Mello Aff #2 Par 12n, (note: quantity of cubic yards of solid waste generated by CMR disposition cited in Affidavit #2 should be 20,000, not 10,000, cubic yards. See below.)

2.7.7 Disposition of the CMR Building

The disposition options for the existing CMR Building include:

Disposition Option 1: Reuse of the Building for administrative and other activities appropriate to the physical conditions of the structure with the performance of necessary structural and systems upgrades and repairs.

Disposition Option 2: Decontamination, decommission, and demolition of selected parts of the existing CMR Building, with some portions of the Building being reused.

Disposition Option 3: Decontamination, decommission, and demolition of the entire existing CMR Building.

Over the past 50 years of operation, certain areas within the existing CMR Building, pieces of equipment, and building systems have become contaminated with radioactive material and by operations involving SNM. These areas include about 3,100 square feet (290 square meters) of contaminated conveyors, gloveboxes, hoods and other equipment items; 760 cubic feet (20 cubic meters) of contaminated ducts; 580 square feet (50 square meters) of contaminated hot cell floor space; and 40,320 square feet (3,750 square meters) of laboratory floor space.

At this time, the existing CMR Building has not been completely characterized with regard to types and locations of contamination. In addition, project-specific work plans have not been prepared that would define the actual methods, timing, or workforce to be used for the decontamination and demolition of the Building. Instead, general or typical methods of decontamination and demolition are presented in general terms below. Additional NEPA compliance review would be required when the specific features of the disposition of the CMR Building actually become mature for decision in about 15 years.

2.7.7.1 Decontamination and Demolition Process

The process that would be used to decontaminate and demolish the CMR Building is described in the text box in Section 2.9.1. Detailed project-specific work plans for the decontamination and demolition of the CMR Building would be developed and approved by NNSA before any actual work began. These plans would include those required for environmental compliance (such as an SWPP Plan) and monitoring activities (such as using a real-time gamma radiation monitor); all necessary legal and regulatory requirements in effect at the time would be undertaken before any decontamination or demolition activities were conducted. Some of the disposition work could involve technologies and equipment that have been used in similar operations, and some could use newly developed technologies and equipment. It is not likely that all of the decontamination and demolition work elements described in the following discussion would be utilized. All work would be carefully planned in accordance with established state and Federal laws and regulations (such as National Emissions Standards for Hazardous Air Pollutants [NESHAP]), DOE Orders, and LANL procedures and BMPs.

The decontamination and demolition work is estimated to require up to one million person-hours. At any given time, a workforce from 2 to 100 or more workers could be onsite (LANL 2003). The DOE and LANL limit for worker exposure is 5 rem per year (10 CFR 835).

2.7.7.2 CMR Building Decontamination

The CMR Building consists of three levels, each essentially covering the full footprint of the structure. Radioactive contamination in the CMR Building is known or suspected in quantities that could require some level of decontamination or control for continued use or to control the spread of contamination during demolition. The three building levels include:

- **Attic—**Contains primarily facility equipment and is expected to be mostly free of radioactive contamination.

- **Main Floor—**Most of the CMR Building's laboratory and office space is on this level. The ceilings are expected to be mostly clean, with increasing potential for contamination toward the floor. It is estimated that 45 percent of the items and surfaces at this level are contaminated to some degree.

- **Basement—**Contains facility equipment, and has the highest potential for contamination. The ventilation ducts and piping in this area are on the contaminated side of the process flow, and it is expected that some contamination would migrate down into the basement. It is assumed that all equipment and surfaces in the basement are contaminated to some degree.

The CMR Building (except for Wing 9) is constructed of reinforced concrete floors (typically 4 inches [10 centimeters] thick), reinforced concrete walls (18 inches [46 centimeters] thick), reinforced concrete frame, and steel framing with a light-gauge metal deck roof. The entire facility is supported on reinforced concrete basement walls and columns on spread footings. Wing 9 is constructed differently with the above-grade walls consisting of lightly reinforced concrete masonry walls. The floor and grade slabs are thicker (approximately 11 inches [28 centimeters]), and the footings and concrete around and under the hot cells are massive (LANL 2003).

The overall footprint is estimated to be 195,000 square feet (18,116 square meters) and the average height from the bottom of the basement slab to the top of the roof is 50 feet (15 meters). The total volume of the Building is estimated to be 360,000 cubic yards (275,242 cubic meters) (LANL 2003).

Ventilation System: The exhaust side of the ventilation system is large and highly contaminated. Most of the contaminated ductwork is in the basement.

Radioactive Liquid Waste Line: The radioactive liquid waste system carries contaminated wastewater to the RLWTF at TA-50. This is a highly contaminated system and, due to leakage, is thought to be the largest contributing source of contamination within the CMR Building. It has been estimated that the radioactive liquid waste line consists of approximately 9,200 feet (2,804 meters) of 5-inch- (13-centimeter-) diameter and 16,100 feet (4,907 meters) of 2.5-inch-

(6-centimeter-) diameter stainless steel pipe. It is expected that the bulk of this piping would be transuranic waste, with some portions being mixed low-level radioactive waste due to mercury contamination. Also, in areas of leakage, surrounding concrete, walls, floors, and other adjacent surfaces there may be higher levels of contamination (LANL 2003).

Vacuum Systems: Of the two large vacuum systems in the CMR Building, one is highly contaminated. The second newer system is expected to have only low levels of contamination.

Walls: Leaks from the radioactive liquid waste line have resulted in contamination within the walls. It has been estimated that 432,000 square feet (40,134 square meters) would have to be replaced to achieve a level of decontamination adequate for reuse of the space for operations (LANL 2003).

Floors: Floor contamination is widespread and ranges from low to high levels. The basement floors have many areas of contamination, some of which have been painted over. Floor contamination in the attic is limited.

Asbestos: Approximately 73,000 feet (22,250 meters) of asbestos pipe insulation has been found in the CMR Building, with another 9,400 square feet (873 square meters) on ducts. Floor tile (up to 20,000 square feet [1,858 square meters]) and ceiling tile may also contain asbestos (LANL 2003).

Decontamination of the CMR Building would consist of the removal of nonradiological and radiological contamination from the building using vacuum blasting, sand blasting, carbon dioxide bead blasting, scabbling, and mechanical separation of radioactive and nonradioactive materials. This would include removal of flooring, ceiling tiles, insulation, and paint contaminated with asbestos, lead, and other toxic-contaminated materials. Some of these materials may also be contaminated with radionuclides and require special handling. Radiologically contaminated and uncontaminated debris would be segregated. The extent of decontamination performed would be limited to those activities required to minimize radiological and hazardous material exposure to workers, the public, and the environment.

Decontamination of the CMR Building would also include the removal of asbestos debris. About 50 percent of the asbestos debris is anticipated to be free of radiological contamination. The other 50 percent of the asbestos debris is expected to be radiologically contaminated and would require special handling.

Air emissions generated during asbestos removal would be controlled by tents enclosing highly contaminated areas and using high-efficiency particulate air-filtered collection devices to collect asbestos dust particles. Dust suppression techniques would also be used to ensure that particulate emissions are kept to a minimum. Asbestos decontamination workers would be protected by personal protective equipment and other engineering and administrative controls.

Worker exposure to ionizing radiation would be controlled to limit any individual's dose to less than 1 rem per year. Where practical, shielding and remotely operated equipment would be used to reduce radiation levels at worker locations.

2.7.7.3 Demolition of the CMR Building

Once the CMR Building has been decontaminated, demolition could proceed. All demolition debris would be sent to appropriate disposal sites. The CMR Building is not expected to be technically difficult to demolish and waste debris would be handled, transported, and disposed of in accordance with standard LANL procedures.

Demolition of uncontaminated portions of the Building would be performed using standard industry practices. A post-demolition site survey would be performed in accordance with the requirements of the *Nuclear Regulatory Commission Manual for Conducting Radiation Surveys* (NUREG/CR-5849).

2.7.7.4 Waste Management and Pollution Prevention Techniques

Waste management and pollution prevention techniques that could be implemented during the demolition of the CMR Building would include:

- Conducting routine briefings of workers;
- Segregating wastes at the point of generation to avoid mixing and cross-contamination;
- Decontaminating and reusing equipment and supplies;
- Removing surface contamination from items before discarding;
- Avoiding use of organic solvents during decontamination;
- Using drip, spray, squirt bottles or portable tanks for decontamination rinses;
- Using impermeable materials such as plastic liners or mats and drip pallets to prevent the spread of contamination;
- Avoiding areas of contamination until they are due for decontamination;
- Reducing waste volumes (by such methods as compaction); and
- Engaging in the use of recycling actions (materials such as lead, scrap metals, and stainless steel could be recycled to the extent practical).

Some of the wastes generated from the decontamination and demolition of the CMR Building would be considered residual radioactive material. DOE Order 5400.5 establishes guidelines, procedures, and requirements to enable the reuse, recycle, or release of materials that are below established limits. Materials that are below these limits are acceptable for use without restrictions. The residual radioactive material that would be generated by the decontamination and demolition of the CMR Building would include uncontaminated concrete, soil, steel, lead, roofing material, wood, and fiberglass. The concrete material could be crushed and used as backfill at LANL. Soil could also be used as backfill or as topsoil cover, depending on their characteristics. Steel and lead could be stored and reused or recycled at LANL. Wood, fiberglass, and roofing materials would be disposed at the Los Alamos County Landfill or its replacement facility. The total amount of waste generated from the disposition of the CMR Building is anticipated to be 36,000 cubic yards (27,500 cubic meters); this estimate does not include the amount of waste generated by the demolition of the outbuildings, parking lots, or soil removal. The total volume of solid waste, and recyclable materials generated from the disposition of the CMR Building is estimated at 20,000 cubic yards (15,300 cubic meters)

Decontamination and Demolition Work Elements

Characterization, Segregation of Work Areas, and Structural Evaluation: Walls, floors, ceilings, roof, equipment, ductwork, plumbing, and other building and site elements would be tested to determine the type and extent of contamination present. The CMR Building would then be segregated into areas of contamination and noncontamination. Contaminated areas would be further subdivided by the type of contamination: radioactive materials, hazardous materials, toxic materials including asbestos, and any other RCRA listed or characteristic contamination. As part of the characterization and segregation of work areas, consideration would also be given to the structural integrity of the CMR Building. Some areas could require demolition work prior to decontamination.

Removal of Contamination: Workers would remove or stabilize contamination according to the type and condition of materials. If the surface of a wall was found to be contaminated, it might be physically stripped off. If contamination was found within a wall, a surface coating might be applied to keep the contamination from releasing contaminated dust during dismantlement and to keep the surface intact.

Demolition of the CMR Building, Foundation, and Parking Lot: After contaminated materials have been removed, wherever possible and practical, the demolition of all or portions of the CMR Building would begin. Demolition could involve simply knocking down the structure and breaking up any large pieces. Knocking down portions of the CMR Building, foundation, and parking lot could require the use of backhoes, front-end loaders, bulldozers, wrecking balls, shears, sledge and mechanized jack hammers, cutting torches, saws, and drills. If not contaminated, demolition material could be reused onsite at LANL or disposed of as construction waste onsite or offsite. Asphalt would be placed in containers and trucked to established storage sites within LANL, at TA-59 on Sigma Mesa.

Segregating, Packaging, and Transport of Debris: Demolition debris from the CMR Building would be segregated and characterized by size, type of contamination, and ultimate disposition. Debris that is still radiologically contaminated would be segregated as low-level radioactive waste if no hazardous[1] contamination is present. Radiologically-contaminated and non-contaminated asbestos debris would also be segregated separately. Other types of debris that would be segregated include mixed low-level radioactive waste,[2] noncontaminated construction debris, and debris requiring special handling. Segregation activities could be conducted on a gross scale using heavy machinery or could be done on a smaller scale using hand-held tools. Segregated waste would be packaged as appropriate and stored temporarily pending transport to an appropriate onsite or offsite disposal facility.

Debris would be packaged for transport and disposal according to waste type, characterization, ultimate disposition, and U.S. Department of Transportation (DOT) or DOE transportation requirements. Uncontaminated construction debris could be sent unpackaged to the local landfill by truck. Demolition debris would also be recycled or reused to the extent practicable. Debris would be disposed of either on or offsite depending on the available capacity of existing disposal facilities. Offsite disposal would involve greater transportation requirements depending on the type of waste, packaging, acceptance criteria, and location of the receiving facility.

Testing and Cleanup of Soil and Contouring and Seeding: The soils beneath the CMR Building would be sampled and tested for contamination. Any contaminated soil would undergo cleanup per applicable environmental regulations and permit requirements and would be packaged and transported to the appropriate disposal facility depending on the type and concentration of contamination. After clean fill and soil were brought to the site as needed, the site would be contoured. Contouring would be designed to minimize erosion and replicate or blend in with the surrounding environment. Subsequent seeding activities would utilize native plant seeds and the seeds of non-native cereal grains selected to hold the soil in place until native vegetation becomes stabilized.

1 *Hazardous waste is a category of waste regulated under the RCRA. Hazardous RCRA waste must be solid and exhibit at least one of four characteristics described in 40 CFR 261.20 through 40 CFR 261.24 (ignitability, corrosivity, reactivity, or toxicity) or be specifically listed by the U.S. Environmental Protection Agency in 40 CFR 261.31 through 40 CFR 261.33.*

2 *Mixed low-level radioactive waste contains both hazardous RCRA waste and source, special nuclear, or byproduct material subject to the Atomic Energy Act.*

(LANL 2003). The volume of radioactive waste generated from the disposition of the CMR Building is estimated to be 16,000 cubic yards (12,200 cubic meters).

Asbestos that is not radiologically contaminated would be packaged according to applicable requirements and sent to the LANL asbestos transfer station for shipment offsite to a permitted asbestos disposal facility along with other asbestos waste generated at LANL.

Radioactive contaminated soil, concrete, walls, and tiles would be packaged as low-level radioactive wastes and disposed of at TA-54, Area G, or an offsite commercial facility. Gloveboxes and radioactive liquid waste lines categorized as transuranic waste would be disposed at the Waste Isolation Pilot Plant (WIPP).

If any other RCRA-regulated hazardous wastes were generated by disposition activities, they would be handled, packaged, and disposed of according to LANL's hazardous waste management program. Hazardous wastes would be stored at TA-54, Area L, at LANL until sufficient quantities are accumulated for shipment to offsite treatment, storage, and disposal facilities. Any hazardous waste generated by the demolition of the CMR Building would be transferred to an appropriate offsite facility for disposal. All offsite shipments would be transported by a properly licensed and permitted shipper and conducted in compliance with U.S. Department of Transportation (DOT) regulations and DOE standards.

2.7.8 Disposition of the CMRR Facility

Disposition of the new CMRR Facility would be considered at the end of its designed lifetime operation of at least 50 years. It is anticipated that the impacts from the disposition of the CMRR Facility would be similar to those discussed for the disposition of the existing CMR Building.

2.8 The Preferred Alternative

CEQ regulations require an agency to identify its preferred alternative, if one or more exists, in the final EIS [40 CFR 1502.14(e)]. The Preferred Alternative is the alternative that the agency believes would fulfill its statutory mission, giving consideration to environmental, economic, technical, and other factors. Alternative 1 (construct a new CMRR Facility at TA-55), is NNSA's Preferred Alternative for the replacement of the CMR capabilities. NNSA has identified as its preferred construction option the construction of a single consolidated SNM-capable Hazard Category 2 laboratory with a separate administrative offices and support functions building (Construction Option 3). NNSA's preferred option for the disposition of the CMR Building is to decontaminate, decommission and demolish the entire structure (Disposition Option 3).

2.9 Summary of Environmental Consequences for the CMR Building Replacement Project

This section comparatively summarizes the alternatives analyzed in this EIS in terms of their expected environmental impacts and other possible decision factors. The following subsections summarize the environmental consequences and risks by construction and operations impacts for