

H. Sigma Mesa Planning Area

1. General Description

Sigma Mesa Planning Area covers approximately three square miles. It is bordered by the Omega West Planning Area and the LANSCE Mesa Planning Area along the north, the Land Transfer Planning Area on the east, the Pajarito Corridor West Planning Area and San Ildefonso Pueblo land on the south, and the Core Planning Area on the west. The east-west length of Sigma Mesa Planning Area is bisected by East Jemez Road.

The Sigma Mesa Planning Area is composed of:

TA-05:

TA-53: Undeveloped portions of LANSCE

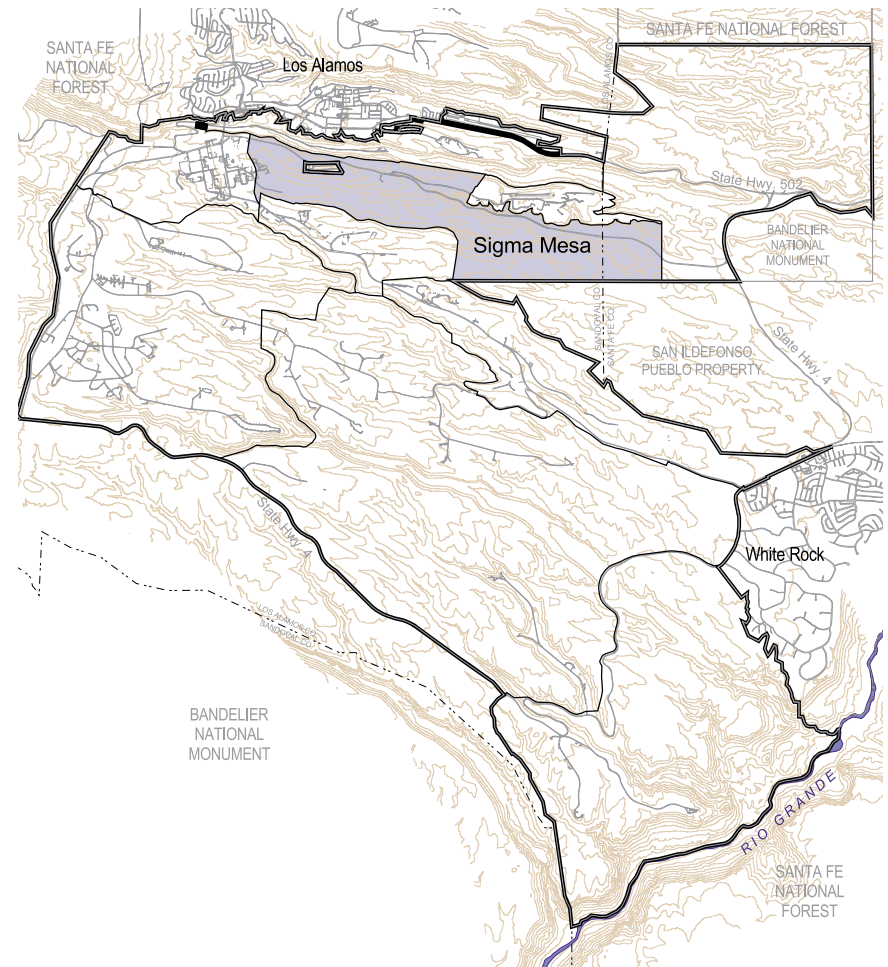
TA-60: Physical support and infrastructure, some support services, subcontractor physical support and the Test Fabrication Facility

TA-61: East Jemez Road physical support and infrastructure, including the sanitary landfill and sand, gravel, and concrete operations

TA-72:

The planning area is mainly for physical support and infrastructure facilities.

Map IV.H1: Key Map

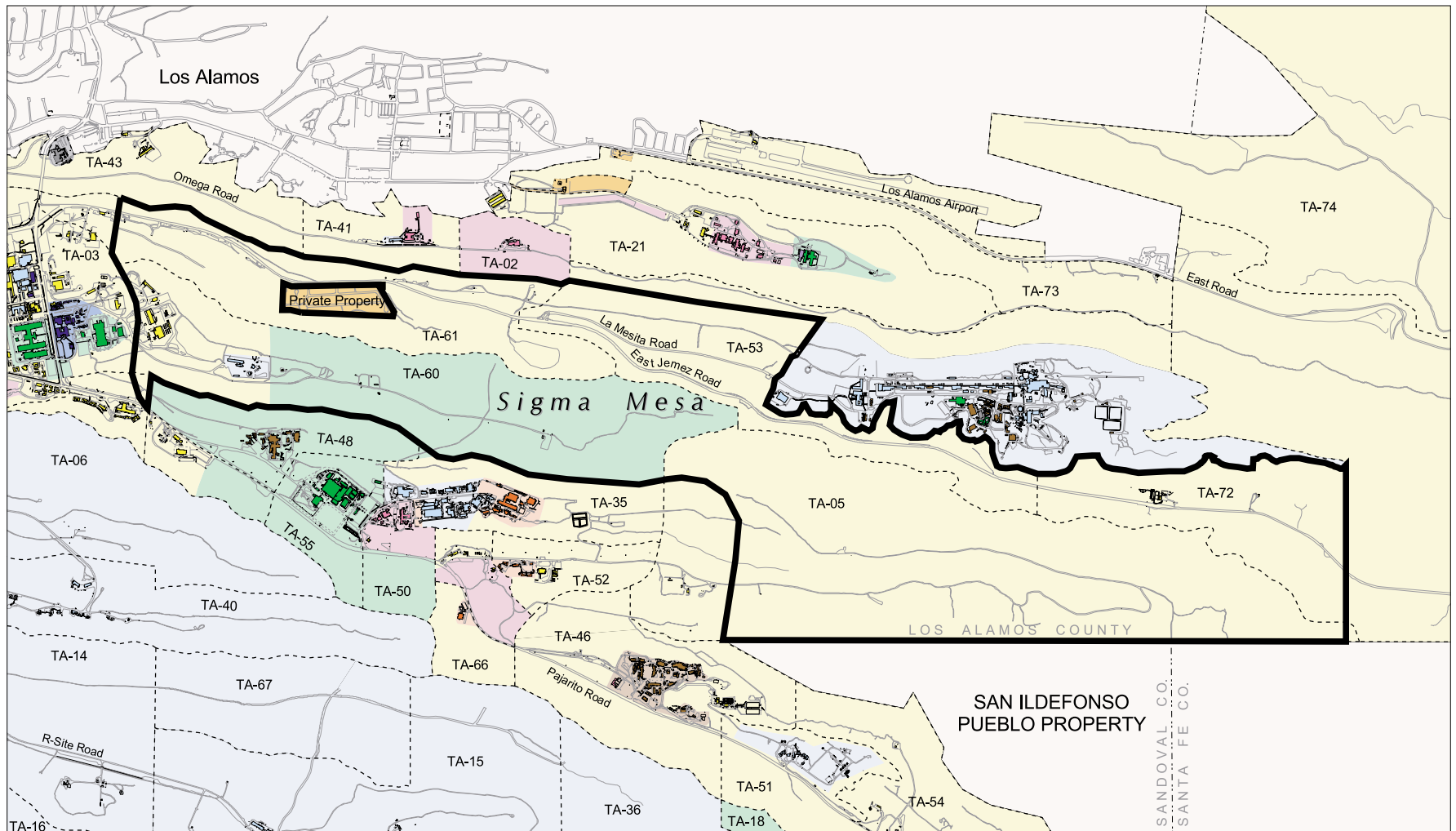


2. *Specific Planning Assumptions*

Planning assumptions to guide physical planning at the Sigma Mesa Planning Area for the next ten years are:

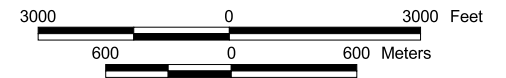
- The Sigma Mesa Planning Area contains support facilities needed to keep the Laboratory operational. Relocation of support facilities from other areas of the Laboratory, in particular TA-03, is planned for the future. This consolidation will enable the Laboratory's support services subcontractor, Johnson Controls Northern New Mexico (JCNNM), to work more effectively.
- The Rack Assembly and Alignment Complex on Sigma Mesa Planning Area, although not currently used, should be maintained for future programmatic needs. In the event active testing of nuclear weapons resumes, the rack facility will be an integral part of the effort.
- The P-RAD/PRISM project at TA-53 will impact the Sigma Mesa Planning Area. Tunnels from TA-53 to the Pajarito Corridor West Planning Area are planned to cut across the Sigma Mesa Planning Area. Support facilities may need to be constructed above the tunnels, and a new road from TA-53 to the Pajarito Corridor West Planning Area will also cut across the Sigma Mesa Planning Area.

Map IV-H2: Sigma Mesa Programmatic Associations



AREA / STRUCTURE	PROGRAM
	Defense Program / Stockpile Stewardship
	Defense Program / Stockpile Weapons Management
	Defense Program / Landlord or Institutional
	Office of Science
	Laboratory Directed Research & Development

AREA / STRUCTURE	PROGRAM
	Multiple Programs
	Nonproliferation & National Security
	Non DOE Programs
	Environmental Restoration & Waste Management
	County or Private within DOE Boundary



3. *Land Use*

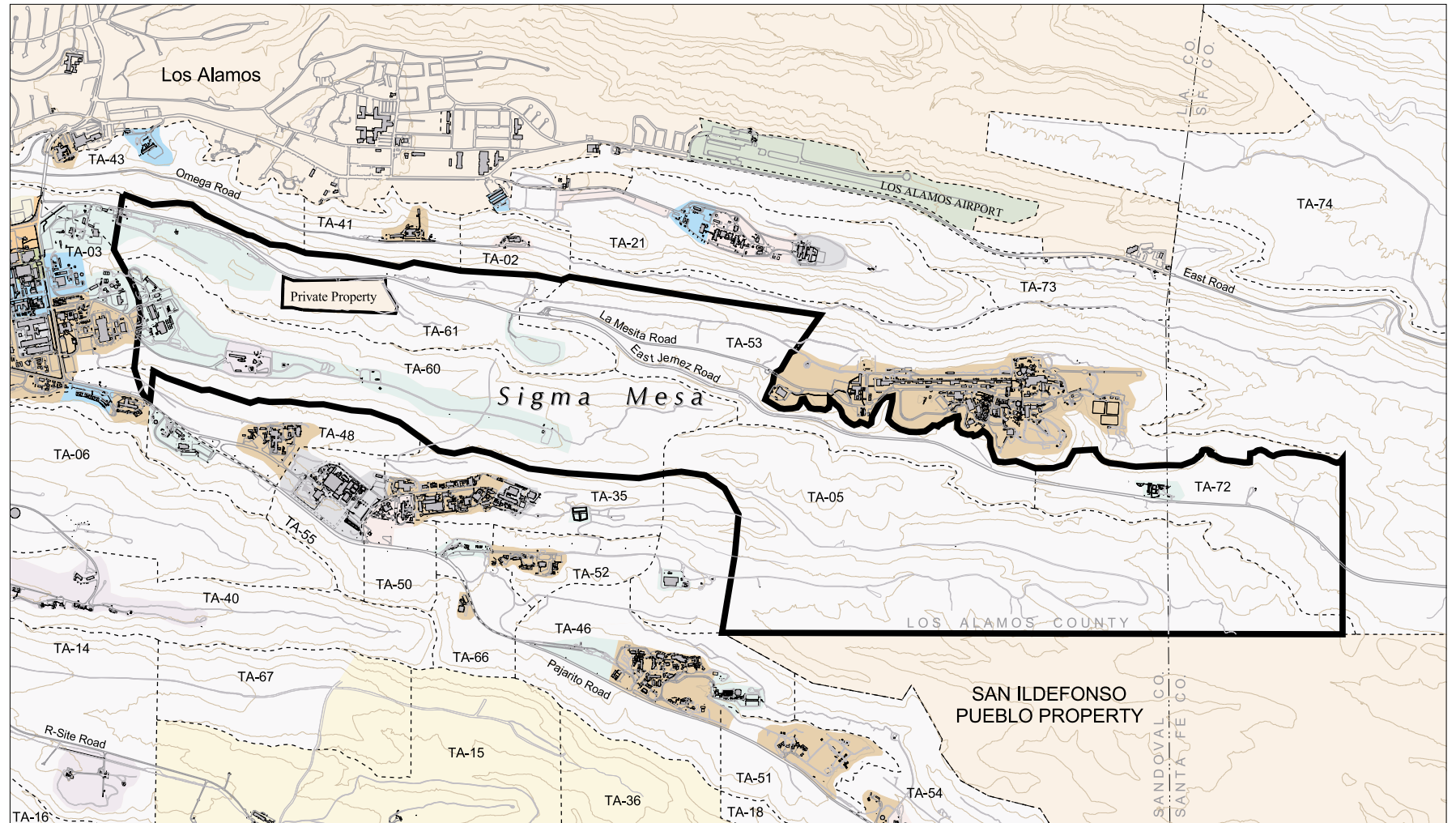
Sigma Mesa Planning Area will become the main site for support functions and activities. In particular, JCNNM will relocate its current shops and administrative functions from TA-03. The Laboratory's warehousing may also be relocated from TA-03 to a site in TA-61.

The P-RAD/PRISM project will have an impact on the planning area. Current plans call for a series of tunnels to be built from the LANSCE Mesa Planning Area to the Pajarito Corridor West Planning Area. These tunnels will pass through Mortandad Canyon, which lies in the Sigma Mesa Planning Area. Support facilities will probably be constructed somewhere within the planning area, and a new road will be built connecting to the Pajarito Corridor West Planning Area for the internal movement of materials.

a. Existing Land Use

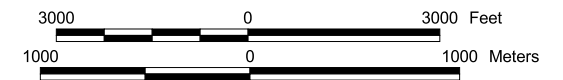
Sigma Mesa's land use is essentially Reserve. The predominant land use within the planning area is Physical/Technical Support. There is a small area used for High Explosives R&D. Unique to this planning area is the privately owned 25-acre island where the Royal Crest Mobile Home Park is located.

Map IV-H4: Sigma Mesa Existing Land Use



LEGEND

- | | | |
|------------------------------|----------------------------|-----------------------------------|
| LANL Buildings | Experimental Science | Reserve |
| Non Dept. of Energy Property | High Explosive R&D | Theoretical/Computational Science |
| Planning Area | High Explosive Testing | Waste Management |
| Research Park | Nuclear Materials R&D | |
| Administration | Physical/Technical Support | |
| Airfield | Public/Corporate Interface | |



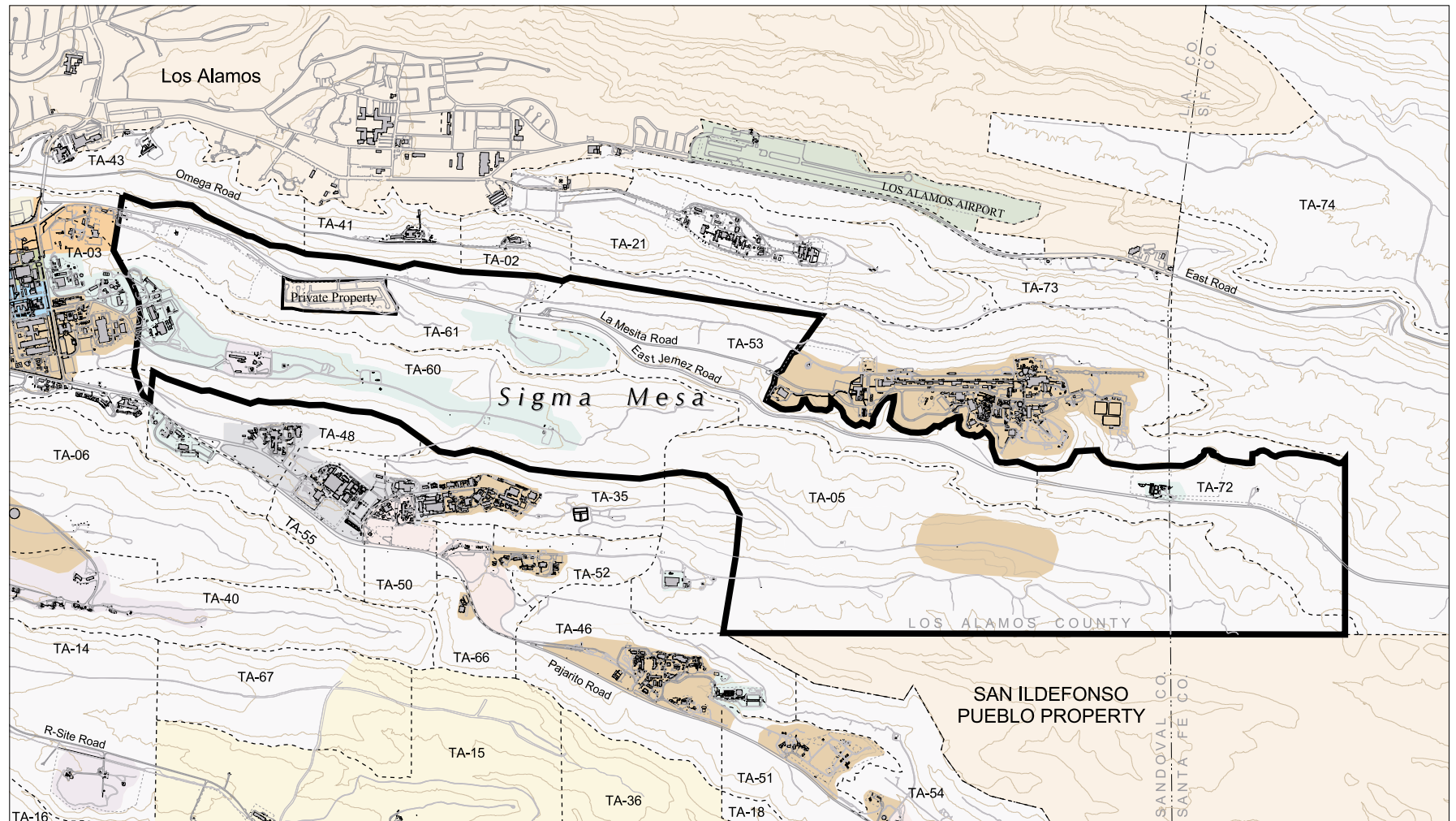
b. Future Land Use

The Sigma Mesa Planning Area will continue its focus on Physical/Technical Support. Much of the existing land with this designation is used for lay-down and outdoor storage and has tremendous development potential. The landfill, once closed, could be considered for satellite parking for the Core Planning Area.

Table IV.H1: Sigma Mesa Land Use

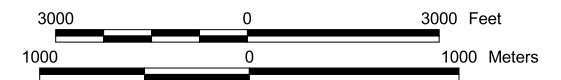
Existing Land Use		Future Land Use	
<u>Land Use Category</u>	<u>Acreage</u>	<u>Land Use Category</u>	<u>Acreage</u>
Physical/Technical Support	175	Physical/Technical Support	173
High Explosives R&D	13	High Explosives R&D	13
Non-DOE (Mobile Home Park)	25	Non-DOE (Mobile Home Park)	25
Reserve (Capable of development: 125 acres)	<u>1,737</u>	Experimental Science	61
		Reserve (Capable of development: 57 acres)	<u>1,678</u>
Total	1,950	Total	1,950

Map IV-H5: Sigma Mesa Future Land Use



LEGEND

- | | | |
|------------------------------|----------------------------|-----------------------------------|
| LANL Buildings | Experimental Science | Reserve |
| Non Dept. of Energy Property | High Explosive R&D | Theoretical/Computational Science |
| Planning Area | High Explosive Testing | Waste Management |
| Research Park | Nuclear Materials R&D | |
| Administration | Physical/Technical Support | |
| Airfield | Public/Corporate Interface | |

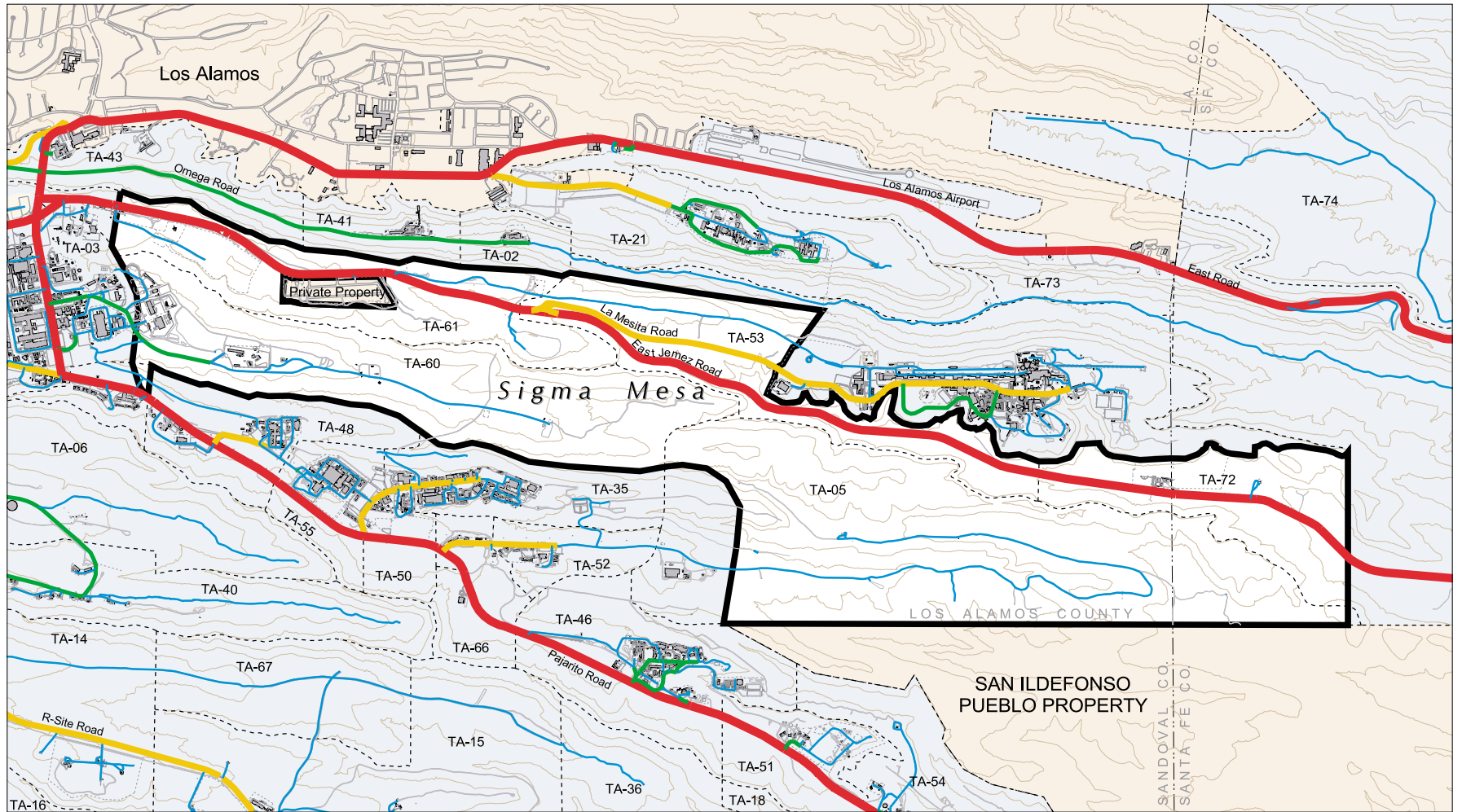


4. Transportation/Circulation/Parking











a. Existing Transportation/Circulation/Parking

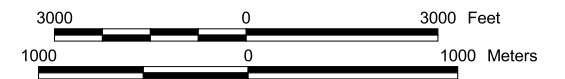
The transportation system in the Sigma Mesa Planning Area is very limited. There is one entrance/exit and one road down the mesa top in this area.

Map IV-H6: Sigma Mesa Existing Transportation



LEGEND

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|--|--|
|  Arterial |  Dept. of Energy Property |
|  Collector |  LANL Buildings |
|  Local |  Non Dept. of Energy Property |
|  Access / Service |  Planning Area |
|  Emergency Lanes |  Research Park |



b. Future Transportation/Circulation/Parking

Development of Sigma Mesa Planning Area cannot be completed without the eastern portion of the TA-03 perimeter road. This road will provide an alternate route for truck traffic into the Physical/Technical Support area while improving current TA-03 security and circulation.

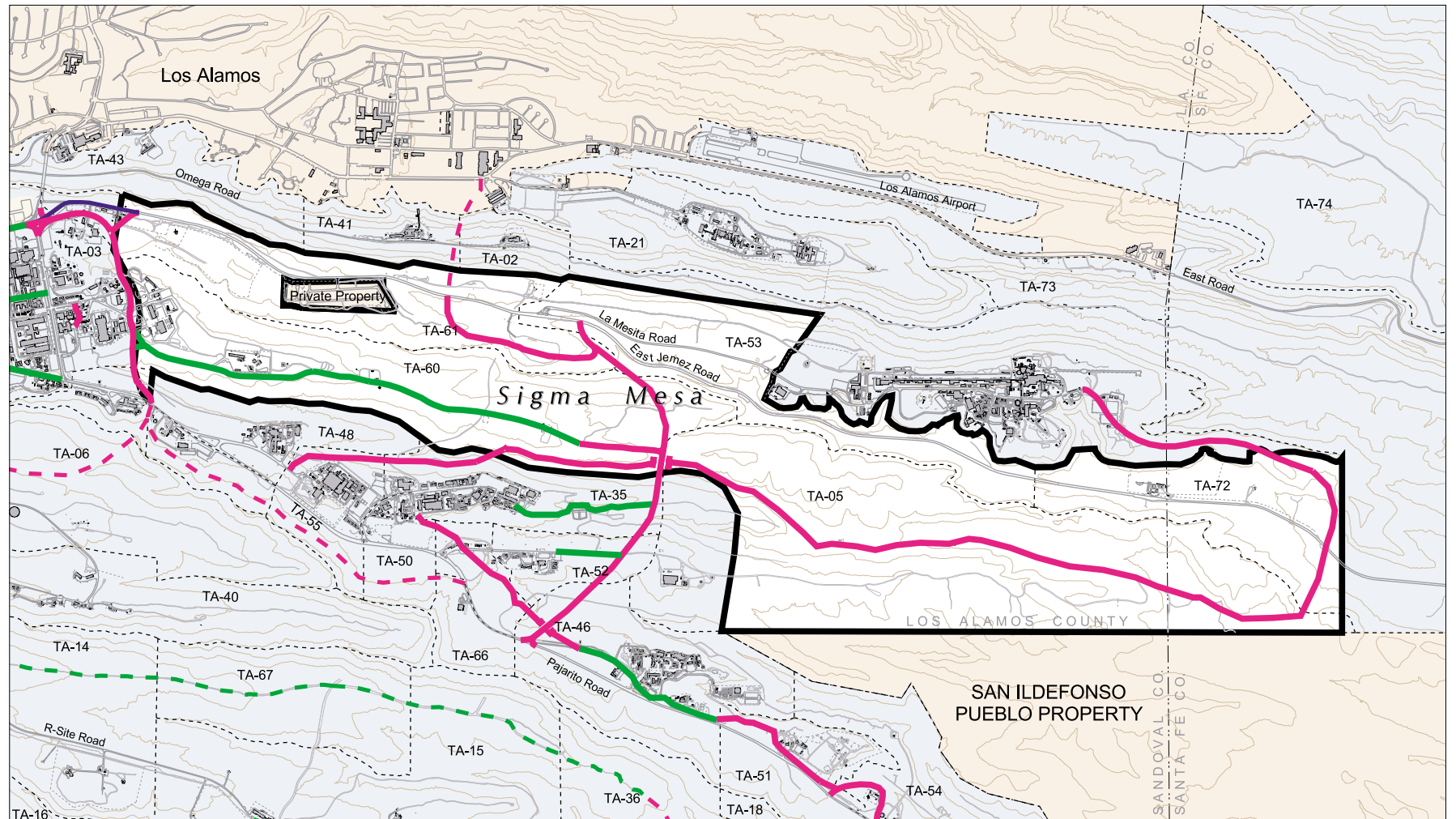
The circulation and safety on the Sigma Mesa Planning Area will be improved by adding a second entry/exit to the mesa. The current Access/Service road should be upgraded for safety and development purposes. A new Access/Service road proceeding northeasterly from the present road leading down the center of Sigma Mesa would connect to East Jemez Road, east of the Borrow Pit. An alternate road linking the Pajarito Corridor West Planning Area to the upgraded Sigma Mesa Planning Area road should also be considered.

A second bridge will connect the town site near DP Road to East Jemez Road near the mobile home park. This second bridge will improve overall Laboratory circulation and safety and provide an alternate route as Laboratory security is tightened.

Restricting access to Pajarito Road for security reasons and the construction of the proposed perimeter road around TA-03 should limit the road closure disruptions caused by shipments of SNM.

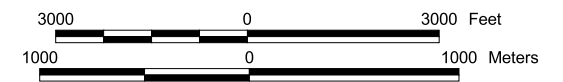
Additional new road construction will occur just east of Royal Crest Mobile Home Park to accommodate the development of the Borrow Pit. This construction will involve the widening of East Jemez Road approximately 600-1200 feet on each side of the entrance to the LANSCE Mesa Planning area. Part of this road construction will travel through areas constrained by threatened and endangered species habitat core and buffer zones. Therefore, environmentally sensitive construction techniques will be required.

Map IV-H7: Sigma Mesa Future Transportation



LEGEND

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|--|--------------------------------------|--|------------------------------|
| | New Construction | | Dept. of Energy Property |
| | Long Range Proposed New Construction | | LANL Buildings |
| | Road Improvements | | Non Dept. of Energy Property |
| | Long Range Proposed Improved Roads | | Planning Area |
| | Road Elimination | | Research Park |



5. Security

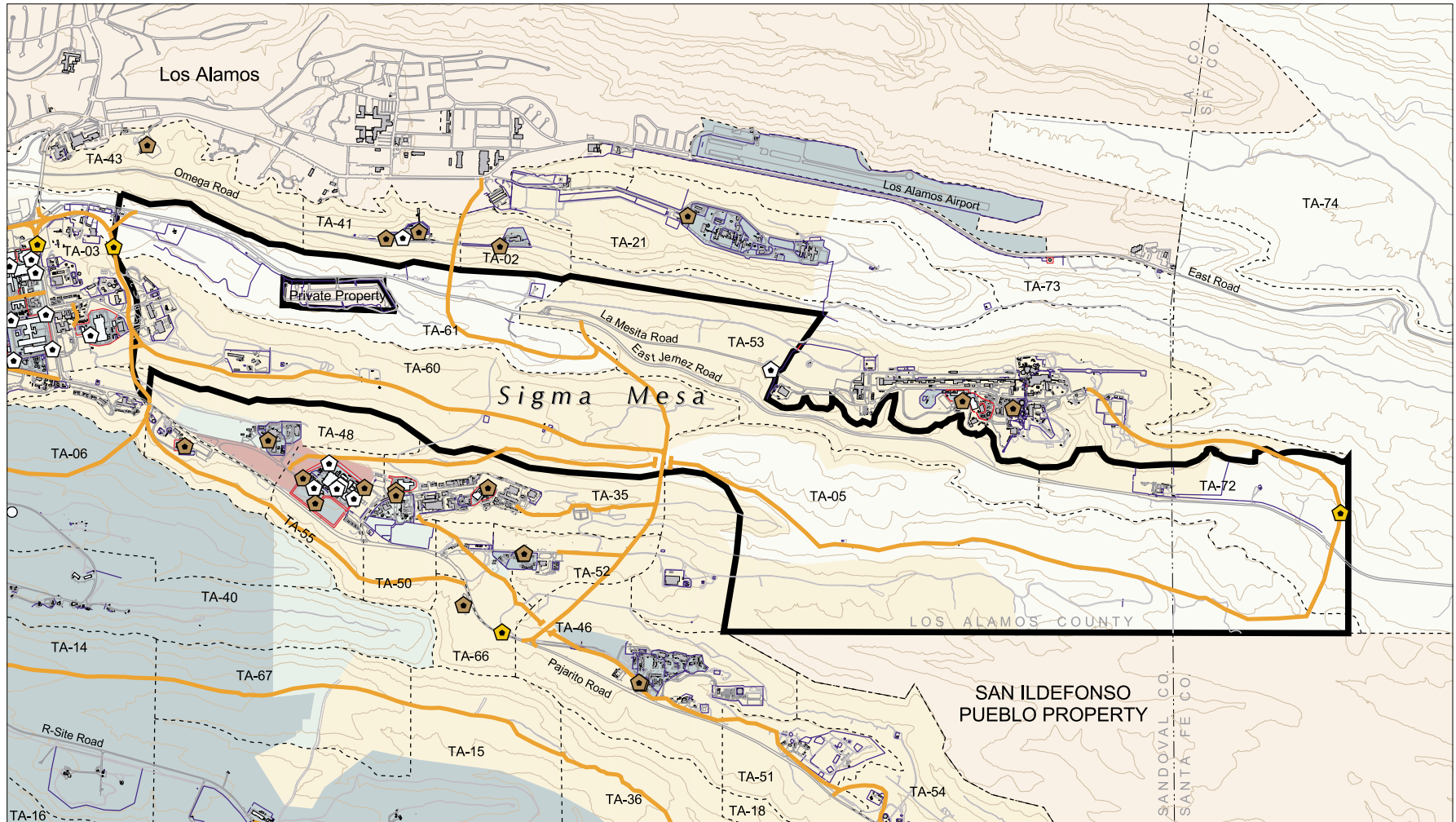
Security functions at Sigma Mesa Planning Area will keep the same status as outlined in the 1990 Site Development Plan. It is currently designated as a property protection area and has access control on the roadway to the eastern part of the mesa where material storage resides. Relocation activities from TA-03 to Sigma Mesa Planning Area should not require any new security.

An important security issue is the presence of a 25-acre privately owned and publicly accessible residential area just east of TA-61 on East Jemez Road. It would be advantageous for security and safety reasons to relocate this residential area.

Recommendations

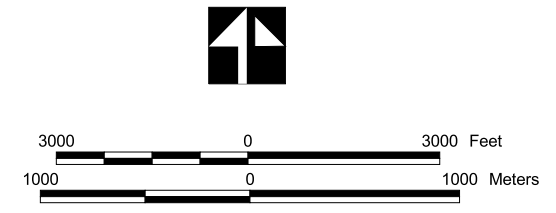
- Maintain TA-60 as a property protection area.
- Maintain TA-61 as a security buffer, even though there are some areas that are open to public access.

Map IV-H8: Sigma Mesa Existing and Future Security Areas



LEGEND

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|------------------------------|-------------------------|-----------------------------------|
| Industrial Fences | Proposed Guard Stations | Secured Building |
| Security Fences | Active Guard Station | Existing Limited Security Area |
| Proposed/Improve Roads | Closed Guard Station | Existing Property Protection Area |
| Roads | Planning Area | Existing Protected Area |
| Technical Area Boundaries | Research Park | Future Limited Security Area |
| Non Dept. of Energy Property | | Future Protected Area |
| | | Security Buffer |



6. *Utilities*

a. *Water System*

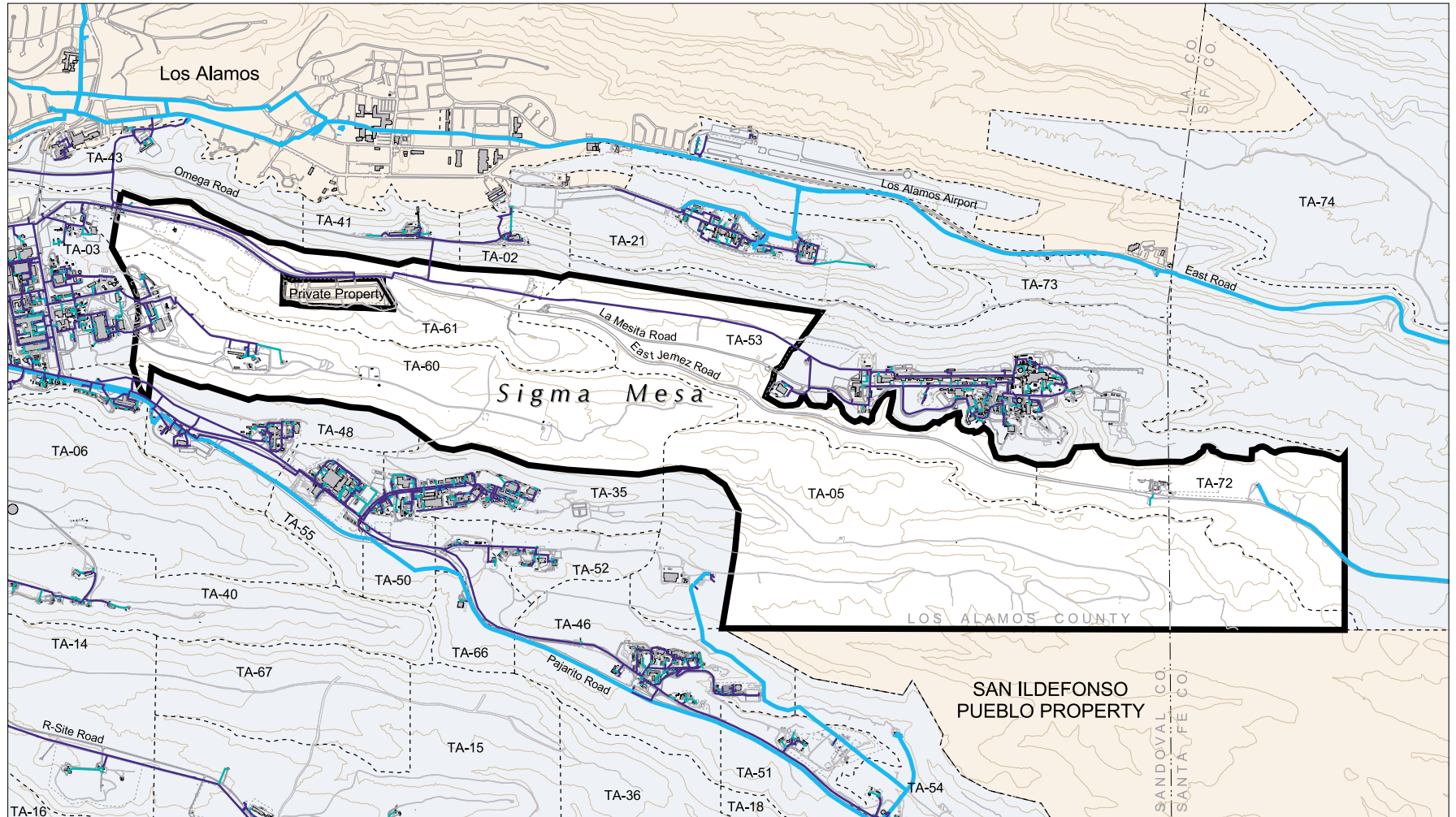
Condition of System: The water distribution system is in good condition throughout the planning area. No projects are required to improve any water system conditions.

System Materials: Pipe materials used in the water distribution system include cast iron, steel, asbestos cement, reinforced concrete, copper, ductile iron, and plastic. Cast iron has been replaced by ductile iron for distribution sized pipe. Steel and reinforced concrete are not common in today's systems of the Laboratory's size (greater than 24 inches diameter). Plastics and ductile iron dominate the water supply market for these sizes and fittings. Concerns regarding materials include:

- Replacement of asbestos cement pipe, particularly in areas where pipe may be disturbed for repair or replacement.
- Replace aged cast iron or steel pipe.

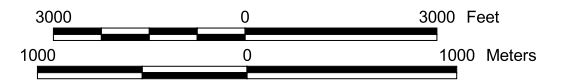
System Capacities: Fire hydrants are typically connected to 6-inch-diameter pipe. Laboratory water service lines that provide water for fire protection need to be replaced if they have diameters that are less than 6 inches.

Map IV-H9: Sigma Mesa Existing Water System



LEGEND

- Water Distribution Lines
- Water Service Lines
- Water Transmission Lines
- Planning Area
- Dept. of Energy Property
- LANL Buildings
- Non Dept. of Energy Property
- Research Park



b. Sanitary Sewer System

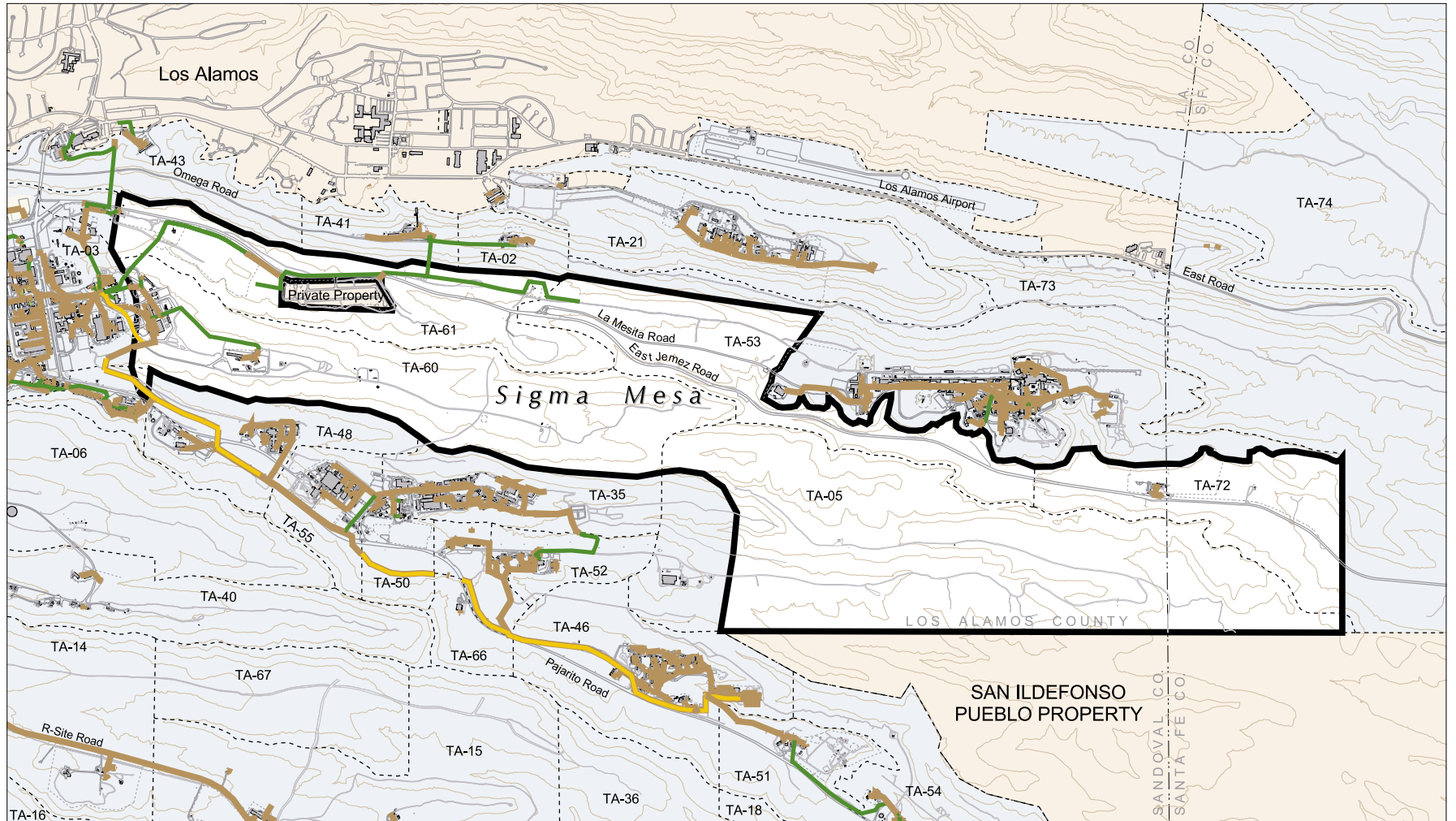
Condition of System: The sewer system is generally in good operating condition.

System Materials: Pipe materials used in the sewer system include cast iron, vitrified clay, steel, asbestos cement, reinforced concrete, copper, ductile iron, and plastic. Material concerns are:











- Replacement of concrete pipe that has shown evidence of interior deterioration from exposure to sewer gases.
- Replacement of asbestos cement pipe, especially where it could be disturbed by maintenance operations.
- General condition of aged vitrified clay pipe.

System Capacities: The sewer system has no capacity issues, with exception of limitations set by lift station pumps. There is currently a strategy in place to abandon lift stations where economically feasible and replace them with gravity flow. Those gravity systems will accommodate increased demands and require considerably less maintenance.

Map IV-H10: Sigma Mesa Existing Sanitary Sewer System



LEGEND

- | | |
|--|--|
|  Gravity Lines |  Dept. of Energy Property |
|  Effluent Lines |  LANL Buildings |
|  Force Main Lines |  Non Dept. of Energy Property |
|  Drain Lines |  Planning Area |
|  Service Lines |  Research Park |

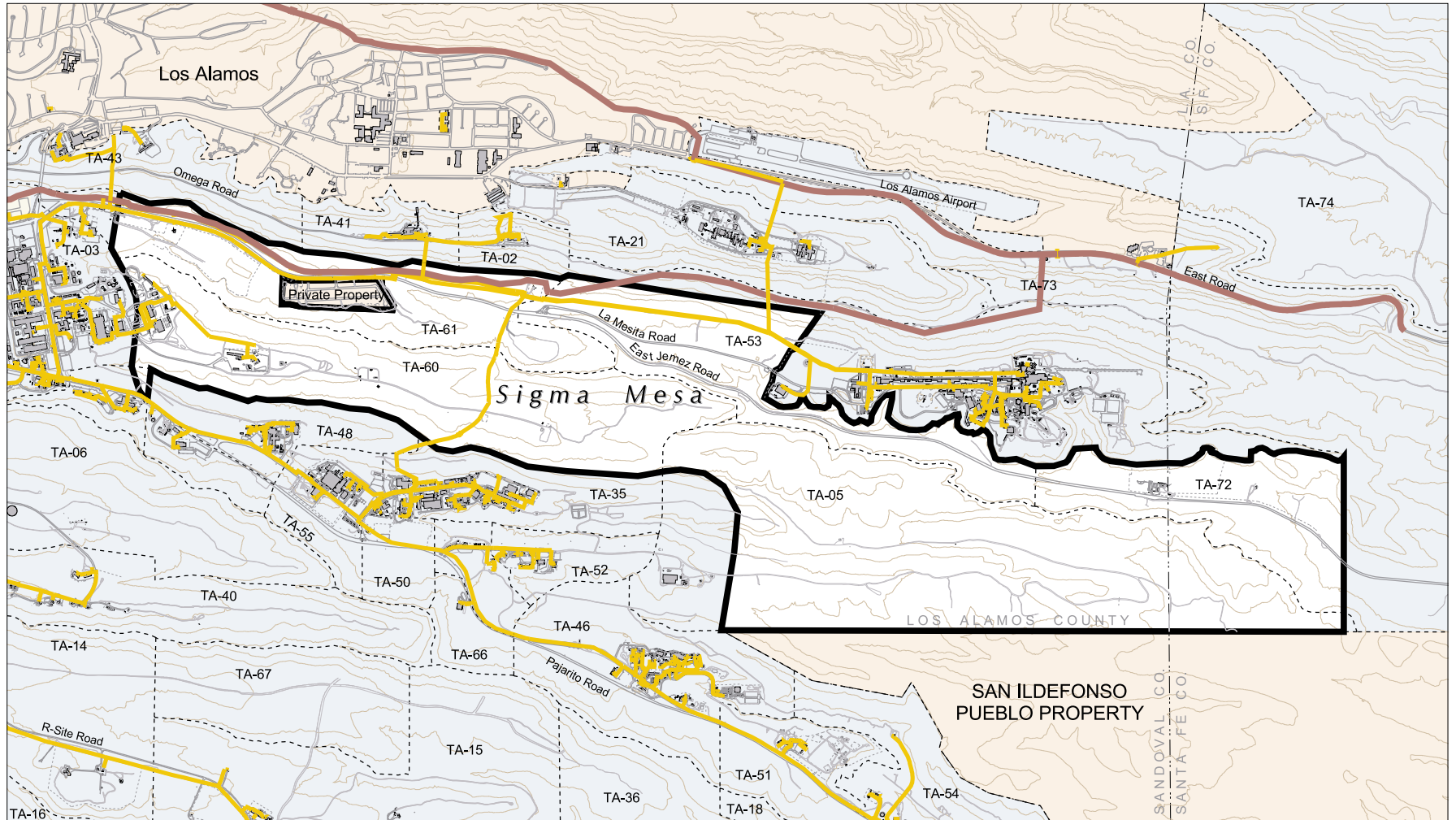


c. Natural Gas System

A 6-inch line from Tech Meter 2 supplies gas to a 6-inch line north of East Jemez Road. There is an undefined restriction in the East Jemez Road pipe for about one mile west to just east of the Royal Crest Mobile Home Park. Short-range repair plans have not yet been developed.

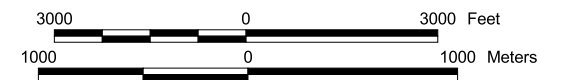
Long range plans for this section of pipe are to test it section by section to determine the origin of the restriction. Once the restriction is located and quantified, plans will be made to solve the problem. It is not believed that an increase in pipe size will be necessary.

Map IV-H11: Sigma Mesa Existing Natural Gas System



LEGEND

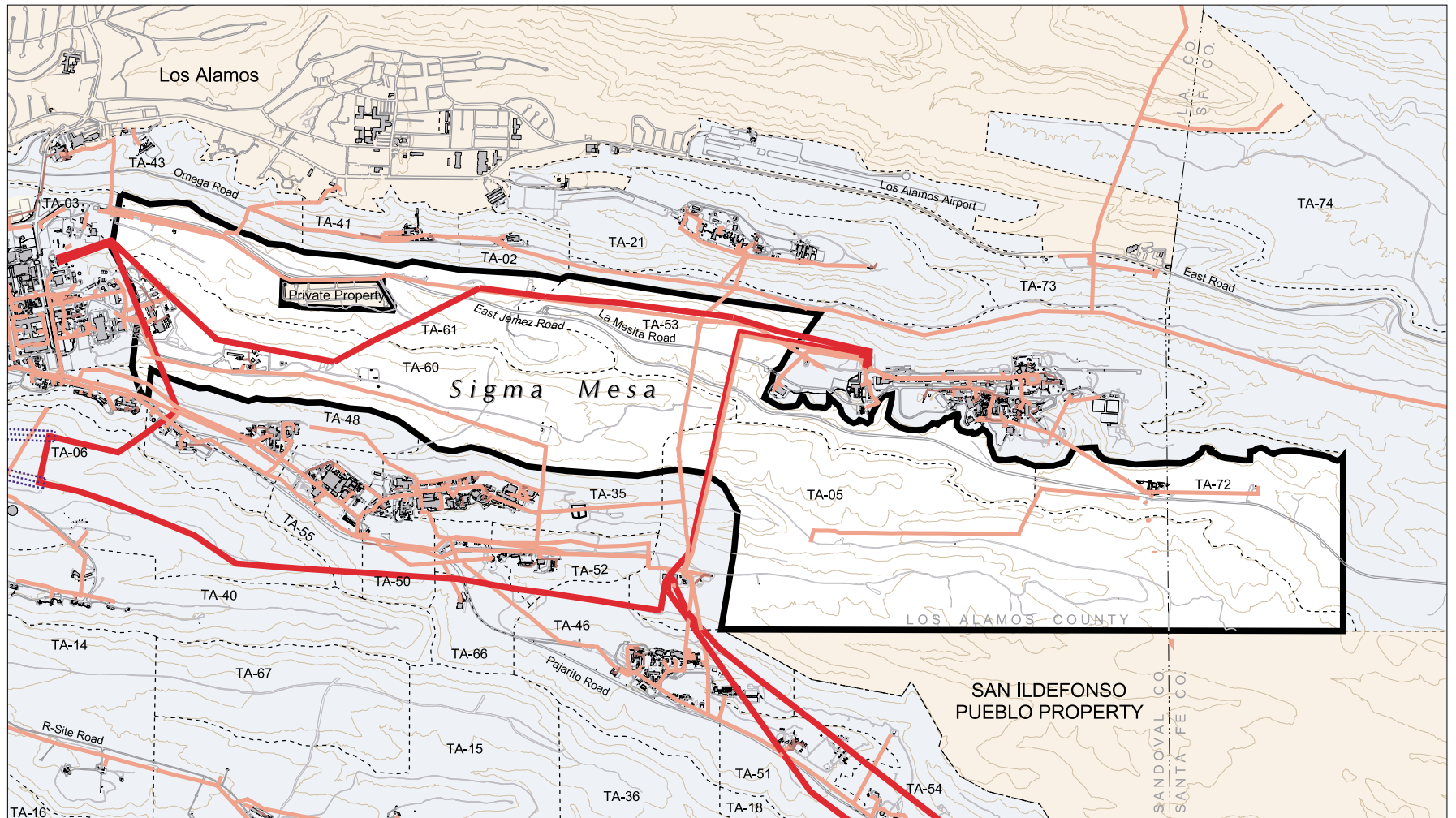
- Natural Gas Distribution
- Natural Gas Transmission
- Planning Area
- Dept. of Energy Property
- LANL Buildings
- Non Dept. of Energy Property











d. Electric Transmission and Distribution System

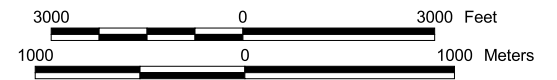
No issues have been identified.

Map IV-H12: Sigma Mesa Existing Electrical System



LEGEND

- | | |
|---|--|
|  Proposed 155 kv Transmission Line |  Dept. of Energy Property |
|  Electrical Transmission |  LANL Buildings |
|  Electrical Distribution |  Non Dept. of Energy Property |
|  Electrical Service |  Planning Area |



7. Facilities

The Sigma Mesa Planning Area accounts for around 1% of the Laboratory’s on-site population. About 127,000 GSF pf space, which accounts for 2% of the Laboratory’s total GSF, is contained in 32 structures. Almost all employees in this planning area are housed in acceptable facilities - only about 7% of the facilities are in poor or failing condition. A majority of the structures, 67%, are used for storage and service use.

Table IV-H2: Sigma Mesa Facility Condition

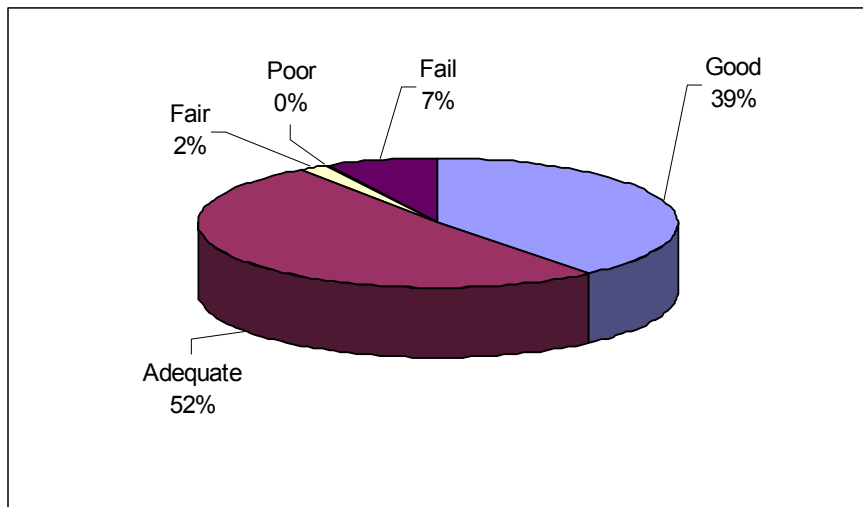


Table IV-H3: Sigma Mesa Employee Environment Condition

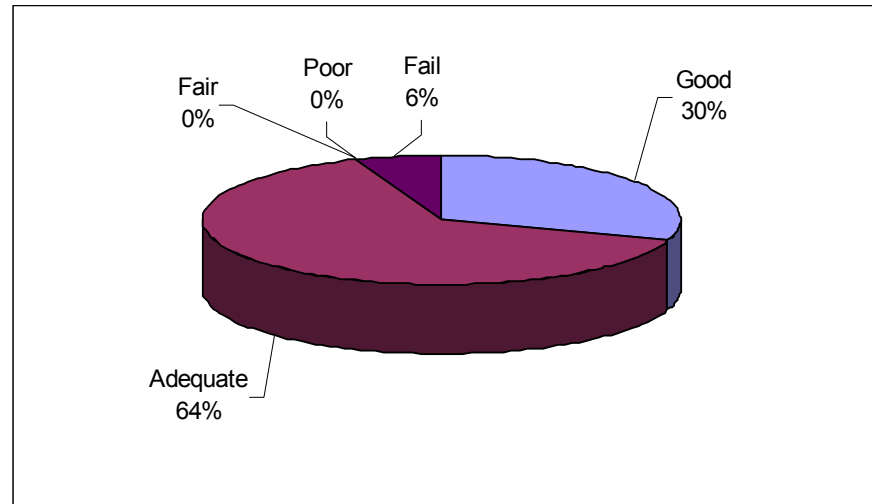
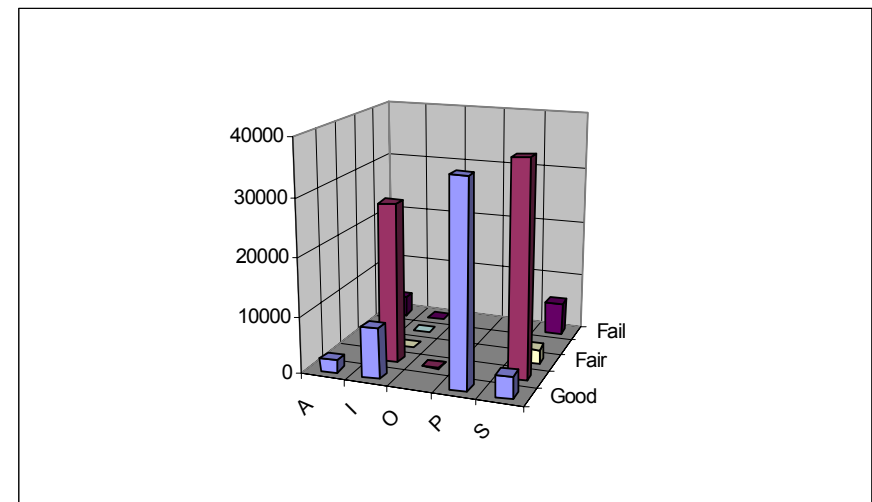


Table IV-H4: Sigma Mesa Facility Use & Condition



8. *Environment, Safety, and Health*

9. *Quality Environment*

Although the Sigma Mesa Planning Area is adjacent to two of the most heavily populated and developed planning areas, it retains a mostly rural nature. Sigma Mesa Planning Area has only one way of entry and exit, so a majority of the planning area remains relatively isolated.

Site improvements are needed at the cluster of buildings at the western edge of TA-60. These facilities serve support functions and are industrial in nature. Screening is needed of storage yards, and this could be accomplished by introducing landscaping around buildings and parking lots. A clearer definition between interior vehicular and pedestrian circulation and parking is needed.

<i>Sigma Mesa Planning Area Assessment/Needs Summary</i>			
<i>Current Functions/Capability</i>	<i>Current Mission Activity</i>	<i>Forecasted Functions/Capabilities</i>	<i>Plan Discussion</i>
NTS Rack Facilities			
Specialty Shops & Rack Assembly	Weapons Testing at NTS	None, but hold facilities in standby	Facilities could be reused if refurbished. Specialty buildings such as the tower may have no reuse and is scheduled for D&D in FY06.
JCN Support Shops & Storage Facilities/Yards			
Equipment Maintenance Shop & Storage / Warehousing	SSS Support	Continue as current	SSS support functions are to be evaluated and appropriate functions consolidated in the Sigma Mesa Planning area. Move SSS shops out of the core of TA-3 to improve TA-03 site usage and to accommodate Administration/Program revitalization projects. Access to this area is limited to Eniwetok Drive.
PTLA Shooting Range			
Protective Force Training	Security Support	Continue as current	
Private Ownership Trailer Park			
Residential Housing	None	Continue as current	This private land is the driver for many operational considerations of LANL nuclear facilities. If this private island were removed, prime developable area and better operations could be obtained. This is a major land use incompatibility

<i>Needed Development</i>	<i>Proposed Projects</i>	<i>Land Use</i>	<i>Transp.</i>	<i>Security</i>	<i>Utilities</i>	<i>Facilities</i>	<i>Quality</i>	<i>ESH</i>
	TA-60 Test Fabrication Facility Demolition	●	○	○	○	●	○	○
Consolidate support facilities to Sigma Mesa (JCNNM relocation)	JCNNM Replacement	●	●	○	○	●	●	●
	None							
Relocate private trailer park to remove safety issue which is approximately 100 acres of developable land.	Need project	●	●	●	○	○	○	●

<i>Sigma Mesa Planning Area Assessment/Needs Summary</i>			
<i>Current Functions/Capability</i>	<i>Current Mission Activity</i>	<i>Forecasted Functions/Capabilities</i>	<i>Plan Discussion</i>
Sigma Mesa Open Storage Yards			
Open Air Storage	Multiple DP & Basic Science missions	Continue as current	Clean up outside storage to consolidate and create space for other uses.
Infrastructure Facilities			
Utility Supply & Site Access	All missions in the planning area	Continue as current	<p>This area is recipient of several expansion & development opportunities in next few years which may include:</p> <ul style="list-style-type: none"> - SSS Support services consolidation - Warehousing relocations and others at Borrow Pit site - AHF support development <p>Road System: This area requires the East Loop Road at TA-03 to develop.</p> <p>Multiple road extensions through the planning area are anticipated as the area develops.</p> <p>Utilities: Utilities will need to be extended into the area for new development. Restrictions in the Natural Gas Line on East Jemez Road require repair or replacement. Replacement of aged and non</p> <p>Quality Environment: The area as it develops along the East Loop Road needs to be well buffered visually to retain a quality environment around TA-03.</p>

<i>Needed Development</i>	<i>Proposed Projects</i>	<i>Land Use</i>	<i>Transp.</i>	<i>Security</i>	<i>Utilities</i>	<i>Facilities</i>	<i>Quality</i>	<i>ESH</i>
	None							
AHF Support: • Potential subsurface tunnels for AHF • Potential AHF firing site	Need project	●	●	●	●	●	●	●
TA-03 East Loop Road	Need project	●	●	●	○	○	●	●
Sigma Mesa Road Connection to the east (long-term plan)	Need project	●	●	○	○	○	●	●
Widen Jemez Road on each side of entrance to LANSCE/Borrow Pit area	Need project	○	●	○	○	○	●	●
Development of Borrow Pit	Need project	●	●	○	●	●	●	●
Sigma Mesa Infrastructure • ImprovementsExtend utilities to new JCNNM Consolidation area	Need project	●	○	○	●	●	○	●
• Correct natural gas line restriction approx. 1 mile east of trailer park on East Jemez Road	Need project	○	○	○	●	●	●	○
• Replace aged utilities and abandon lift sta- tions, convert to gravity flow where feasible	On-going utility maintenance	○	○	○	●	●	●	○
Visually buffer storage yards with landscaping	Need project	●	○	○	○	○	●	○

