

ATTACHMENT 1. ENVIRONMENTAL ANALYSIS

PAR 04-122 Extramural Research Facilities Improvement Program For Tupper Hall Phase III

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Introduction

The University of California, Davis (UC Davis) is responding to a request for proposals from the National Institutes of Health (NIH) for federal funds to renovate the existing space used by the School of Medicine's infectious disease research programs in Tupper Hall. The proposed renovations would modernize and improve existing facilities to support modern research methods and to provide a safe and efficient research environment. The proposed project would renovate 18,458 gross square feet of existing Biosafety Level 2 (BSL-2) research laboratories, Biosafety Level 3 (BSL-3) laboratories, and animal space to current BSL-3 standards and accommodate BSL-3 practices, equipment, and facilities, which are suitable for work involving agents that may cause serious or potentially lethal disease as a result of exposure.

The space is utilized by School of Medicine faculty, staff and students from the departments of Medical Microbiology & Immunology, Internal Medicine (Division of Infectious Disease) and Medical Pathology whose research focuses on using non-human primate models of human infectious and immunologic disease to better understand the disease, diagnostic tools, and treatments. In recent years, the research has focused on among other things, HIV/SIV pathogenesis, anti-viral therapies and vaccine development; vaccine development for Valley Fever; strategies for control of malaria; host-pathogen interactions of Salmonella and other pathogenic species. Tupper Hall is located on campus in the Health Sciences District, approximately one mile southwest of the UC Davis academic core.

The following Environmental Analysis Form presents the campus' preliminary evaluation of the environmental and community effects of the proposed project pursuant to NIH requirements for the National Environmental Policy Act of 1969 (NEPA).

The project would renovate existing laboratory space on the third floor of Tupper Hall and would not change the building's overall space nor would it add new employees to the campus. All improvements would be made to existing interior space and no changes would be made to the exterior of Tupper Hall. There would be no increase in impervious surfaces due to this project and therefore no

increase in storm water runoff. Due to emphasis on shared use of larger labs, the total number of fume hoods would be reduced slightly. The types of medical research and office operations that would occur in the renovated facility would be similar to those currently taking place in the building. As a result, utility usage at Tupper Hall would not change as a result of this renovation project. Hazardous materials used in, and waste generated by the renovated facility will also be largely similar to that under existing conditions and would be handled and treated consistent with state and federal regulations and guidelines.

Permits, Licenses, and Other Approvals

If selected for award of federal funds, the potential environmental effects of the proposed project would be fully evaluated in an environmental review pursuant to the requirements of NEPA. The University will comply with the environmental review requirements of the California Environmental Quality Act (CEQA) prior to potential University approval and development of the project. The University would not take any action giving impetus to the project in a manner that limits the choice of alternatives or mitigation measures prior to completing the environmental review. Any decision by the University to approve the project is contingent upon completion of the CEQA process. Design approval is required before the development of construction drawings for the project. The University would not spend any federal grant funds on the Project unless and until the design is approved by the University.

Under state law, the University of California is the lead agency for evaluation and approval of projects on lands owned by The Regents. No additional land use approvals are required for the project from local, regional, or state land use boards. The proposed building site is designated in the 2003 LRDP for *Academic/ Administrative High Density* land uses, and the proposed renovation project would be consistent with this land use designation.

SUGGESTED FORMAT

Environmental Analysis Form

Date _____ Proposed Construction Grant for _____
 (Principal Investigator)

A. USE OF NATURAL RESOURCES

This set of criteria is concerned with the *accessibility* of nonrenewable natural resources such as land, minerals, and fuels as well as the flow resources (water and air) that are constantly renewed but in which short-term or local shortages might occur.

Criteria	Impact		Description of Environmental Impact
	YES	NO	
<i>Will the project:</i>			
1) Change traditional use of the land parcel (by rezoning etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	Present zoning: _____ Present use of site: _____ Proposed zoning: _____
2) After use of other land by related development of stores, roads, or site changes?	<input type="checkbox"/>	<input type="checkbox"/>	
a) Generate new stores?	<input type="checkbox"/>	<input type="checkbox"/>	
b) Cause new roads?	<input type="checkbox"/>	<input type="checkbox"/>	
c) Cause new parking?	<input type="checkbox"/>	<input type="checkbox"/>	
Before answering question 3, consider these items: Soil borings <i>have/have not</i> been completed. Proposed facility <i>will/will not</i> have foundations similar to other facilities in the area. The facility <i>is/is not</i> in a flood plain.			
3) Use land for purposes unsuitable to its physical characteristics?	<input type="checkbox"/>	<input type="checkbox"/>	
4) Include the use of wetlands (swamps, marshes etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	
5) Block access to known mineral deposits?	<input type="checkbox"/>	<input type="checkbox"/>	(Sand, gravel, clay, stone, or other common building materials are not considered mineral deposits.)
6) Increase fuel and mineral consumption in state by more than 1% annually?	<input type="checkbox"/>	<input type="checkbox"/>	Est. annual fuel requirements: _____ gallons of fuel _____ cubic feet of natural gas _____ tons of coal _____ kWh of electricity Expected source(s) of these fuels:

Criteria	Impact		Description of Environmental Impact
	YES	NO	
7) Decrease the volume of water in a lake, river table, reservoir, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
8) Change traditional use of a body water?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
9) <i>Not</i> comply with the local and State land use planning?	<input type="checkbox"/>	<input type="checkbox"/>	

B. POLLUTION

This set of criteria concerns the processes that generate pollution. These include the introduction of pollutants into the environment, changes in the flow of energy through the environment, and changes in the composition of environments through the augmentation or deletion of substances that are naturally present. The criteria are also directly concerned with the production and one-time use of materials and the proper disposal of wastes.

Criteria	Impact		Description of Environmental Impact
	YES	NO	
<i>Will the project:</i>			
1) Increase identifiable ambient air pollution levels from a new emission source or from existing sources?	<input type="checkbox"/>	<input type="checkbox"/>	
2) Increase identifiable ambient air pollution levels through a major increase in the number of or use of automobiles, trucks, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	Approximate number of new employees: _____
3) Exceed city or State health standards with exhausts from fume hoods?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
4) Involve			If yes, describe.
a) Dredging or swamp drainage?	<input type="checkbox"/>	<input type="checkbox"/>	
b) Construction of a waste treatment plant?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe capacity & location.

Criteria	Impact		Description of Environmental Impact
	YES	NO	
c) Discharge of untreated human waste directly into a lake, river, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
d) Discharge of laboratory wastes biohazard wastes directly into a lake, river, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe
5) Overload existing waste treatment plants due to new loads (volume, chemicals, toxicity, etc.) water?	<input type="checkbox"/>	<input type="checkbox"/>	Please obtain and submit a connection permit or other approval from local sewer authority.
6) Cause soil erosion (after completion of construction phase) or leaching of foreign substances (such as salt) into soil?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe
7) Allow seepage of contaminants into the water table?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
8) Increase the stress placed upon an identified earthquake fault?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, please include a statement from a structural engineer.
9) Create an identifiable change in aquatic life by discharge of hot water?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
10) Decrease the percolation on more than one acre of land?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
11) Cause storm water runoff onto land owned by others?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
<p>Consider the following statements prior to answering questions 12-14: Facility <i>will/will not</i> emit noises in excess of local noise standards. Is facility near wildlife sanctuary? Are outdoor animal facilities included? Facility <i>will/will not</i> contain x-ray machines. Facility <i>will/will not</i> meet Atomic Energy Commission standards.</p>			
12) Produce noises considered offensive to a human population?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.

Criteria	Impact		Description of Environmental Impact
	YES	NO	
13) Create sounds that result in changes in behavior patterns of animals?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
14) Introduce major new sources of unshielded radiation?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
15) Cause shock waves and/or vibration (after construction phase)?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
16) Change the direction and wind velocity as to affect the local population (i.e., high-rise building)?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
17) Cause a new, large volume of production of non-recycled items?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
18) Result in the non-recycling of recyclable items such as laboratory glassware, animal cages, and office paper?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe. If no, indicate number of Glassware-washing machines: _____ Cage-washing machines: _____
19) Generate solid wastes that cannot be properly disposed of by existing facilities?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe. If no, describe proposed methods and disposal sites.
20) Dispose of solid wastes in in polluting landfills, wells, caves, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
21) Require storage of waste pending technology for safe disposal?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
22) <i>Not</i> comply with Federal, State, & local requirements for waste handling, transportation, or disposal methods?	<input type="checkbox"/>	<input type="checkbox"/>	Describe proposed methods.

C. POPULATIONS

This section of the initial criteria addresses changes in human & plant populations.

NOTE: For these criteria, the *affected area* is defined as being *greater than 160 acres in size*.

Criteria	Impact		Description of Environmental Impact
	YES	NO	
<i>Will the facility cause:</i>			
1) A 5% change in the density of the local population?	<input type="checkbox"/>	<input type="checkbox"/>	Est. local population: _____ Number of new employees: _____
2) Alteration of transportation, health, education, and/or welfare service?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
3) Change in social service needs by altering population's age pattern (new schools, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
4) A 5% change in the transient population?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe. Include est. number of Visitors: _____ Patients: _____ Students: _____
5) Changes in genetic engineering directed at the human population?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
6) Violation of local, State, or Federal standards pertaining to population densities of or conservation of plants and animals?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe. Also describe any approvals needed or submit those already obtained.

D. HUMAN SERVICES

As society has evolved, traditional self-sufficient human communities have given way to dense populations that depend upon the development and application of technology. Man's highly complex, technological environments are maintained by a variety of services, ranging from the provision of the basic necessities of food and water to a complex system of economic exchange. These services are largely interdependent, and their complexities must be considered.

NOTE: In this section, the *human environment* impacted upon is defined as *less than 160 acres* in size.

Criteria	Impact		Description of Environmental Impact
	YES	NO	
<i>Could the proposed project disrupt:</i>			
1) Food supplies for 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
2) Water supplies for over 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
3) Electrical power for 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
4) Heating supplies (natural gas, heating oil) for over 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
5) Or deprive population of housing for over 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
6) Removal of sewage for more than 12 hours?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
7) Removal of solid waste (trash) for more than 7 days?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
8) Existing health services' response in case of a disaster?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.

Criteria	Impact		Description of Environmental Impact
	YES	NO	
9) Telephone, telegraph, radio, or mail service for over 2 weeks ?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
10) Transmit service for more than than 2 weeks?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
<i>Will the proposed project use more than 5% of:</i>			
11) Remaining electrical capacity?	<input type="checkbox"/>	<input type="checkbox"/>	Estimated daily usage is ___ kWh. Please obtain & submit an approval letter from local utility or plant engineer.
12) Remaining water?	<input type="checkbox"/>	<input type="checkbox"/>	Estimated daily usage is ___ gallons. Please obtain & submit an approval letter from local utility or plant engineer.
13) Available capacity of the sewage treatment system (branch lines, mains, plants)?	<input type="checkbox"/>	<input type="checkbox"/>	Estimated daily flow is ___ gallons. Please obtain & submit an approval letter from local utility.
14) Available capacity of trash disposal system (collection, incinerator plant, landfill)?	<input type="checkbox"/>	<input type="checkbox"/>	Also clearly explain proposed handling and disposal of chemical wastes, biohazardous, syringes, and other special wastes.
15) Available heating fuel (gas, coal or heating oil)?	<input type="checkbox"/>	<input type="checkbox"/>	Annual quantities have already been described. Explain which of these fuels, if any, are in short supply.
<i>Will the proposed project decrease :</i>			
16) By 5% the food delivery system by removal of retail food stores etc.?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
17) By 5% the area's domestic housing by demolition, closing, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain. Will <i>any</i> housing be demolished, closed, etc.?

Criteria	Impact		Description of Environmental Impact
	YES	NO	
18) By more than 5% the use of existing transit systems (bus, train, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain. Relate to extent of new employment.
19) Accessibility to routine health services by altering point-of-service delivery?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
<i>Will the proposed facility:</i>			
20) Increase by more than 5% the patient load of the area's routine care services?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
21) Change the availability of social services by opening or closing facilities?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
22) Increase by more than 5% the number of social services recipients (through unemployment)?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
23) Cause discontinuation of existing stops or train stations?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain.
24) Increase by more than 5% the annual volume of telephone, telegraph, or mail?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, explain. Relate to new employment or change in location of employees.
25) Eliminate employment sources for 10% of the population.	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
26) Change school enrollment by more than 5%?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.

D. HUMAN VALUES

The fifth set of criteria is directed toward human values concerning the environmental qualities generally agreed upon to the extent that they are stated in statutes, standards, or regulations.

Criteria	Impact		Description of Environmental Impact
	YES	NO	
<i>Will the proposed project:</i>			
1) Encroach upon any historical, architectural, or archeological cultural property?	<input type="checkbox"/>	<input type="checkbox"/>	<i>Historical preservation:</i> Obtain and submit clearance letters from State office. <i>Architectual, archeological, and cultural:</i> Obtain and submit clearance from local government or local society.
2) Affect any endangered species?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.
3) Violate local, State, or Federal standards on aesthetics, or noise?	<input type="checkbox"/>	<input type="checkbox"/>	If yes, describe.

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Environmental Analysis – Supplemental Information

All asterisked (*) responses in the Environmental Analysis Form are discussed further below.

A 6) There would be no increase in energy usage because no new space would be constructed, and the renovated space would have increased energy efficiency.

A 9) Under state law, the University of California is the lead agency for evaluation and approval of projects on lands owned by The Board of Regents of the University of California (The Regents). No additional land use approvals are required for the project from local, regional, or state land use boards. The proposed building site is designated in the 2003 LRDP for *Academic/Administrative High Density* land uses, and the proposed building would be consistent with this land use designation.

B 2) The renovation activities associated with the proposed project would temporarily increase vehicular traffic related to a small number of construction contractors vehicles, which would temporarily increase emissions of air pollutants in the air basin. The 2003 LRDP EIR fully evaluated increases in ambient air pollution levels associated with construction projects and mitigated these increases to the extent feasible. Because the renovation project would not increase campus population (there would be no new students, faculty or staff added to the campus) and because the renovation project does not involve any new stationary emissions source (such as an emergency generator or boiler), there would not be a permanent increase in air pollution from new vehicle trips or stationary sources.

B 3) Due to the emphasis on shared use of large laboratories, the proposed renovation project would slightly reduce the number of fume hoods, which are currently in use. Because the total amount of lab space would not increase, the total emissions of toxic air contaminants from Tupper Hall would remain the same as under existing conditions. These emissions were evaluated in the campus-wide toxic air contaminant health risk assessment performed as part of the 2003 LRDP EIR. The 2003 LRDP EIR concluded that emissions from existing facilities and projected growth on campus through 2015-16 would not expose campus occupants or other populations in the vicinity of the campus to significant toxic air contaminant health risks.

B 5) The project would use the existing sewer connection that serves Tupper Hall. Similar to existing conditions, wastewater from the renovated space would be treated at the campus owned and operated wastewater treatment plant. The existing campus wastewater treatment plant currently has adequate capacity to treat wastewater volumes that will be discharged from the renovated space. Effluent loads from the renovated space would be comparable to that discharged from existing laboratory facilities on campus, and campus programs are in place to address pollutant issues associated with laboratory effluent.

B 12) The renovation activities would involve temporary short-term increases in existing noise levels from construction vehicle trips. However, due to the short duration of renovation activities and the location of the proposed project away from residential areas, the minimal noise increases associated with the proposed renovation project

would not be offensive to a human population. Indoor renovation activities would not produce high noise levels that could affect sensitive populations.

B 13) The minimal noise increases associated with the proposed project (described in response to B 12) would not significantly increase existing noise levels in the area such that animal behavior could be affected.

B 19) Similar to existing conditions, non-hazardous wastes generated by the activities conducted in the renovated space will be disposed at the campus landfill, which has a projected capacity through 2023. Chemical, biohazardous, or other special wastes are handled by campus Environmental Health and Safety personnel and contractors through the campus' Environmental Services Facility (a hazardous waste handling facility that has adequate capacity for the proposed project). Hazardous wastes generated on campus are then taken from the campus Environmental Services Facility to off-site facilities for recycling, treatment, or disposal. Off-site facilities are anticipated to have adequate capacity for additional waste generated by the proposed project. All waste disposal/handling facilities on campus and used by the campus are operated in compliance with applicable state and federal regulations. In addition, biohazardous waste generated in the renovated space would be disposed pursuant to the campus's Medical Waste Plan. The 2003 LRDP EIR evaluated the anticipated campus hazardous materials use and waste generation through 2015-16 and concluded that these increases would not create significant hazards to the public or the environment due to continued implementation of the campus' regulatory compliance programs. The proposed project would be consistent with this analysis, and the project-specific environmental review would further address hazardous materials and wastes associated with the renovated space.

B 22) Waste handling, transportation, and disposal methods associated with the renovated project would comply with all applicable requirements. The campus Office of Environmental Health and Safety has the necessary permits and trained personnel for the transportation and handling of hazardous materials that would be associated with the facility. Waste disposal associated with the proposed facility is discussed further in B 19.

C 5) No research involving genetic engineering of humans is anticipated to occur within the renovated space.

D 11) The project would not increase the demand for utility services. All utilities are provided by the campus.

D 12) See response to D 11 above.

D 13) Wastewater from the renovated space would be treated at the campus wastewater treatment plant. The campus wastewater treatment plant currently operates at approximately 20 percent below its peak monthly permitted capacity. The plant could be expanded in the future to accommodate proposed overall campus growth.

D 14) See response to B 19 above.

D 15) The proposed project would not use heating oil or coal. Natural gas usage would be similar to that under current conditions.

E 1) The project would renovate an existing building that is less than 50 years old. No permit or clearance is required.

E 2) The project would modify the existing interior space in Tupper Hall, and therefore would have no effect on any endangered species.

E 3) The project would not make any changes to the exterior of Tupper Hall and would therefore have no aesthetic effects. Regarding noise, see responses to B12 and 13 above.