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**U.S. Department of Energy (DOE)**

**Finding of No Significant Impact**

**Human Genome Laboratory**

at

**Lawrence Berkeley Laboratory, Berkeley, California**

**AGENCY:** U.S. Department of Energy (DOE)

**ACTION:** Finding of No Significant Impact (FONSI)

**SUMMARY:** The U.S. Department of Energy (DOE) has prepared an Environmental Assessment (EA), DOE/EA-0856, evaluating the proposed action to construct and operate a Human Genome Laboratory (HGL) at Lawrence Berkeley Laboratory (LBL). LBL is located in Berkeley, California and operated by the University of California (UC). The project consists of demolition of existing Building 74B and construction of a three-story office and laboratory building to consolidate and expand existing research on the structure and function of the human genome. Soil excavated during construction would be used to construct a parking lot of approximately 56 spaces on a hillside adjacent to LBL Building 54.

Based upon information and analyses in the EA, the DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969. Therefore, an Environmental Impact Statement is not required.

**DESCRIPTION OF THE PROPOSED ACTION:**

The proposed action is to construct and operate a Human Genome Laboratory (HGL) at LBL on the present site of Building 74B. Building 74B would be demolished as part of the project. The proposed HGL would provide approximately 44,400 gross square feet that would include offices and a core of laboratories where multidisciplinary teams of technical staff would use a common pool of instrumentation and cell culture facilities to conduct research on the structure and function of the human genome. The facility would be occupied by a staff of approximately 92 scientists, students, and support personnel. Approximately half the staff would be relocated from Buildings 50B, 70A, and 74 at LBL, and the Donner Laboratory at UCB, resulting in a net increase of 46 persons at LBL.

## **ALTERNATIVES:**

Five alternatives to the proposed action were considered: (1) no action, (2) a different building configuration, (3) an alternative on-site location (adjacent to Centennial Drive), (4) an alternative off-site location (Richmond Field Station), and (5) location at another DOE facility (Lawrence Livermore National Laboratory). With the exception of the no action alternative, the alternatives were selected based upon criteria necessary to meet the purpose and need of the HGL. The key criteria are as follows:

- The site must accommodate suitable space and facilities for consolidating and conducting human genome experiments in one location and meeting other project objectives.
- The site must be within 45 minutes driving time of LBL in order to create the minimally acceptable operation relations between LBL and Human Genome Laboratory researchers.
- Infrastructure and services must be in place or have expansion potential to serve proposed building development. Infrastructure and services include water, sewer, security, fire, and recreational amenities.
- The site must have no environmentally sensitive resources, such as endangered species, rare plants, or animals.
- Adequate access must be available to existing and future highways and public transportation systems.
- Land must be easily assembled, preferably in single ownership.
- A leased site must meet DOE terms and conditions for leased space.

(1) Under the no action alternative, human genome research would continue to be conducted in the present locations in Buildings 50B, 70A, and 74 at LBL and Donner Laboratory at UCB. No new facility for consolidation and expansion of this research effort would be constructed. The no-action alternative would have no effect on the environment above existing conditions. However, this alternative would adversely affect DOE's ability to fulfill the Human Genome Project mission. Without the proposed facility, DOE would be unable to provide the consolidated and centralized space and equipment needed to obtain the overall goals of the Human Genome Center. Research on the genetic basis of disease and other human-health-related issues would continue at its current level with no programmatic growth.

(2) The different building configuration alternative consists of constructing a two-story building with the same square footage in the same location as the proposed building. The primary difference between this alternative and the proposed action is that the building would be two stories high instead of three and the building would have a larger footprint. Cutting further into the adjacent hillside would be required for this alternative. Increased excavation may increase the likelihood for soil erosion, landsliding, and sedimentation, and the potential for diversion of a greater amount of groundwater around the building foundation. This alternative would disturb a larger area of vegetation and may result in the loss of mature, introduced eucalyptus trees. (However, eucalyptus is considered a fire hazard and the removal of mature trees could result in a net improvement in the area.) A larger amount of soil would be excavated and removed. The potential environmental effects associated with facility operations would be identical to the proposed action.

(3) Under this alternative, the proposed HGL would be constructed approximately 75 ft to the west of Building 74, instead of 75 ft to the east. The building footprint and size would be the same as under the proposed action. Implementation of this alternative would result in loss of more native habitat and mature trees; however, the potential for landslides during construction would be less because this alternative would not require cutting into a hillside. Depth to groundwater at this alternative location would probably be greater, reducing the likelihood of dewatering activities. Under this alternative, the HGL would be highly visible from Centennial Drive and detract from the natural character of the surroundings. Construction activities would be located adjacent to Centennial Drive and noise levels at the UC Botanical Gardens would be slightly higher than with the proposed action. The environmental effects associated with facility operations would be similar to the proposed action.

(4) The alternative offsite location is at the University of California-owned Richmond Field Station (RFS) located approximately 7 miles (mi) northwest of the LBL site. The building footprint and size would be the same as under the proposed action. This alternative would have greater environmental effects than the proposed action. The RFS is located within or nearby sensitive zones for potential historical and cultural resources, within the 100-year coastal flood zone, and near wetlands. Two federal endangered and one State-listed threatened species associated with wetland habitats may be present at the RFS. Implementation of this alternative might result in negative effects to these resources. Implementation of this alternative could add a minimum of 200 daily commute trips to the local street system resulting in additional air emissions, and may slightly decrease the Level of Service (LOS) around UCB and LBL. Utility/energy consumption at the RFS would be greater than that of the proposed action because the net increase in new employees would be 92 at the RFS, compared to 46 at the proposed location.

Currently, hazardous materials are used at the RFS; radioactive materials are not used and biomedical wastes are not generated. Under this alternative, the relative increase in materials used and wastes generated would be greater than under the proposed action.

(5) The Lawrence Livermore National Laboratory (LLNL) was considered as the alternative DOE off-site location for the HGL. LLNL is located approximately 25 miles southeast of the LBL site. The building footprint and size would be the same as under the proposed action. LLNL is on relatively level ground with good drainage. Because of this, the potential for soil erosion and sedimentation of local streams is less than for the proposed project. Also, the potential negative impact to people and property during a seismic event at LLNL is considered less because the Hayward Fault near LBL has a greater Maximum Credible Earthquake than do the faults nearer to LLNL (i.e., Greenville Fault and Las Positas Fault).

The project would add a minimum of 200 daily trips to the local street system serving LLNL, based upon current trip generation at LBL. Many of these trips would be made by motor vehicles because of the lack of developed public transportation in the area and the need to commute between LBL, UCB and LLNL. This would increase local traffic and add to air quality impacts (in a non-attainment area) from motor vehicle emissions because of the increased distance researchers would have to travel. Utility/energy consumption at LLNL would be greater than that of the proposed action under this alternative because the net increase in new employees would be 92 at LLNL compared to 46 at the proposed location.

## **ENVIRONMENTAL IMPACTS:**

### Impacts from Construction and Demolition

Construction activities are expected to generate increased noise levels and short-term vehicle exhaust and airborne particulates. The increased noise levels and air contaminants are not expected to pose a threat to human health because of the low levels that would be generated, the short duration of construction, and the measures that would be taken as a normal part of construction to ensure workers and the environment are protected (for example, ear protection for workers and spraying the ground surface with water to minimize the generation of dust). Short-term transportation effects would include trips by construction workers to and from the site. The effects to traffic and parking would be minor and of short duration.

Because small amounts of radioisotopes were used in Building 74B, precautions would be taken during demolition to ensure that workers and the environment are protected from exposure to unacceptable levels of radioactivity. These precautions would include air sampling to determine if

residual radioactivity is present; use of protective gear by workers, if needed; and use of negative pressure ventilation and air filtration during cleanup to ensure that no radioactive material would be released to the air. Removal of asbestos-containing material would be accomplished by qualified personnel following Federal and local regulatory requirements. Construction debris would be either disposed of in a sanitary landfill or shipped to the DOE Hanford site for disposal as radioactive waste. Equipment would be recycled to the extent possible. The small quantities of hazardous wastes that would be generated during construction of the HGL (such as paint and solvents) would be recycled or disposed of in compliance with LBL standard procedures for handling and disposing hazardous wastes.

A temporary increase in the potential for landslides, soil erosion, and excess water runoff would be present during construction activities. Preventative measures would be used including construction of retaining walls, revegetating disturbed soil, and diverting storm runoff into the existing storm water drainage system.

Existing provisions of utilities, services, and energy at LBL are expected to be adequate for construction activities. The proposed action would have no impact on land use, or sensitive biological or cultural resources, and a very minor impact on visual quality.

### Impacts from Operations

Human Health. Radionuclides (phosphorus-32) would be used during HGL operations. The amount to be used is estimated to be 100 mCi annually (2 mCi/week). Radionuclide emissions would be about 1.04 mCi/year which would be about 0.1 percent of total annual radionuclide emissions from LBL. Dose to workers would be as low as reasonably achievable and would not approach the DOE-established limit of 5,000 mrem/year. Exposure would be minimized by conduct of radiation workplace audits to ensure compliance with procedures and use of personal dosimeters. The collective dose to LBL onsite workers is estimated to be  $2.17 \times 10^{-2}$  person-rem (equivalent to a risk of  $8.7 \times 10^{-6}$  (8.7 in 1 million) excess fatal cancers). The collective dose to a member of the public is estimated to be  $3.39 \times 10^{-4}$  person-rem (equivalent to a risk of  $1.7 \times 10^{-7}$  (1.7 in 10 million) excess fatal cancers).

A wide range of chemicals common to biological research laboratories would be stored and used in small quantities (5-liter quantities or smaller). The total amount of hazardous material quantities used or stored annually would be 2,500 pounds of solid and 300 gallons of liquid hazardous materials, representing less than 3.5 percent of hazardous material used at LBL in 1992. The estimated ground-level concentrations would be at least 3,000 times lower than the Threshold Limit

Values for occupational exposures.

Air Quality. Air emissions from operations would include ozone precursors, carbon monoxide, nitrogen oxide, and PM<sub>10</sub>. Because of the small quantities of chemicals to be used, the proposed HGL operations are expected to result in a slight increase in LBL emissions that would not approach the Bay Area Air Quality Management District thresholds of significance. The estimated annual emissions from the HGL would be 2.8 percent of current emissions from existing LBL sources. The estimated radionuclide emissions would be approximately 1.04 mCi per year, which is 0.1 percent of total annual radionuclide emissions (not including tritium) from existing LBL operations.

Utilities, Services, and Energy. Proposed project operations are expected to result in an incremental increase of 3 percent in use of water, gas, electricity, and production of wastewater above 1992 levels. Available levels of service are expected to be more than adequate for the proposed project. Other services, including communications, emergency notification, fire, and police are also expected to be adequate to support the proposed HGL.

Traffic, Circulation, Parking, and Noise. The 46 additional personnel who would be accessing the Life Sciences Area of LBL would generate daily traffic that represents less than 10 percent of the peak-hour vehicle trips and average daily trips projected site-wide at LBL through 1997. Daily trips at LBL would remain below the goals set forth in the agreement with the City of Berkeley, and LOS along access roads would not change. Adequate parking would be available to maintain the ratio of employees per parking space established in LBL's Long Range Development Plan.

Operation of the HGL would produce little noise, the major sources of which would be heating/cooling equipment and emergency generators. Traffic noise would not increase above current levels because of the small increase in vehicle trips per day.

Geology, Soils, and Seismicity. Operations of the proposed HGL are expected to have no effects on geology, soils, or seismicity.

Hydrology, Surface Water, and Water Quality. Minor diversions of subsurface groundwater flow in the hillside east of the proposed HGL may be required. The diversions would not affect the hydrology, surface water, or water quality of the area because of the minor quantities of water involved and the short distance of diversion. No effects on groundwater recharge are expected.

Waste Management. Radioactive, hazardous, biomedical, and solid wastes would be generated during HGL operations. About 3 cubic feet of mixed low level radioactive, 0.1 Ci of low level radioactive, 5,000 lb of hazardous, and 8,000 lb of biomedical wastes would be generated annually. This increase in waste generation is anticipated to be less than one percent of the current LBL total. In addition, 165 tons (90 percent of this would be recycled) of office-type wastes would be generated annually. This increase in waste generation is anticipated to be less than 3 percent of current LBL total. These increases in waste generation would not require additional waste storage space nor substantially affect current levels of waste transport or disposal. Wastes would be handled, stored, and disposed using approved procedures by qualified LBL personnel in accordance with DOE orders and federal and State regulations.

Land Use, Sensitive Resources, and Aesthetics. Proposed HGL operations would have no effect on land use, sensitive resource, or aesthetics.

Cumulative Effects:

Potential cumulative effects are anticipated for regional air quality, traffic, and waste generation. The San Francisco Bay Area does not meet emission standards (nonattainment status) for carbon monoxide, ozone precursors, and particulate matter less than 10 microns in size (PM<sub>10</sub>). Construction and operation of the HGL would provide a minor contribution to these emissions in the region. However, construction and operations of the HGL would be in compliance with emission control measures. Increased traffic and parking needs will result from the HGL and other LBL activities. The potential cumulative effects associated with the HGL would be reduced by implementing a trip management program to encourage use of bicycles, public transportation, free shuttle buses, carpools, and other measures designed to reduce employee-related vehicle trips. These measures currently are implemented for existing facilities at LBL.

The HGL would increase the quantity of various types of hazardous wastes that are being generated at LBL. California lacks adequate disposal capacity to handle current or projected quantities of hazardous wastes generated within the State. Therefore, at present, LBL and other California generators continue to rely on licensed hazardous waste disposal facilities located outside of California. Currently, about 90 percent of the office-type solid waste generated at LBL is recycled, and only about 10 percent is sent to a landfill. There exists a shortage of landfill space in the Bay Area and in many other regions of California. Waste minimization practices for solid waste as well as other waste types will be implemented in the HGL to continue to minimize waste generated and the cumulative impacts resulting from disposal of such waste.

## DETERMINATION

Based on the information and analysis in the EA, DOE has determined that the proposal to construct and operate the Human Genome Laboratory does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969. Therefore, a Finding of No Significant Impact is made and an Environmental Impact Statement is not required.

## PUBLIC AVAILABILITY

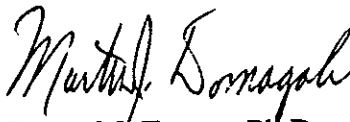
Copies of this EA (DOE/EA-0856) are available from:

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