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APPENDIX F NEW CONSTRUCTION AND REPLACEMENT OF EXISTING FACILITIES AT SANDIA NATIONAL LABORATORIES, NEW MEXICO

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APPENDIX F
NEW CONSTRUCTION AND REPLACEMENT OF EXISTING FACILITIES AT SANDIA NATIONAL LABORATORIES, NEW MEXICO

F. New Construction and Replacement of Existing Facilities at Sandia National Laboratories, New Mexico

F.1 Introduction

A number of construction and demolition projects are planned for the 10-year period evaluated in this Sandia National Laboratories, New Mexico (SNL/NM) site-wide environmental impact statement (SWEIS). Construction and decommissioning and demolition (D&D) activities are continually being accomplished at SNL/NM as new facilities are brought on line to replace older, less efficient facilities. The construction and D&D projects presented in this appendix are projected to take place, assuming funding and administrative/regulatory approvals are obtained, under both the No Action Alternative and the Expanded Operations Alternative. Under the Reduced Operations Alternative, no new construction projects were assumed to take place, and D&D activities were assumed to be limited to those needed to maintain a safe operating environment on the site.

F.2 Planned Construction and D&D Activities

Construction projects could be executed at SNL/NM and on other parts of Kirtland Air Force Base (KAFB) that the U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA) and SNL/NM operate on in support of the continued operation of SNL/NM and DOE activities in the Albuquerque area during the 10-year period evaluated in this SWEIS. The individual projects (see **Table F–1**) would range in size from 5,500 square feet (Building 895 Addition) to approximately 200,000 square feet (Weapons Engineering Facility). The planned construction projects include production facilities, a data center, an Emergency Operations Center, offices, laboratory and light laboratory facilities, and infrastructure (SNL/NM 2013). Some of the projects would include construction of one or more buildings, and others would involve expansion of existing buildings. Most of the planned construction projects would also involve the removal of existing facilities to make way for the new facilities. (The removal of these facilities is included on the D&D projects list discussed below.) In total, approximately 333,500 square feet of space would be constructed at SNL/NM if all of these construction projects were accomplished over the next 10 years.

In support of the planned construction, a number of D&D projects are planned over the 10-year period evaluated in this SWEIS (see **Table F–2**). Several of the projects include demolition of multiple buildings and/or trailers. Many of the buildings planned for D&D are in Technical Area (TA)-I on SNL/NM, with others located in TA-III and TA-V, the Coyote Test Field, and on other parts of KAFB. The structures planned for D&D range in size from small sheds less 500 square feet to approximately 20,000 square feet. In total, approximately 50 buildings and 80 mobile offices and trailers could be demolished over the next 10 years, resulting in a reduction of nearly 232,000 square feet.

41 **Table F–1. Potential Construction Projects**

Construction Projects	Type of Building	Buildings Replaced	Size in Square Feet	Construction Type	Proposed Location
Expand Tritium Operations into Building 700	Production	None	0	Concrete	TA-I
Red Storm Addition to Building 725	Data Center	None	15,000	Steel Frame	TA-I
Construction of Assembly Building at Thunder Range (CAGE)	Assembly	None	15,000	Steel Frame	Thunder Range
Building 905 Addition		None	15,000	Steel Frame	TA-II
TA-IV Support Building	Office	Mobile Offices	20,000	Steel Frame	TA-IV
Building 756	Office	Trailers T14–T18, T23, T39 and T57	17,000	Steel Frame	TA-I
Building 895 Addition	Laboratory	None	5,500	Steel Frame	TA-I
Building 705	Office, Light Laboratory	None	25,000	Steel Frame	TA-I
Integrated Systems Analysis and Studies Facility	Office, Laboratory	Eight trailers	26,000	Steel Frame	TA-I
International Center for Laboratory Risk Management	Office, Laboratory	None	8,000	Steel Frame	TA-I
Construction of an Emergency Operations Center	Emergency Operations Center	Space vacated in 801, and space in 802, 803, 810, 894, 821, 823, 956, 892	20,000	Concrete	TA-II
Weapons Engineering Facility	Office, Laboratory	None	200,000	Concrete	TA-I
Building 840 Renovation	Office, Light Laboratory	None	None	Steel Frame	TA-I

Key: T Buildings = Temporary Buildings; TA = Technical Area.
Source: SNL/NM 2013.

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46 **Table F–2. Potential D&D Projects Over the Next 10 Years**

D&D Project Description (Planned)	Building / Trailer Location	Building/ Trailer Property Number	Property Type	Size in Square Feet	Depth of Excavation in feet (estimated maximum)	Known Contamination in Building	Asbestos or Other Hazardous Materials?
Demolish Building	TA-I	867	Building	19,713	20	Beryllium	Friable Asbestos
Demolish Building	TA-V	6592, 6018	Building	1,372		None	Friable Asbestos
Demolish Substandard Trailers	TA-I	8 various	Trailer	14,790	2	None	Unknown
Demolish Substandard Trailers	TA-I	MO157, MO158, MO159, T77	Trailer	6,140	2	None	Unknown
Demolish Buildings	TA-I	MO293	Trailer	8,613	2	None	Unknown
		851	Building	8,031	20	None	Yes
		851A	Building	300	2	None	No
		851E	Building	300	2	None	No
	KAFB	853 and Accessory Buildings	Building	3,923	5	None	No
National Cybersecurity Facility-related Demolition	TA-I						
		MO324, MO325	Trailer	30,850	5	None	Unknown
Demolish Substandard Trailers	TA-I	T53 & T55	Trailer	3,360	2	None	Unknown
Demolish Underutilized Buildings and Trailers	TA-III	20 Various	Buildings and Structures	3,678			Unknown
Demolish Underutilized Buildings and Structures	CTF	19 Various	Buildings and Structures	8,797			Unknown
	TA-I						

Table F–2. Potential D&D Projects Over the Next 10 Years *(continued)*

D&D Project Description (Planned)	Building/ Trailer Location	Building/ Trailer Property Number	Property Type	Size in Square Feet	Depth of Excavation in feet (estimated maximum)	Known Contamination in Building	Asbestos or Other Hazardous Materials?
Trailer demolition	TA-I	15 Trailers	Trailer	22,805	2	None	Unknown
Trailer demolition	TA-I	16 Trailers	Trailer	32,812	2	None	Unknown
Trailer demolition	TA-I	23 Trailers	Trailer	50,915	2	None	Unknown
Trailer demolition	Misc. Locations	9 Trailers	Trailer	15,208	2	None	Unknown

Key: CTF = Coyote Test Field; Misc. = miscellaneous; MO = mobile office; TA = Technical Area.
Source: SNL/NM 2013.

We anticipate approximately $2M of D&D funding per fiscal year. Our D&D efforts for the next ten years are primarily focused on clean-up of the site which includes the D&D of numerous small sheds, Butler buildings, MOs, and trailers. Some of these projects do generate substantial square footage for the space bank such as Building 867 (19,713 sf) but because their construction materials are primarily metal and concrete, we will be able to recycle 80-90%.

The only other planned D&D of large buildings within a ten year timeframe are 892 and 894. The D&D of these buildings is associated with WEF construction. An analysis of alternatives hasn't been performed for WEF and Building 892 is undergoing a study to determine whether it should be renovated or demolished. While planned, the future of these buildings is still to be determined.

F.3 Effect on Specific Resource Areas

Using information from past DOE construction and D&D projects, estimates of the resource requirements and environmental impacts associated with these types of projects have been developed (see **Table F–3**). Operations impacts of new facilities are expected to be comparable to those of the facilities they are replacing. These resource requirements and environmental impacts are included in the estimates evaluated in Chapter 5 of this SWEIS for the different alternatives under consideration.

F.3.1 Land Use and Visual Resources

The planned construction and D&D activities would have little or no effect on land use at SNL/NM. Nearly all of the planned construction projects are expected to take place on previously disturbed areas within the TAs or on land that would be cleared during the planned D&D activities. The only additional land that would be affected by the planned construction would be the addition of an assembly building on previously disturbed land at Thunder Range in the Coyote Test Field under the No Action and Expanded Operations Alternatives. Current land use at these sites would not change as a result of these planned construction and D&D activities.

Similarly, the planned construction and D&D activities are not expected to have any effect on visual resources at SNL/NM or the surrounding area. Profiles of new construction are low and would not impede views of natural features, nor would they alter the current SNL/NM skyline in a noticeable way.

Table F–3. Annual Outputs, Emissions, Waste, and Safety Projections Related to Potential Construction and D&D Activities

Outputs	Construction-Related	D&D-Related	Total
Volume of Soil Disturbed – cubic yards	100,000	NA	100,000
Water Usage – gallons	2,600,000	440,000	3,000,000
Electricity Usage – kilowatt-hours	3,600,000	45,000	3,600,000
Concrete Used – cubic yards	12,000	NA	12,000
Steel Used – tons	1,100	NA	1,100
Site + Construction Fuel Usage – gallons	540,000	14,000	550,000
Labor Effort – Full-time equivalents	210	13	220
Total Emissions			
Fugitive Dust – tons	72	1	73
Nitrogen oxides – tons	109	2	110
Carbon monoxide – tons	1,100	43	1,100
Sulfur oxides – tons	6.8	0.1	6.9
PM_{10} – tons	7.4	0.2	7.6
Carbon dioxide – tons	5,700	140	5,800
Total organic compounds – tons	59	2	62
Safety			
DOE Construction-Recordable Injuries	2.9	1.9	4.8
DOE Construction-Lost Workdays	55	34	89
DOE Construction-Fatalities	0.0035	0.0022	0.0058
Overall SNL/NM-Recordable Injuries	3.3	2.1	5.4
Overall SNL/NM-Lost Workdays	49	31	80
Overall SNL/NM-Fatalities	0.0082	0.0051	0.013
Waste			
Solid waste – tons	240	13,000	13,200
Solid waste - recycled – tons	235	12,700	12,900
Solid waste to landfill – tons	5	300	300
Sanitary waste – tons	N/A	4	4
Solid TSCA waste – tons	N/A	19	19
Hazardous waste – tons	N/A	4	4
Other chemical waste – tons	N/A	13	13

Note: Sums presented in the table may differ from those calculated from table entries due to rounding.

Key: DOE = U.S. Department of Energy; NA = not applicable; PM_{10} = particulate matter smaller than 10 micrometers in diameter; SNL/NM = Sandia National Laboratories, New Mexico; TSCA = Toxic Substances Control Act.

F.3.2 Site Infrastructure

Construction and D&D activities would require the use of relatively small amounts of electricity, water, and fuel. Water usage in support of these efforts was estimated to be approximately 3.0 million gallons per year, and electricity usage was estimated to be approximately 3.6 million kilowatt hours per year. Fuel usage related to these operations would be approximately 550,000 gallons per year.

Electricity and water usage would be a small fraction of the annual requirements associated with these resources from continued operation of SNL/NM and DOE activities in the Albuquerque area. Fuel would be supplied by the construction or D&D contractors as part of their normal equipment usage.

F.3.3 Air Quality

Airborne particulate matter (for example, dust and equipment emissions) levels would be elevated during construction and D&D activities, but these temporary increases are expected to be too small to result in violation of the National Ambient Air Quality Standards beyond the SNL/NM boundary and would be mitigated as needed by watering and other standard construction dust control practices. In addition, because these types of activities continually occur at SNL/NM, they are already reflected in the background concentrations for criteria pollutants in the area surrounding the site. These concentrations are expected to remain below applicable national and state air quality standards.

F.3.4 Geology & Soils

Planned construction activities would likely involve some disturbance or excavation of surface soils. Bedrock may also be disturbed or excavated, depending on whether the construction requires deep footings or basements. Applicable building codes would dictate the depth of footings or foundations and ensure that proper fill or compaction is used to stabilize the soil material at individual sites.

Based on the square footage of planned construction activities and the projected maximum excavation depth, the annual volume of excavated soil associated with these activities would be approximately 100,000 cubic yards (see Table F–3). In support of these planned construction projects, in many cases existing buildings would be razed. Any soil excavated during these D&D activities would be sampled as appropriate to ensure it is not contaminated and, if not, would be available for recycling/reuse as fill material during the ensuing construction projects. No excavated soil would be classified as waste unless sampling indicated the presence of contamination.

These materials would be used to help offset the requirements for fill associated with planned construction activities. These construction activities were estimated to require the annual use of approximately 100,000 cubic yards of soil. Any unfilled requirements would be supplied using materials brought onto the site from nearby suppliers.

F.3.5 Biological and Ecological Resources

The planned D&D activities should have little effect on overall biological resources because the activities are planned to take place on previously disturbed land. However, several species of birds on the site are protected under the Migratory Bird Treaty Act (16 *United States Code* [U.S.C.] §703), including but not limited to: Mourning Dove (*Zenaida macroura*), Say's Phoebe (*Sayornis saya*), Western Kingbird (*Tyrannus verticalis*), American Robin (*Turdus migratorius*), and House Finch (*Carpodacus mexicanus*). These can be found nesting in a number of places on buildings and structures listed for D&D in Table F–2. Implementation of the planned D&D activities would require biological evaluations and surveys before these undertakings could proceed.

F.3.6 Cultural Resources

There are no known archaeological sites in any of the TAs. However, some of the TAs contain historic districts and National Register of Historic Places (NRHP)-eligible buildings that have been identified in consultation with the New Mexico State Historic Preservation Office. Proposed D&D activities include the demolition of a number of buildings identified as NRHP-eligible or eligible as a contributing element within a historic district to make way for construction of new facilities. Implementation of many of the planned D&D activities would require completion of Section 106 consultation with the State Historic Preservation Office and appropriate actions to mitigate negative effects before these undertakings could proceed. These consultations would be performed as part of the detailed planning process for D&D of individual facilities.

F.3.7 Socioeconomics

The planned construction projects were estimated to employ the equivalent of approximately 210 full-time workers per year over the 10-year period. The planned D&D projects were estimated to employ the equivalent of approximately 13 full-time workers per year over the 10-year period. Workers employed by these projects are expected to mainly come from within the region of influence (ROI), depending on the type of project and construction expertise required. In total, planned construction and D&D projects could employ the equivalent of approximately 220 full-time workers per year over the 10-year period. These jobs would be a small fraction of the jobs related to the continued operation of SNL/NM and DOE activities in the Albuquerque area, but represent important jobs to the construction industry within the local community.

These activities are also expected to result in additional spending in the ROI that would lead to the creation of indirect or induced jobs. The average annual use of 220 construction workers on site is expected to result in the creation of approximately 190 indirect and induced jobs in the ROI, for a total employment impact of 410 full-time employees on average.

F.3.8 Human Health and Worker Safety

As discussed above, the planned construction and D&D projects were estimated to employ the equivalent of approximately 220 full-time workers per year over the 10-year period. Based on DOE and SNL/NM personnel construction safety statistics, this level of work would result in a small number of injuries and no fatalities on an annual basis. About 5 recordable injuries were projected annually, resulting in about 90 lost workdays. No fatalities are expected to result from accidents connected with these activities.

Other than potential accidents involving members of the public related to the transportation activities associated with the planned construction and D&D activities (see Section F.3.11), there should be no adverse impacts on human health from these activities. All of these activities would take place on parts of SNL/NM and KAFB that have restricted access to members of the public, and standards practices would be implemented to keep noninvolved workers at safe distances from the planned activities.

F.3.9 Waste Management

Construction and D&D activities would generate solid waste in categories and volumes that would depend on the type of building or structure being built or demolished and its size. Table F–3 lists the quantities of waste that would be generated if all of the planned construction projects were executed within the next 10 years. The total solid waste generated from construction was estimated to average approximately 240 tons per year over the 10-year period. Ninety-eight percent of that waste

(approximately 210 tons per year) was estimated to be recycled on average, and the remaining 2 percent (approximately 5 tons per year) would be landfilled.

Solid waste would also be generated by D&D activities in categories and volumes that would depend on the type of buildings or structures being demolished (for example, concrete, steel frame, trailers) and their size. Typical demolition debris includes wood, concrete, brick, metal, ceiling tiles, lighting fixtures, and soil that has to be handled as some type of waste. Older buildings may include friable asbestos. Much of the demolition debris can be recycled, and the companies performing these services for DOE and SNL/NM activities would be required to recycle materials to the extent practicable. The D&D activities were estimated to produce approximately 13,000 tons of solid waste annually, of which up to 12,700 tons could be recycled and the remaining 300 tons could be sent to a landfill for disposal. In addition to the solid waste that would be generated, D&D activities could result in the generation of hazardous, sanitary, or chemical waste, depending on the age and previous use of the buildings being demolished. On this basis, it was estimated that the planned D&D activities could annually generate approximately 19 tons of Toxic Substances Control Act waste, 13 tons of chemical waste, 4 tons of sanitary waste, and 4 tons of hazardous waste. These wastes would be combined with the types of wastes generated by the continued operation of SNL/NM and would be sent to permitted treatment and disposal facilities. Local facilities would be used to the extent practical; as necessary to ensure treatment and disposal of waste in accordance with regulations, some waste may be transported to out-of-state facilities.

F.3.10 Noise and Vibration

Construction and D&D activities would result in temporary increases in noise and vibration as a result of equipment operations and demolition activities. These noises and vibrations would be localized, short-term, and intermittent during machinery operations. Heavy construction equipment would be used periodically during demolition and construction; therefore, noise and vibration levels from the equipment would fluctuate throughout the day and according to the phases of construction. Noise generation and vibration would last only for the duration of construction activities and would be isolated to normal working hours (that is, between 7:00 a.m. and 5:00 p.m.). Given the location of these activities relative to public areas, these noises and vibrations would primarily affect other SNL/NM facilities and personnel. Activities in TA-I, -II, and -IV may affect persons residing in KAFB housing or at nearby KAFB shopping and commercial areas, but the noises and vibrations should be diminished by the time they reach these areas. Activities in TA-III or the Coyote Test Field are not expected to affect members of the public.

F.3.11 Transportation and Traffic

The planned construction and D&D projects were predicted to result in minor increases in traffic and possible lane restrictions, resulting in congestion or slowed traffic as materials and equipment are transported on and off site and waste is shipped off site. The number of trips associated with these activities was estimated to range from approximately 960 per year under the Reduced Operations Alternative to 1,900 per year under the Expanded Operations Alternative. These trips are expected to result in up to 3 accidents over the 10-year period, but no fatalities.

F.3.12 Energy Conservation, Renewable Energy, and Sustainable Design

The planned construction and D&D projects were predicted to result in increased efficiencies on SNL/NM as older buildings are replaced by new, more energy- and water-efficient facilities. SNL/NM has committed to ensuring that any future buildings will be built to meet or exceed Leadership in Energy and Environmental Design (LEED) Gold standards. Long-term, significant, beneficial effects on sustainable design are expected due to the demolition of approximately 890,000 gross square feet of older, less efficient facilities and the addition of 770,000 gross square feet of LEED Gold–certified new construction.

F.3.13 Unaffected Resource Areas

Planned construction and D&D activities are not expected to appreciably affect water resources or environmental justice. As discussed in Section F.3.1, all construction would occur on previously disturbed sites. Planned construction and D&D activities would have little or no effect on water resources. Limited amounts of water would be used for dust suppression during both demolition and construction activities, but this use would be temporary and would not constitute a substantial percentage of overall water use at SNL/NM, as discussed in Section F.3.2.

Planned construction and D&D activities are unlikely to have an appreciable effect on environmental justice. None of the environmental impacts discussed above in Section F.3 is projected to have significant adverse impacts on the general population, including minority and low-income populations residing near SNL/NM. There should be a beneficial impact on members of these groups because these activities would create construction jobs, as discussed in Section F.3.7, thereby increasing employment opportunities for minority and low-income workers in the ROI.

F.4 References

SNL/NM (Sandia National Laboratories, New Mexico), 2013, *Data Call Response to Support Development of the Site-wide Environmental Impact Statement for the Continued Operation of the Department of Energy/National Nuclear Security Administration Sandia National Laboratories, New Mexico*, Albuquerque, New Mexico, January.

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