of a typical trailer.

Many of the buildings the Laboratory uses for conducting state-of-the-art science are old and outdated. Forty-eight percent of all Laboratory buildings larger than 2,000 gross square feet are 30 years old or older. In addition, 36% of all buildings larger than 10,000 gross square feet were constructed before 1960. Only 15% of the gross square footage in buildings larger than 2,000 gross square feet were constructed in 1990 and after.

Table IV-A2: Facility Space Distribution by Planning Area



Many of the remaining medium-sized facilities are also old and can be considered substandard. Priority must be given to important Laboratory facilities for maintenance and upgrading. More funding is needed to rehabilitate substandard facilities if they are going to continue to be used in the future.

The Laboratory could reuse developable land and reduce its energy, security, and maintenance costs by replacing its inventory of small buildings, particularly temporary, substandard, and transportable buildings, with larger, new, permanent buildings. The practice of retaining and reusing temporary structures must be eliminated.

b. Facilities Space Characterization

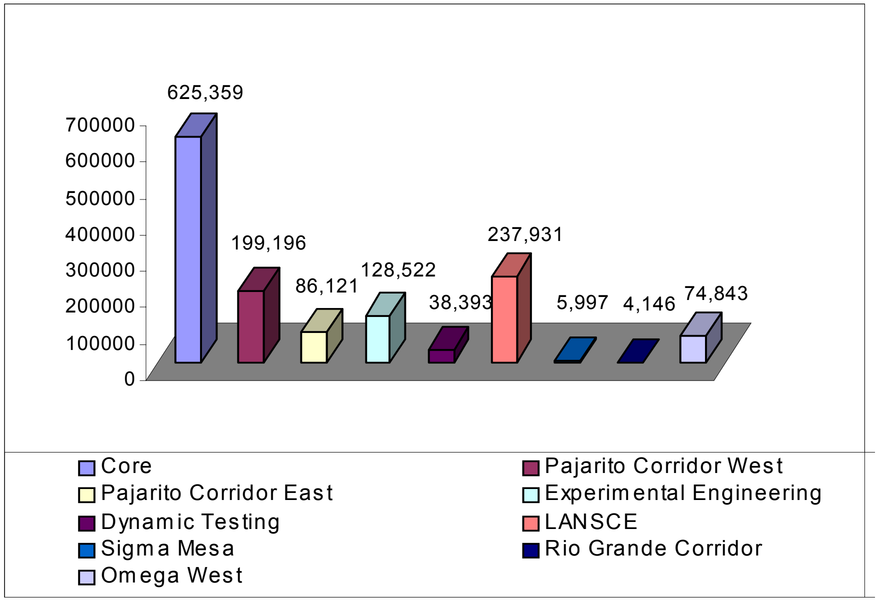
Space utilization at the Laboratory falls into six basic categories: administration, laboratory, service, storage, service production, and "other."

Administration Space

Approximately 2.0 million gross square feet of administration space currently exists at the Laboratory, composing 25% of the total gross space. This total includes about 270,000 gross square feet in leased off-site facilities such as the Pueblo School and White Rock Office Park. Administration space is utilized primarily for office type environments.

Considering ongoing trends in scientific research toward computer modeling, which necessitates larger offices to accommodate the required equipment, the offices at the Laboratory appear to be less suitable than average. Moreover, the Laboratory is sometimes forced to convert existing office space into other uses, displacing occupants into temporary or leased space.

Table IV-A3: Administrative Space Distribution



More permanent office facilities are needed. An additional 703,000 square feet of permanent office space would be required if all leased, transitional, and temporary office space were to be vacated. This temporary and leased space could be gradually relinquished as permanent, more economical facilities are constructed.

Laboratory Space
There are approximately 3.5 million gross square feet of laboratory space, 45% of the total gross space. Bench-type research facilities such as biology, electronic, physics, and chemistry laboratories characterize laboratory space. This category also includes heavy experimental space, which characteristically consists of large, high bay areas that accommodate massive scientific equipment. The Laboratory has had to convert laboratory space in some older buildings into administration space because of the shortage of permanent office space. This reduces the potential for the future rehabilitation of older laboratory space.

Storage Space
Approximately 940,000 gross square feet of storage space exists at the Laboratory, 12% of the total gross space. There has been a tendency to retain equipment that is not being used, resulting in a large and ever-growing storage problem. The storage of needed items has therefore become a problem.

Adequate, easily maintainable space built specifically for storage is lacking. As a result, there has been a proliferation of small, low-cost, uninhabitable structures – including shipping cargo containers, metal sheds, and even railroad freight cars – that are used for this purpose. In addition, many items are stored outdoors for lack of proper storage facilities. The maintenance demands and environmental and aesthetic ramifications of this proliferation of substandard units are a problem. Space that has become inadequate for other uses is often used for storage, which minimizes the number of marginal facilities disposed of or decommissioned.

Table IV-A4: Laboratory Space Distribution

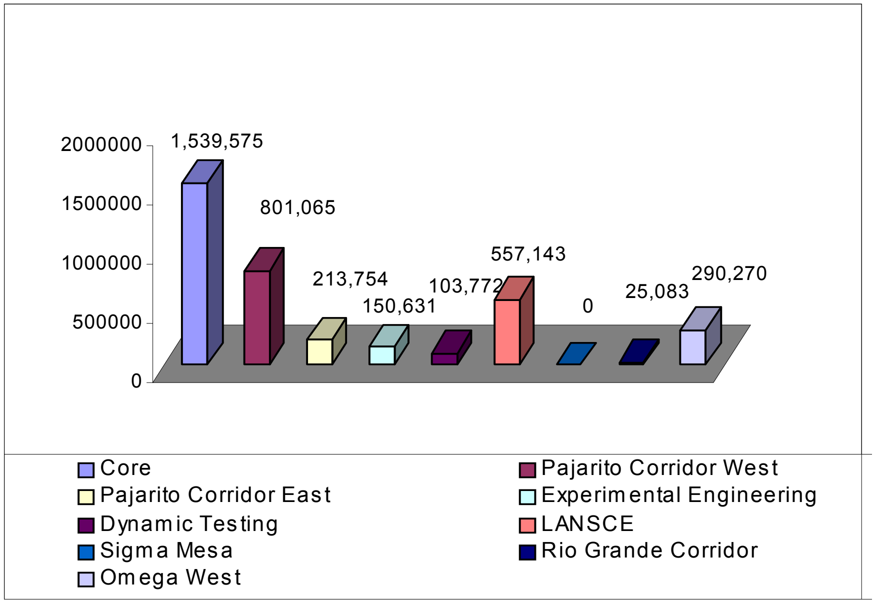
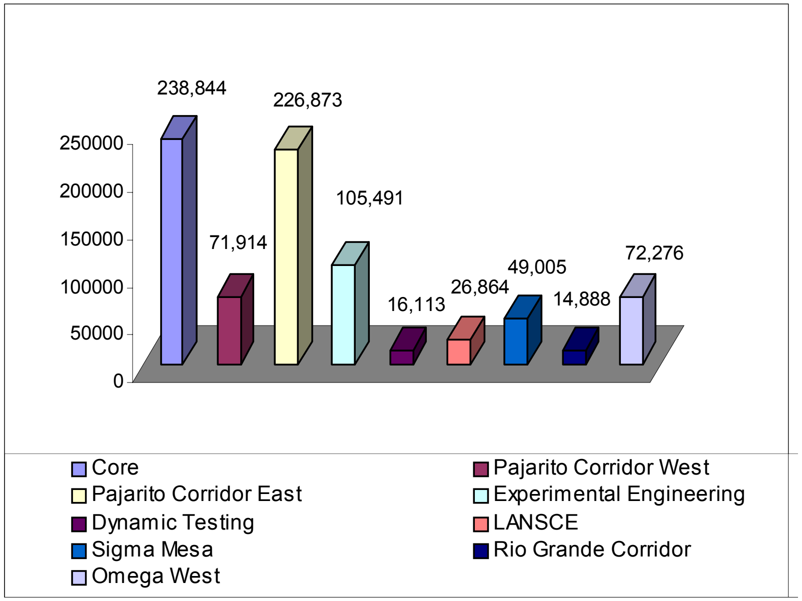


Table IV-A5: Storage Space Distribution



Service Space
There are 890,000 gross square feet of service space at the Laboratory, 11% of the total gross space. This category includes space utilized for Laboratory support functions and space that that cannot be occupied by staff or used for storage. Building plant and equipment space, restrooms, stairwells, halls, etc. fall into this category.

Production Space
Approximately 470,000 square feet, or 6%, of the Laboratory's total gross space, are used for production activities, including the handling and processing of various materials.

Table IV-A6: Service Space Distribution

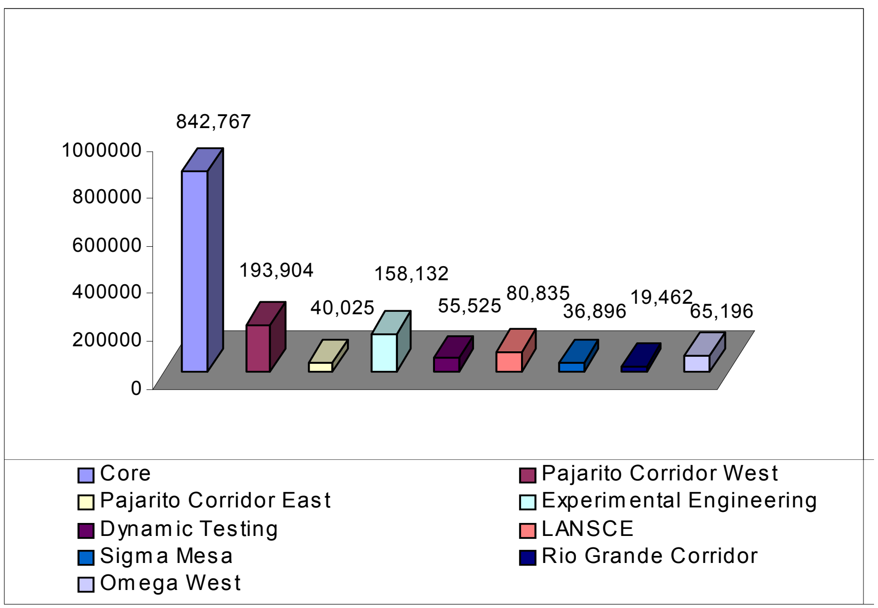
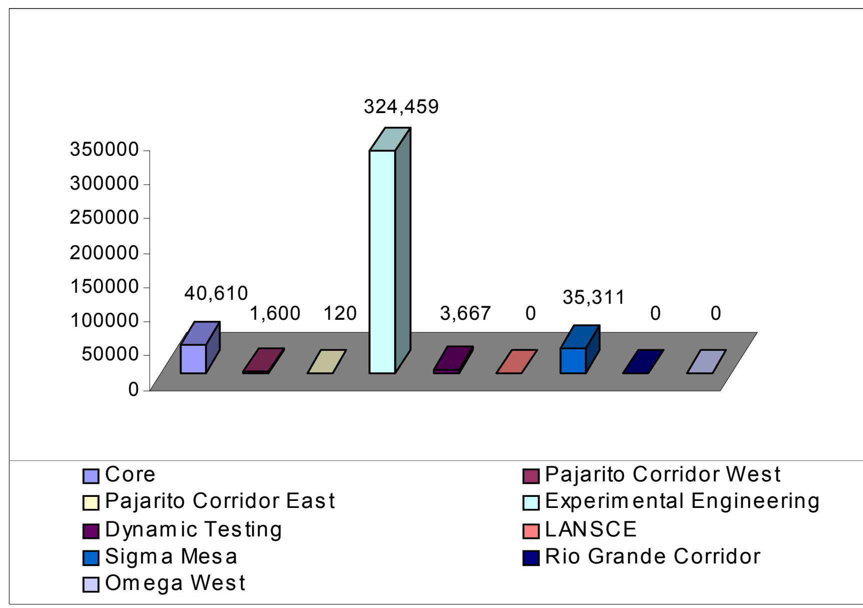


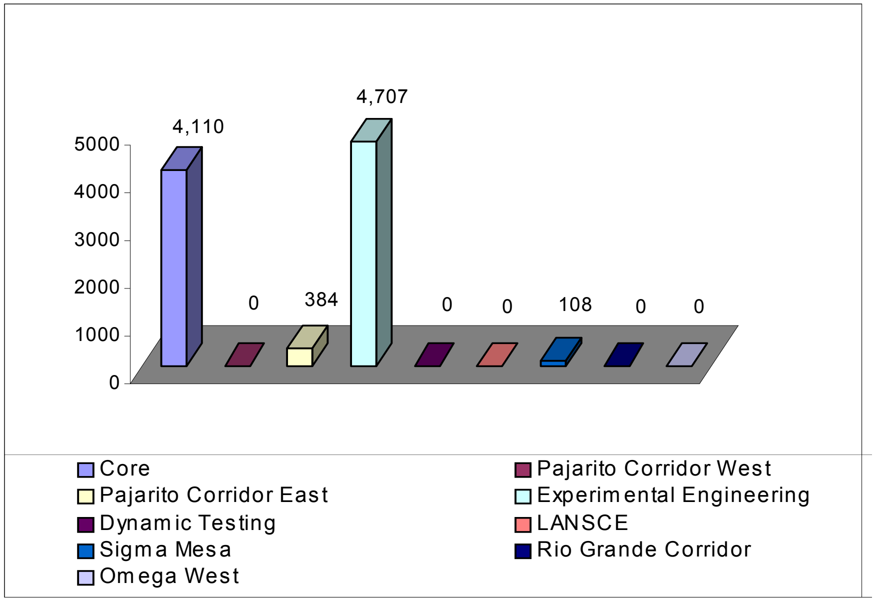
Table IV-A7: Production Space Distribution



Other Space

There are approximately 55,000 gross square feet of “other” space at the Laboratory. This translates into less than1% of the total gross space. This category includes unique and specialized facilities that do not fit easily under other classifications.

Table IV-A8: Other Space Distribution



E. Space

In FY98, the Laboratory spent about $115,000,000 on space costs. Currently, there are approximately 7.8 million gross square feet of facility space onsite. Additionally, the Laboratory leases about 265,000 square feet of space in Los Alamos, White Rock, Española, and Santa Fe. In total, the space is distributed as follows: 45% laboratories, 25% administration, 12% storage, 11% service, 6% production and the balance for other uses.

1. Current Space Management Process

Space management at the Laboratory currently functions under an "interim" process adopted in 1995. This process was adopted along with the advent of the facility management model.

2. Space Allocation Process

An authorized representative of an organization already occupying substantial space in a facility management unit (FMU) contacts the facility manager (FM) for all space needs within that FMU. This includes requests for additional existing space, to excess space, for space purchase (e.g. trailers), for new construction, and to correct assignments in the CAFM database. When the Primary FM has space that will meet his tenant's needs and the tenant's use of the space is consistent with the mission of the FMU, the FM may reassign the space.

When, for any reason, the FM cannot meet a space request, the tenant is referred to Facility and Waste Operations-Space Management (FWO-SM) for an alternative solution. If the space request involves space purchase/acquisition, or new construction, the FM and tenant confer with FWO-SM to explore alternative actions. Only when FWO-SM concurs can the FM follow procedures for purchase or new construction.

3. Excess Space

An authorized representative of a tenant or non-tenant must declare to the FM of the FMU in which the space is located that a specific space is excess to the needs of his organization. In consultation with the FM, FWO-SM determines if the subject space will continue as a Laboratory resource or whether it will be authorized for shutdown and removal as an active resource.

Should the FM decide the space is to continue as a Laboratory resource, there are three options. They are:

1. Reassign the space to another tenant.

2. Reassign the space to the FMU organizational code, assuming all responsibilities as tenant and FM, including space recharge.

3. Forward the space to the FWO-SM institutional space bank and maintain FM responsibilities.

4. Out of Service Space

If space is to be taken out of service for either placement in the institutional space data bank or for indefinite safe shutdown prior to disposal, the vacating organization has several responsibilities. For permanent buildings, a safe shutdown plan must be prepared in association with the FM and to FWO-SM's satisfaction. All funding necessary for the plan's preparation and implementation must be provided by the vacating organization. For temporary buildings, the vacating organization must prepare the space for disposal through the approved Laboratory salvage process.

Vacated space remains in the subject FMU and is under the surveillance and maintenance (S&M) responsibility of the FM as defined in the safe shutdown plan. The space is eventually transferred to FMU-85, the Laboratory's central S&M FMU. FMU- 85 is responsible for planning for the disposition of all vacated space placed in safe shutdown awaiting disposal.

5. Data Maintenance

It is the responsibility of each FM to provide Facility and Waste Operations Division (FWO) with current information on space assignments, reassignments, room modifications, use changes, and all other space-related data as found in the FSS CAFM space database. FWO in turn enters the data in a timely manner and distributes it to all interested parties.

6. Planned New Space Management Process

With the evolution of the distributed facility management model, the need to reevaluate the Laboratory's current space management process has become apparent. The Facilities and Waste Operations Division (FWO) is preparing a recommendation to reinvent the Laboratory's space management function as a fully integrated formal process. The purpose of the proposed integrated space management process will be to more effectively plan, acquire, operate, maintain, lease, and dispose of the Laboratory's physical assets as valuable national resources. The management of physical assets, from acquisition through operations and disposition, is intended to be an integrated and seamless process linking the various life cycle phases. Stewardship of these physical assets during all phases of their life cycle will be accomplished in a safe and cost-effective manner to meet the DOE mission and ensure protection of workers, the public, and the environment. Physical asset stewardship will also incorporate industry standards.

The cornerstone of the integrated space management program will be a space utilization target, or setpoint, for each line organization/program. This setpoint will be the total square footage of space allocated to each Laboratory line organization and/or program. It will be the Senior Executive Team's (SET's) responsibility to review each organization for alignment with its target space allocation. This evaluation will be based upon an analysis by FWO.

In concert with the utilization target, the SET will establish priorities among programs and activities as they impact space needs. These priorities will be determined on the basis of PMD comprehensive facilities planning.

Success of the integrated space management program will rely on several responsible parties fulfilling specific responsibilities:

7. Senior Executive Team (SET)

- Promotes a culture that recognizes space as Laboratory "community property."

8. Site Planning and Construction Committee (SPCC)

- Establishes space utilization standards.

9. Line/Program Organization Managers

- Provide FWO/SM reports of the population in space assigned to their respective organizations.
- Develop plans and implement actions, consistent with SPCC guidance, that will align their organizations to their space utilization setpoint.

10. Facility Managers (FM)

- Allocate space within utilization standards and use and activity priorities adopted/established by the SET.

11. Facilities and Waste Operations (FWO)

- Provide the SET reports on the utilization of all Laboratory space.
- Facilitate the disposal of excess space per LIR 230-01-01.0, Laboratory Excess Space and Surplus Facility Requirements.
- Develop space utilization standards and recommendations for SPCC consideration.
- Expand and maintain the Laboratory's space database and its user interface capabilities.

F. Environment, Safety and Health

1. Air Quality

a. Radiological Air Quality

Some Laboratory operations may result in the release of radioactive materials to the air from point sources such as stacks or vents or from non-point sources such as the radioactive materials in contaminated soils. The concentration of radionuclides in point source releases is continuously sampled or estimated based on knowledge of the materials used and the activities performed. Non-point source emissions are directly monitored, sampled or estimated from airborne concentrations outdoors. Radionuclide emissions from the Laboratory include radioisotopes such as tritium, uranium, strontium-90 and plutonium.

The largest contributors to Laboratory radiological point source emissions are LANSCE and the tritium operations. Laboratory non-point sources include fugitive emissions from the LANSCE bay area and holding ponds, the PHERMEX facility at TA-15, the dynamic testing facility at TA-36, and low-level radioactive waste disposal at Material Disposal Area G.

Regulatory Framework

There is a broad regulatory framework for protecting air quality. The following is a minimal discussion of some of the regulations. The Laboratory has implemented an Air Quality Policy for coordination with and compliance with these regulations.

Radiological air emission requirements are specified in 40 CFR 61, Subpart H, "National Emissions Standards for Hazardous Air Pollutants." Under these regulations, the radiation dose to the public from airborne radionuclide emissions from DOE facilities is limited to 10 millirem per year effective dose equivalent. EPA issued DOE Notices of Noncompliance for not meeting all the provisions of 40 CFR 61 in 1991 and 1992. In June 1996, DOE and EPA signed a Federal Facility Compliance Agreement that specifies how the University of California (UC) will meet the requirements of 40 CFR 61, Subpart H. Since June 1996, DOE and UC have asserted that Laboratory operations are in full compliance.

b. Non-radiological Air Quality

Pollutants released from Laboratory operations are emitted primarily from combustion sources such as boilers, emergency generators, and motor vehicles. DOE is not required to monitor toxic air pollutant emissions because Laboratory's emissions are below the state's permitting threshold limits.

Regulatory Framework

There is a broad federal and state regulatory framework for protecting air quality. Laboratory is in compliance with federal and state requirements, per the *New Mexico 2.73 Emissions Inventory Report, Los Alamos National Laboratory report LA ____(?), 1997*. The Laboratory implemented an Air Quality Policy for coordination with and compliance with these regulations.

The following is a minimal discussion of one state regulation that could immediately affect development of the Laboratory .

The New Mexico Environment Department (NMED) administers requirements of the Prevention of Significant Deterioration regulation, Chapter 20, New Mexico Administrative Code, Section 2.74. This regulation has stringent requirements before construction of any new, large, stationary source can begin. Wilderness areas, national parks, and national monuments receive special protection; thus, the proximity of Bandelier National Monument's wilderness area could have an impact on any proposed new construction at the Laboratory . Because the total emissions of any criteria pollutant from the Laboratory are below the regulation's threshold of 250 tons a year, currently this regulation is not applied to the Laboratory .

9. *Quality Environment*

The physical setting of Los Alamos is spectacular and beautiful. The topography permits views across the Rio Grande Valley to the east and the Sangre de Cristo Mountains. The adjacent Jemez Mountains rise above the Laboratory to the west. Interesting geologic landforms consisting of steep canyons and narrow fingerlike mesas extend eastward from the mountains and further enhance the unique environment. The mountain flora and fauna, unusual geology, archaeological heritage, and mild climate create an enchanting environment for the Laboratory.

Because the Laboratory was established in response to a national emergency and continued to operate under intense pressures during the Cold War era, much of the man-made environment resulted in an austere, military/industrial appearance. Many facilities are temporary structures that have exceeded their design life, and other structures are substandard or do not accommodate contemporary scientific research and development needs. Other structures lack architectural unity and the majority of the site's parking lots, security gates and service and storage yards are highly visible to employees and visitors. Pedestrians compete with service vehicles for the right-of-way along poorly defined walkways and roadways. Signage is often cluttered, unattractive and visually inconsistent. Overall the site appears disorganized, lacks respect for visual impacts and is poorly integrated with its surroundings.

The Laboratory must upgrade the physical appearance and image of the institution if it is to effectively compete with other federal installations for important work and top qualified personnel. Physical appearance does not relate just to aesthetics; it also relates to the functional organization, efficiency and safety of the work environment. As physical appearance is an indication of the pride and self-respect people have of themselves, a similar relationship can be extended to institutions.

The Laboratory recently published *Architectural and Site Design Principles*. The document presents seven principles necessary for upgrading the infrastructure and quality of the workplace. The principles are image and entrance, land development and siting, vehicular movement and parking, pedestrian environments, landscaping/open space, security and safety, and architectural and visual concerns. The Laboratory can incorporate these principles into future project development requirements, but the challenge will be deciding how non-project financed institutional improvements can be funded and become an ongoing, accepted way of maintaining a quality environment. These institutional physical improvements can increase substantially the identity, appearance and employee morale of the Laboratory.

Site Wide Planning Area Assessment/Needs Summary

Current Functions/Capability	Current Mission Activity	Forecasted Functions/Capabilities	Plan Discussion
Infrastructure Facilities			
Offsite Utility & Infrastructure Systems	Provide utilities, infrastructure and access up to the site	Limited, if any, systems will be retained	Utility systems are being transferred to other agencies such as the county, PNM, and others. DOE/LANL will purchase utility commodities as needed.
Onsite Utility & Infrastructure Systems	Provide utilities, infrastuture and access distribution throughout the site	Continued Onsite Utility & Infrastructure Systems need to be maintained. Some utility expansion and traffic increases are anticipated.	Utilities: Utility expansion of a limited degree must be accommodated. Utility system aging and degradation needs to be addressed. Upgrade or replace some utility feeds and backups to meet current and future demands. Roads: Poor circulation, limited access, and adjacency of sensitive facilities to public circulation needs to be addressed.

Needed Development	*Proposed Projects*	Land Use	Transp.	Security	Utilities	Facilities	Quality	ESH
Regional solid waste landfill	No project	○	○	○	○	○	○	○
Regional transit coordination	No project	○	○	○	○	○	○	○
Road from NM4 to Santa Fe and Albuquerque	No project	○	○	○	○	○	○	○
Utilities	Utilities							
- Norton LineReconductoring	- Norton LineReconductoring	○	○	○	○	○	○	○
- Third 115kV electrical line	- Third 115kV electrical line	○	○	○	○	○	○	○
- General utility replacement and upgrades	- General utility replacement and upgrades	○	○	○	○	○	○	○
Roads	Roads							
- TA-03 perimeter loop road	- TA-03 perimeter loop road	○	○	○	○	○	○	○
- Upgrade East Jemez Road	No project	○	○	○	○	○	○	○
- Build new north-south road connecting Pajarito Road to East Jemez to divert public traffic off Pajarito Road	No project	○	○	○	○	○	○	○
- Alternatives for Pajarito Road: a) add entry access gates and close to public traffic	No project	○	○	○	○	○	○	○
b) realign and upgrade Pajarito Rd	No project	○	○	○	○	○	○	○
c) building new north south road connecting Pajarito Road to East Jemez	No project	○	○	○	○	○	○	○

Site Wide Planning Area Assessment/Needs Summary

Current Functions/Capability	*Current Mission Activity*	*Forecasted Functions/Capabilities*	*Plan Discussion*
Infrastructure Facilities			
Onsite Utility & Infrastructure Systems	Provide utilities, infrastuture and access distribution throughout the site	Continued on-site utilities, infrastructure systems need to be maintained.	Parking: Rearrangement existing parking and location of new parking to the perimeters of development is desired to reduce security and safety issues. Transit: To reduce overall automobile traffic, continued development of shuttle and on-site transit network is needed Quality Environment: Improvements to create a pedestrian and bicycle friendly enviroment and provide alternatives to automotive use are desired by staff. Other pressing needs are for clearer signage and wayfinding for safety and security. The overall visual quality of the site needed improvement to keep and attract quality staff. Security: A comprehensive security plan is in progress. Current site wide physical security issues are a need for secure storage for inactive classified documents and a need to improve access and boundary controls.

Needed Development	Proposed Projects	Land Use	Transp.	Security	Utilities	Facilities	Quality	ESH
Parking: - Replacement parking for parking removed by SCC and NISC development	SCC and NISC projects	○	○	○	○	○	○	○
- Parking structure near current JCNNM building.	No project	○	○	○	○	○	○	○
Transit: - Master plan for bus/shuttle stops and other related transit improvements	No project	○	○	○	○	○	○	○
Quality Envrionment: - Create a new gateway area at TA-03	No project	○	○	○	○	○	○	○
- Site wide signage master plan and improvements	No project	○	○	○	○	○	○	○
- Site wide pedestrian/ bike trails connecting population nodes	No project	○	○	○	○	○	○	○
Security: - Secure storage facility for inactive classified documents at TA-03	Secure storage facility for inactive classified documents at TA-03	○	○	○	○	○	○	○
- Industrial security perimeter at TA-03 with optionally manned entry points	No project	○	○	○	○	○	○	○
- Control access points to the Laboratory	Control access gates (4)	○	○	○	○	○	○	○
- Continue to fence, sign all Laboratory land	No project	○	○	○	○	○	○	○