

**Categorical Exclusion (CX) Determination for  
Building 71 Seismic Improvement and Modifications  
Lawrence Berkeley National Laboratory  
(LB-ER-08-4)**

Lawrence Berkeley National Laboratory (LBNL) proposes to seismically improve Building 71, a 54,000-gross square foot (gsf) accelerator building constructed in 1957. (See Figure 1) Currently rated "Very Poor," the building would improve to a seismically "Fair" rating with implementation of the proposed action. Separate from the seismic improvement, LBNL also proposes to modify Building 71 to accommodate ongoing laser research in Building 71 Room 146.

The proposed seismic improvement action would remove the remnants of the retired Super Heavy Ion Linear Accelerator (SuperHILAC). This equipment no longer serves a functional purpose and, because of its considerable mass, would undermine the building's structural performance during a major seismic event. Project implementation would take place over approximately six months and would include hazardous material removal, followed by disassembly of the accelerator remains, and ending with demolition and removal of cast-in-place concrete and shielding blocks. Approximately 55 truck trips would be generated by the project: 30 trips would transport steel for recycling or disposal; 20 trips would transport concrete for local recycling; and 5 trips would transport mixed waste for appropriate disposal (including two trips expected to a licensed hazardous waste disposal facility in Utah). All truck trips would follow prescribed truck routes and would comply with all relevant transportation and safety regulations and protocols.

The proposed modifications for the Room 146 laser lab would include construction of new interior walls and an in-kind replacement of an outdated cooling tower and chiller. Project implementation would take place over approximately six months and would include partial demolition of an existing floor slab, drilling and installing two-foot diameter foundation piers to support new interior walls, constructing 3-foot-thick cast-in-place concrete walls and ceiling, and equipping the new laser lab with utilities and scientific apparatuses. In addition, an existing 12-foot-high cooling tower and accompanying chiller on the exterior roof of Building 71 would be replaced with a more efficient cooling tower and chiller unit of similar dimensions. Approximately 40 truck trips would be generated by the project to account for concrete, steel, drill rig, cooling tower and chiller, and removal of debris.

Laser research is currently conducted in Building 71 as part of an effort to innovate relatively small "wakefield" lasers to power future high-energy particle accelerators. The modifications to Building 71 would create a dedicated space specially designed to support this ongoing research. The in-kind replacements to the cooling tower and chiller would provide more reliable temperature control for the laser equipment.

Building 71 is located in the northwest portion of LBNL. It is surrounded by a service road and then steep grassland slopes and eucalyptus stands to the north, west, and east; to the south are McMillan Road and several Berkeley Lab office trailers. The HILAC, and its later

incarnation known as the "SuperHILAC," operated in Building 71 until the accelerator was retired in 1993.

Because of research associated with the HILAC and SuperHILAC, Building 71 was recommended<sup>1</sup> by DOE as being eligible for listing in the National Register of Historic Places pursuant to the National Historic Preservation Act (NHPA). A Historic Architectural Evaluation Report was prepared and submitted to the State Historic Preservation Office (SHPO) and the National Park Service (NPS), and mitigation was proposed for eventual removal of the accelerator remnants and associated blocks. Mitigation will include preparation of a HAER report with photo documentation. Due to the inaccessibility of various HILAC components until the outer layers of the machine are removed, HAER preparation will take place concurrently with project implementation and will be submitted to the SHPO within two months following project completion<sup>2</sup>. Public and private groups identified as potentially interested parties to this undertaking were notified and invited to respond; however, no responses were received within or after the requested thirty-day response period.

The proposed seismic improvements and building modifications would not adversely affect the environment. Exterior changes (cooling tower and chiller) would be in-kind replacements and would not result in increased visual, noise, hydrological, utilities, or air emissions impacts. Low-level waste, hazardous waste removal, transport, and disposal would follow all applicable federal, state, and environment, health, and safety regulations and protocols. Combined construction and demolition truck trips would be temporary and would average fewer than one round truck trip per day. On-site workers would number up to forty per day; limited parking would be provided and car-pooling encouraged. This would be temporary and far below the recently established significance threshold for LBNL-related traffic impacts.<sup>3</sup> Building 71 was intended for accelerator and other "heavy" lab uses and is within the Long Range Development Plan's "Research and Academic Zone," which is designated for research and support development. Building 71 is surrounded by roadways and parking lots, and no sensitive biological resources would be affected. No significant impact to historic resources would occur due pursuant to successful implementation of the HABS/HAER process.

The proposed action is not connected to other actions with potentially significant impacts and is not part of a proposed action that is or may be the subject of an Environmental Assessment or an Environmental Impact Statement. There are no extraordinary circumstances related to this action.

The Categorical Exclusions (CX) applicable to these proposed actions is from DOE NEPA Implementing Procedure, 10 CFR Part 1021, Subpart D, Appendix B: B3.6: Siting,

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<sup>1</sup> *Accelerator and Accelerator Support buildings 46, 46-A, 47, 58/58-A, 71 and 88, Ernest Orlando Lawrence Berkeley National Laboratory, Historic Architectural Evaluation Report, Harvey, 2007)*

<sup>2</sup> MOA Between DOE BSO and the CA SHPO Regarding the Building 71 SuperHILAC Removal Project at LBNL signed 11/07/07 and 28 Nov 2007.

<sup>3</sup> 2006 Long Range Development Plan Environmental Impact Report established that increased automobile trips associated with 375 new parking spaces would be the trigger point for a significant impact on local area traffic intersections.

construction (or modification), operation ... of facilities for indoor bench-scale laboratory operations ... and small-scale pilot projects ... contiguous to an already developed area; B1.23: Demolition and subsequent disposal of buildings, equipment, and support structures; and B1.5: Minor improvements to cooling water systems within an existing building or structure ...

The above accurately describes the proposed action which reflects the requirements of the CX cited above. Therefore, I recommend that the proposed action be categorically excluded from further NEPA review and documentation.

*Kim Abbott*

*12/5/07*

Kim Abbott  
DOE NEPA Program Manager

Date

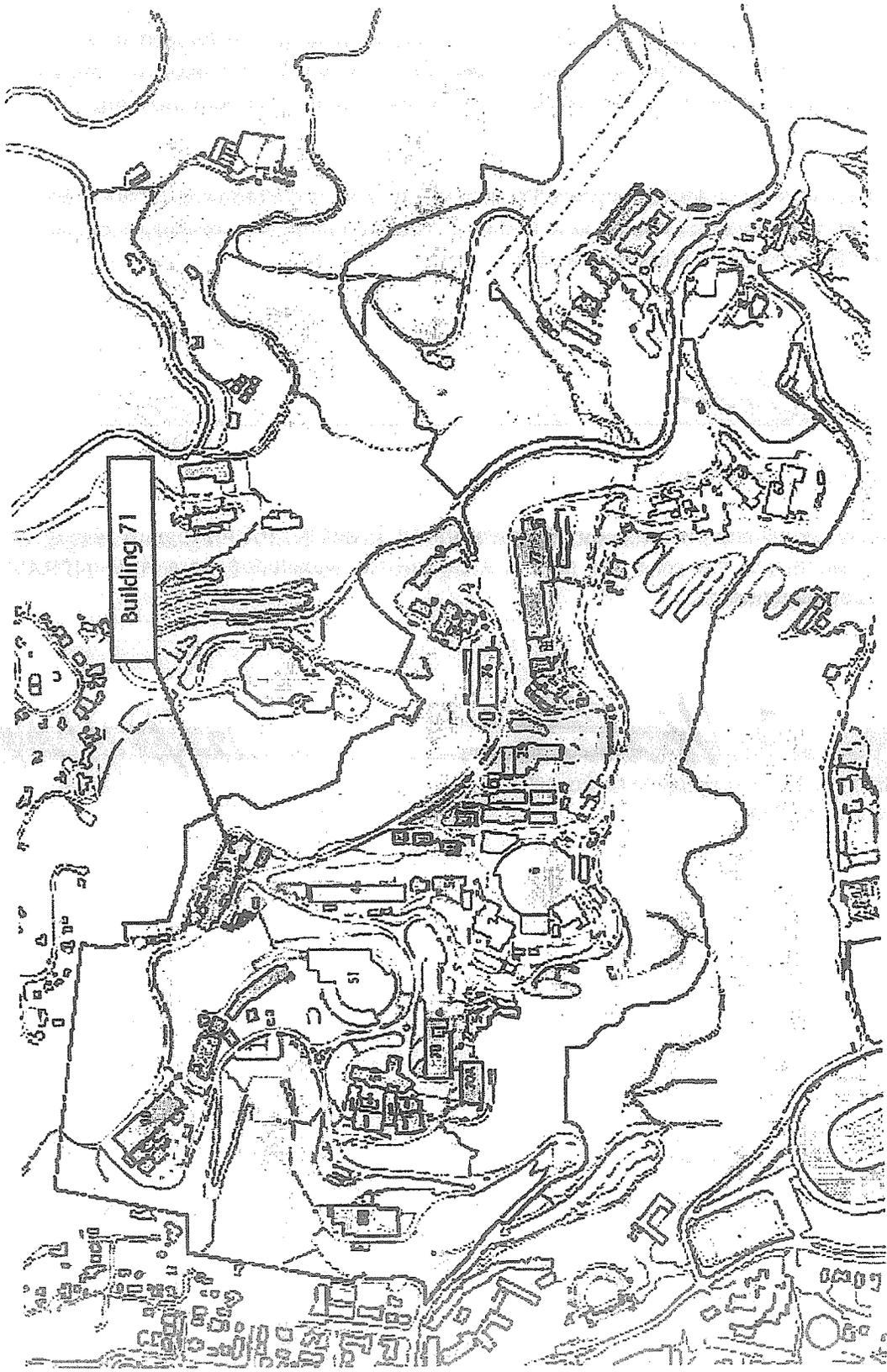
Based on my review and the recommendation of the DOE LBNL NEPA Program Manager, I have determined that the proposed action is categorically excluded from further NEPA review and documentation.

*Gary S. Hartman*

*12/17/2007*

Gary Hartman, NEPA Compliance Officer  
DOE Oak Ridge Office

Date



MEMORANDUM OF AGREEMENT  
BETWEEN THE U.S. DEPARTMENT OF ENERGY  
BERKELEY SITE OFFICE  
AND  
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICE  
REGARDING THE BUILDING 71 SUPERHILAC REMOVAL PROJECT  
AT  
THE LAWRENCE BERKELEY NATIONAL LABORATORY

WHEREAS the U.S. Department of Energy (DOE) Berkeley Site Office (BSO) plans to remove the SuperHilac in Building 71 at the Lawrence Berkeley National Laboratory, an action that constitutes an undertaking pursuant to 36 CFR Part 800; and

WHEREAS, the undertaking will disassemble and remove from Building 71 the SuperHilac, its support systems, and shielding. The project includes preliminary characterization and preparation of a deactivation plan, deactivation of all utilities in the work area, abatement of hazardous materials in the work area, segmenting the accelerator tank into ~ 10' sections and removal, removal of ~150 sheets of steel shielding around the accelerator, removal of ~70 shield blocks, disposal of all waste, and replacement of building exteriors; and

WHEREAS, DOE-BSO has defined the undertaking's area of potential effect (APE) as the footprint of building 71 and associated appurtenances; and

WHEREAS DOE-BSO has determined that the undertaking will have an adverse effect on the historic characteristics and qualities of Building 71, which is eligible for listing in the National Register of Historic Places, and has consulted with the State Historic Preservation Officer (SHPO) pursuant to 36 C.F.R. Part 800, of the regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f); and

WHEREAS, in accordance with 36 C.F.R. § 800.6(a)(1), DOE-BSO has notified the Advisory Council on Historic Preservation (ACHP) of its "adverse effect" determination with specified documentation and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii); and

NOW, THEREFORE, DOE-BSO and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties, and further agree that these stipulations shall govern the Undertaking all of its parts until the MOA expires or is terminated.

#### STIPULATIONS

DOE-BSO shall ensure that the following mitigating measures are carried out:

## I. RECORDATION OF HISTORIC PROPERTIES

- A. Prior to the start of work that could adversely affect any characteristics that qualify Building 71 as a historic property, DOE-BSO shall contact the Historic American Engineering Record (HAER), Pacific Great Basin Office of the National Park Service (NPS), Oakland, and request the NPS to recommend the level and type of recordation that would be appropriate for this undertaking.
- B. Portions of the SUPERHILAC can not be accessed or photographed until some of the equipment and shielding have been removed, accordingly, not all of the relevant HAER documentation can be prepared prior to the commencement of the demolition effort.
- C. DOE-BSO will provide the NPS copies of the photographs of the equipment, and shielding, and exterior of the SUPERHILAC that will ultimately be included in the HAER document before the removal effort begins. It is agreed that the removal effort of this undertaking can proceed before the HAER document has been approved in order to obtain a complete record for the HAER document.
- D. DOE-BSO shall ensure that all HAER documentation is complete and submitted to the NPS within two months of completion of the removal effort.
- E. Copies of this documentation will be made available to the SHPO and the appropriate local archives designated by the SHPO.

## II. ADMINISTRATIVE STIPULATIONS

- A. Definition of Parties. For the purpose of this MOA, the term "parties to this MOA" means DOE-BSO and the SHPO, each of which has authority under 36 CFR 800.7(a) to terminate the consultation process.

## III. DURATION

This MOA will be null and void if its terms are not carried out within five (5) years from the date of its execution. Prior to such time, DOE-BSO may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation VIII below.

## IV. POST-REVIEW DISCOVERIES

If DOE-BSO determines after demolition has commenced, that the undertaking will affect a previously unidentified property that may be eligible for inclusion in the National Register of Historic Places, DOE-BSO will address the discovery in accordance with 36 CFR § 800.13(b)(3). Reclamation may assume the discovered property to be eligible for the National Register in accordance with 36 CFR § 800.13(c).

## V. MONITORING AND REPORTING

Each three months following the execution of this MOA until it expires or is terminated, DOE-BSO shall provide all parties to this MOA a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in DOE-BSO's efforts to carry out the terms of this MOA.

## VI. DISPUTE RESOLUTION

Should any signatory to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, DOE-BSO shall consult with such party to resolve the objection. If DOE-BSO determines that such objection cannot be resolved, DOE BSO will:

- A. Forward all documentation relevant to the dispute, including the DOE-BSO's proposed resolution, to the ACHP. The ACHP shall provide DOE-BSO with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, DOE-BSO shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. DOE-BSO will then proceed according to its final decision.
- B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, DOE-BSO may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, DOE-BSO shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.
- C. DOE-BSO's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

## VII. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

## VIII. TERMINATION

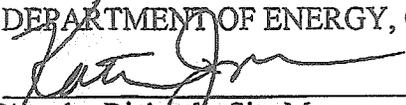
- A. If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation VII, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.
- B. Once the MOA is terminated, and prior to work continuing on the undertaking, DOE BSO must either (a) execute an MOA pursuant to 36 CFR § 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. DOE

BSO shall notify the signatories as to the course of action it will pursue.

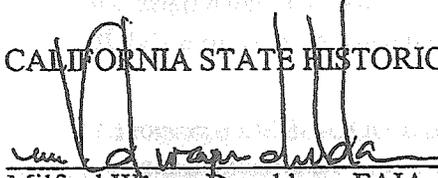
Execution of this MOA by the DOE-BSO, and SHPO and implementation of its terms evidence that DOE-BSO has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATORIES:

DEPARTMENT OF ENERGY, OFFICE OF SCIENCE, BERKELEY SITE OFFICE

  
Date 11/9/07  
Mundra Richards, Site Manager

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

  
Date 28 NOV 2007  
Milford Wayne Donaldson, FAIA