

5.0 MITIGATION MONITORING AND REPORTING PROGRAM

The California Environmental Quality Act (CEQA) requires that a Lead Agency establish a program to monitor and report on mitigation measures adopted as part of the environmental review process to avoid or reduce the severity and magnitude of potentially significant environmental impacts associated with project implementation. CEQA (Public Resources Code Section 21081.6 (a)(1)) requires that a Mitigation Monitoring and Reporting Program (MMRP) be adopted at the time that the agency determines to carry out a project for which an EIR has been prepared, to ensure that mitigation measures identified in the EIR are fully implemented.

The MMRP for the Computational Research and Theory (CRT) project is presented in **Tables 5.0-1 and 5.0-2**. **Table 5.0-1** includes the full text of project-specific mitigation measures identified in the Final EIR. **Table 5.0-2** includes the mitigation measures adopted as part of the Lawrence Berkeley National Laboratory (LBNL) Long Range Development Plan (LRDP) and continuing best practices adopted as part of the UC Berkeley 2020 LRDP that are included as part of the CRT project. The MMRP describes implementation and monitoring procedures, responsibilities, and timing for each mitigation measure identified in the EIR, including:

Significant Impact: Identifies the Impact Number and statement from the Final EIR.

Mitigation Measure: Provides full text of the mitigation measure as provided in the Final EIR.

Monitoring/Reporting Action(s): Designates responsibility for implementation of the mitigation measure and when appropriate, summarizes the steps to be taken to implement the measure.

Mitigation Timing: Identifies the stage of the project during which the mitigation action will be taken.

Monitoring Schedule: Specifies procedures for documenting and reporting mitigation implementation.

The Berkeley Lab may modify the means by which a mitigation measure will be implemented, as long as the alternative means ensure compliance during project implementation. The responsibilities of mitigation implementation, monitoring and reporting extend to several LBNL departments and offices. The manager or department lead of the identified unit or department will be directly responsible for ensuring the responsible party complies with the mitigation. The Planning, Design, and Construction Department (PD&C) is responsible for the overall administration of the program and for assisting relevant departments and project managers in their oversight and reporting responsibilities. The Department is also responsible for ensuring the relevant parties understand their charge and complete the required procedures accurately and on schedule.

**Table 5.0-1
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Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
AESTHETIC AND VISUAL QUALITY				
VIS-1: Construction activities associated with the project would create temporary aesthetic nuisances for adjacent land uses.	VIS-1: LBNL and its contractors shall minimize the use of on-site storage and when necessary store building materials and equipment away from public view, and shall keep activity within the project site and laydown areas.	Facilities Planning and Environment, Health and Safety Division shall oversee compliance with outdoor storage requirements	Project construction	Confirm and document during construction
GEOLOGY AND SOILS				
GEO-1: The proposed project would expose people and structures to substantial adverse effects related to seismic ground shaking.	GEO-1: In addition to damage assessment of the CRT building structural elements (which is covered in the LBNL Master Emergency Program Plan), assessment of stormwater conveyance systems and hydromodification vaults shall be conducted by the Damage Assessment Team following earthquakes strong enough to cause damage.	Damage Assessment Team	Following an earthquake strong enough to cause damage	Confirm and document after earthquake

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HYDROLOGY AND WATER QUALITY				
<p>HYDRO-1: Development of the project site would increase the area of impervious surfaces (i.e., pavements and hardscapes, building roofs, and compacted soil surfaces) and would result in increased peaks and duration of stormwater flows, potentially contributing to erosion and/or siltation in Strawberry Creek.</p>	<p>HYDRO-1: Using the Bay Area Hydrology Model, calculations shall be provided following approval of the final project design to show that the proposed hydromodification vaults are sized appropriately to control flows such that "flow duration control" is provided between 10 percent of the two-year recurrence storm and the 10-year recurrence storm.</p>	<p>Design Team to submit to Facilities Planning. Facilities Planning shall submit Bay Area Hydrology Model calculations design to show the proposed hydromodification vault and the ability to handle stormwater flows for review by the Environment, Health and Safety Division.</p>	<p>Prior to final project design and during construction</p>	<p>Confirm and document during project construction</p>
<p>HYDRO-2: Development of the site would alter surface drainage patterns on the site and could result in increased peak flows and induce flooding in downstream reaches.</p>	<p>HYDRO-2: The hydromodification vaults or stormwater pipe system shall be oversized to allow detention of peak flows for the 25-, 50- and 100-year design storms and release at a rate no greater than the pre-development condition, or equivalent separate facilities will be incorporated to provide such control. Final design calculations showing no increases in peak runoff for the 25-, 50-, and 100-year events will be provided to and reviewed by LBNL staff upon finalization of the project design.</p>	<p>Design Team to submit to Facilities Planning. Facilities Planning shall submit Bay Area Hydrology Model calculations design to show the proposed hydromodification vault and the ability to handle stormwater flows for review and approval by the Environment, Health and Safety Division and the Berkeley Public Works Department.</p>	<p>Prior to final project design and during construction</p>	<p>Confirm and document during project construction</p>

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Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>HYDROLOGY AND WATER QUALITY (continued)</p> <p>HYDRO-4: Stormwater runoff from the proposed driveway and other impervious surfaces could potentially contribute to long-term pollutant discharges to surface waters, including Cafeteria Creek, Strawberry Creek, and San Francisco Bay.</p>	<p>HYDRO-4a: An in-line pollution prevention device (such as a Continuous Deflective Separation unit or Stormceptor) shall be installed within the storm drain system to control sediment and floatables from the access driveway and loading dock area in the northern portion of the project site prior to release of stormwater to the storm drain at Cyclotron Road.</p> <p>HYDRO-4b: If feasible, vegetated swales or a stormwater garden shall be incorporated into the project to maintain water quality of roof runoff and avoid exceeding water quality objectives prior to discharge to creeks. LBNL shall provide calculations showing that design of these features meets recognized criteria for design of water quality Best Management Practices (BMPs). Should it be determined that appropriately sized vegetated swales are not feasible, then alternative Regional Water Quality Control Board-approved methods of treating stormwater runoff, such as in-line pollution prevention devices or infiltration galleries, shall be incorporated into the project. All water quality treatment and source controls shall be summarized in the project-specific Storm Water Pollution Prevention Plan (SWPPP), which will be available to regulatory agencies for inspection.</p>		<p>Facilities Planning shall submit storm drain plans for review and approval by the Environment, Health, and Safety Division.</p> <p>Facilities Planning shall submit BMPs for review and approval by the Environment, Health, and Safety Division.</p>	<p>Prior to final project design approval.</p>	<p>Confirm and document during project construction.</p> <p>Confirm periodic maintenance of Continuous Deflective Separation unit or Stormceptor by Facilities Division.</p>

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Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
TRAFFIC/ACCESS				
TRANS-4: The proposed CRT project would potentially result in increased hazards to pedestrians or bicyclists or conflicts with adopted policies, plans, or programs promoting walking or bicycling.	TRANS-4 Final design of the CRT building shall provide a minimum of 32 bicycle parking spaces to further encourage bicycling and walking to the site.	Facilities Planning shall verify that plans include bicycle parking as part of the design.	Prior to design approval	Confirm and document during project construction
TRANS 5: The construction of the proposed CRT project would temporarily and intermittently result in impacts on vehicles, pedestrians, or bicyclists, and parking.	TRANS-5: LBNL shall include the following in the Construction Traffic Management Plan (CTMP) prepared for the proposed project: <ul style="list-style-type: none"> For trucks hauling fill material internal to the LBNL site, trucks should use internal truck routes within the LBNL site to minimize disruption to vehicle, bicycle, and pedestrian circulation and parking. Consider stacked parking within the LBNL site or off-site parking for construction workers to minimize parking demand. 	Facilities Planning shall submit Construction Management Plan for review and approval by the City of Berkeley Public Works Department for approval	CTMP needs to be prepared and approved prior to construction. During construction	Ongoing during construction

Table 5.0-2
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Long Range Development Adopted Mitigation Measures

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>AESTHETICS AND VISUAL QUALITY</p> <p>CRT Impact VIS - 4: The proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. (Less than Significant)</p>	<p>LRDP MM VIS-4a: All new buildings on the LBNL hill site constructed pursuant to the 2006 LRDP shall incorporate design standards that ensure lighting would be designed to confine illumination to its specific site, in order to minimize light spillage to adjacent LBNL buildings and open space areas. Consistent with safety considerations, LBNL project buildings shall shield and orient light sources so that they are not directly visible from outside their immediate surroundings.</p> <p>LRDP MM VIS-4b: New exterior lighting fixtures shall be compatible with existing lighting fixtures and installations in the vicinity of the new building, and will have an individual photocell. In general, and consistent with safety considerations, exterior lighting at building entrances, along walkways and streets, and at parking lots shall maintain an illumination level of not more than 20 lux (approximately 2 foot-candles).</p> <p>LRDP MM VIS-4c: All new buildings on the LBNL hill site constructed pursuant to the 2006 LRDP shall incorporate design standards that preclude or limit the use of reflective exterior wall materials or reflective glass, or the use of white surfaces for roofs, roads, and parking lots, except in specific instances when required for energy conservation.</p>	<p>Facilities Planning</p> <p>Shall oversee compliance with design guidelines, LRDP policies, and LRDP EIR.</p>	<p>Project design and review process</p>	<p>Confirm and document during design approval.</p>

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Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>AIR QUALITY</p> <p>CRT Impact AIR-1: Construction of the proposed project would generate short-term emissions of fugitive dust and criteria air pollutants that would not adversely affect local air quality in the vicinity of the construction site. (Less than Significant)</p>	<p>LRDP MM AQ-1a: During construction of the proposed LRDP buildings, the developer must implement all “basic” control measures to minimize the generation of fugitive dust. In addition, for construction sites greater than 4 acres or projects that would generate large amounts of fugitive dust, “enhanced” and “optional” control measures should be implemented. The recommended control measures are located in Table 2 of the <i>BAAQMD CEQA Guidelines</i>.</p>	<p>See individual components below.</p>		
<p>CRT Impact AIR-1 (continued)</p>	<p>LRDP MM AQ-1b: During construction of the proposed LRDP buildings, the developer must implement the following mitigation measures to minimize heavy-duty construction equipment exhaust.</p> <ul style="list-style-type: none"> • Construction equipment shall be properly tuned and maintained in accordance with manufacturer’s specifications. • Best management construction practices shall be used to avoid unnecessary emissions (e.g., truck and vehicles in loading and unloading queues would turn their engines off when not in use). • Any stationary motor sources such as generators and compressors located within 100 feet of a sensitive receptor shall be equipped with a supplementary exhaust pollution control system as required by the BAAQMD and CARB. • Incorporate use of low-NO_x emitting, low-particulate emitting, or alternatively fueled construction equipment into the construction equipment fleet where feasible, especially when operating near sensitive receptors. • Reduce construction-worker trips with ride-sharing or alternative modes of transportation. 	<p>Shall include applicable air emission and dust control standards in contractor specifications and will monitor/inspect project sites.</p>	<p>Contract specifications prior to project bidding process.</p>	<p>Record in contract specifications; project managers/inspectors shall periodically conduct physical monitoring at project during construction period for all subsequent projects and document results in project file.</p>

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Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>AIR QUALITY (continued)</p> <p>CRT Impact AIR-5: The proposed project would not expose maximally exposed individuals to cancer risks exceeding 10 in one million. (Less than Significant)</p> <p>CRT Impact AIR-6: The proposed project would not generate ground level concentrations of non-carcinogenic toxic air contaminants that would result in a Hazard Index greater than 1.0 for the maximally exposed individual. (Less than Significant)</p>	<p>Mitigation Measure</p> <p>LRDP MM AQ-4a: To avoid the single location where implementation of the 2006 LRDP would result in an increase in health risk in excess of the 10-in-1-million threshold, LBNL shall adjust, prior to the construction of parking structure PS-1 (or similarly configured building), the exhaust system of the existing generator near Building 90 to reduce or eliminate the restriction on upward exhaust flow caused by the existing rain cap. For example, modeling indicates that removal of the rain cap would reduce the risk caused by construction of parking structure PS-1 in proximity to the existing generator to a level below 10 in 1 million. The Berkeley Lab could install a hinged rain cap, which would prevent moisture infiltration into the generator but still allow unobstructed exhaust flow and would avoid the significant impact identified in the health risk assessment.</p>		<p>PD&C</p> <p>Shall plan, design, and implement projects such as PS-1, and is also in charge of implementing equipment modification in consultation with Environmental Health and Safety.</p>	<p>Prior to construction of parking structure PS-1 or similarly configured building.</p>	<p>Approval process for PS-1 or similarly configured building shall include implementation plan for this measure. Considered complete upon documentation or modification of rain cap on generator near Building 90.</p>

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Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES</p> <p>CRT Impact BIO-2: The proposed project would not result in indirect adverse effects to nearby creeks and seeps subject to ACOE and CDFG jurisdiction and also considered to be sensitive plant communities and habitats. (Less than Significant)</p>	<p>LRDP MM BIO-2a: Future development under the 2006 LRDP shall avoid, to the extent feasible, the fill of potentially jurisdictional waters. Therefore, during the design phase of any future development project that may affect potentially jurisdictional waters, a preliminary evaluation of the project site shall be made by a qualified biologist to determine if the site is proximate to potentially jurisdictional waters and, if deemed necessary by the biologist, a wetlands delineation shall be prepared and submitted to the Corps for verification. Most development projected under the 2006 LRDP would have no potential for impacts on jurisdictional waters. However, development in specific locations including Buildings S-2 and S-0, as well as Parking Structures and Lots PS-1 and PL-9 and Roads R-2 and R-5, could require fill of or create the potential for accidental discharges to jurisdictional waters. It should be noted that the preferable form of mitigation recommended by the Corps is avoidance of jurisdictional waters. To the extent practicable, new development under the 2006 LRDP shall be located so as to avoid the fill of jurisdictional waters.</p>		<p>Facilities Planning Shall engage a qualified wetlands biologist or other qualified professional to conduct an initial survey and prepare a report on the findings thereof.</p>	<p>Project design and review process</p>	<p>Document in project file at project approval.</p>

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Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>CRT Impact BIO-2: (continued)</p>	<p>LRDP MM BIO-2b: Any unavoidable loss of jurisdictional waters shall be compensated for through the development and implementation of a project-specific Wetlands Mitigation Plan. In the event that potential impacts to streams resulting from a 2006 LRDP development project are identified, compensation for loss of jurisdictional waters would be based on the Corps-verified wetlands delineation identified in Mitigation Measure BIO-2a. During the permit application process for specific development project(s) with identified impacts on jurisdictional drainages or wetlands, LBNL would consult with the Corps, CDFG, and Regional Water Quality Control Board regarding the most appropriate assessment and mitigation methods to adequately address losses to wetland function that could occur as a result of the development project(s). A project-specific wetland mitigation plan would be developed prior to project implementation and submitted to permitting agencies for their approval.</p> <p>The plan may include one or more of the following mitigation options: restoration, rehabilitation, or enhancement of drainages and wetlands in on-site areas that remain unaffected by grading and project development or off-site at one or more suitable locations within the project region; creation of on-site or off-site drainages or wetlands at a minimum of a 1:1 functional equivalency or acreage ratio (as verified by the Corps); purchase of credits in an authorized mitigation bank acceptable to the Corps and CDFG; contributions in support of restoration and enhancement programs located within the project region (such as those operated by local non-profit organizations including the Friends of Strawberry Creek, the Urban Creeks Council, or the Waterways Restoration Institute); or other options approved by the appropriate regulatory agency at the time of the specific project approval.</p> <p>All mitigation work proposed in existing wetlands or drainages on- or off-site shall be authorized by applicable permits.</p>	<p>Facilities Planning</p> <p>Where applicable, to provide project-specific Wetlands Mitigation Plan in coordination with Lawrence Berkeley National Laboratory, Environmental Health and Safety and relevant regulatory and overseeing agencies.</p>	<p>During project design and review process and environmental review and approval process.</p>	<p>Successful completion as required to secure necessary agency permits.</p> <p>Mitigation Plan measures will be inspected, where applicable, during and after implementation of subsequent projects. Results will be documented in project file.</p>

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Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>CRT Impact BIO-2: (continued)</p>	<p>LRDP MM BIO-2c: To the extent feasible, construction projects that might affect jurisdictional drainages and/or wetlands could be scheduled for dry-weather months. Avoiding ground-disturbing activities during the rainy season would further decrease the potential risk of construction-related discharges to jurisdictional waters.</p>				
<p>CRT Impact BIO-3: The proposed project would not adversely affect special-status nesting birds (including raptors) such that nests are destroyed, they abandon their nests, or that their reproductive efforts fail. (Less than Significant)</p>	<p>LRDP MM BIO-3: Direct disturbance, including tree and shrub removal or nest destruction by any other means, or indirect disturbance (e.g., noise, increased human activity in area) of active nests of raptors and other special-status bird species (as listed in Table IV.C-1) within or in the vicinity of the proposed footprint of a future development project shall be avoided in accordance with the following procedures for Pre-Construction Special-Status Avian Surveys and Subsequent Actions. No more than two weeks in advance of any tree or shrub removal or demolition or construction activity involving particularly noisy or intrusive activities (such as concrete breaking) that will commence during the breeding season (February 1 through July 31), a qualified wildlife biologist shall conduct pre-construction surveys of all potential special-status bird nesting habitat in the vicinity of the planned activity and, depending on the survey findings, the following actions shall be taken to avoid potential adverse effects on special-status nesting birds:</p> <ol style="list-style-type: none"> 1. Pre-construction surveys are not required for demolition or construction activities scheduled to occur during the non-breeding season (August 1 through January 31). 2. If pre-construction surveys indicate that no nests of special-status birds are present or that nests are inactive or potential habitat is unoccupied, no further mitigation is required. 	<p>Facilities Planning</p> <p>Where construction is scheduled during breeding season (February 1 through July 31), shall engage a qualified wildlife biologist to conduct pre-construction survey(s) and identify appropriate treatment in accordance with the procedures delineated here for Pre-Construction Special-Status Avian Surveys and Subsequent Actions. The wildlife biologist shall prepare a report upon the completion of survey (if no nests of special-status birds are present or nests are inactive or potential</p>			

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Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>CRT Impact BIO-3: (continued)</p>	<p>3. If active nests of special-status birds are found during the surveys, a no-disturbance buffer zone will be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zones and types of construction activities restricted within them will be determined through consultation with the CDFG, taking into account factors such as the following:</p> <ul style="list-style-type: none"> a. Noise and human disturbance levels at the project site and the nesting site at the time of the survey and the noise and disturbance expected during the construction activity; b. Distance and amount of vegetation or other screening between the project site and the nest; and c. Sensitivity of individual nesting species and behaviors of the nesting birds. <p>4. Noisy demolition or construction activities as described above (or activities producing similar substantial increases in noise and activity levels in the vicinity) commencing during the non-breeding season and continuing into the breeding season do not require surveys (as it is assumed that any breeding birds taking up nests would be acclimated to project-related activities already under way). However, if trees and shrubs are to be removed during the breeding season, the trees and shrubs will be surveyed for nests prior to their removal, according to the survey and protective action guidelines 3a through 3c, above.</p> <p>5. Nests initiated during demolition or construction activities would be presumed to be unaffected by the activity, and a buffer zone around such nests would not be necessary.</p> <p>6. Destruction of active nests of special-status birds and overt interference with nesting activities of special-status birds shall be prohibited.</p>		<p>habitat is unoccupied) or upon completion of construction activity that could disturb special-status birds that are present. The biologist shall have the authority to initiate protective action in accordance with the procedures described herein.</p>	<p>Prior to construction for all applicable projects under 2006 LRDP.</p>	<p>Considered complete upon receipt by LBNL of biologist's final report.</p>

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Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>CRT Impact BIO -3: (continued)</p>	<p>7. The noise control procedures for maximum noise, equipment, and operations identified in section IV.1, Noise, of this EIR shall be implemented.</p>			
<p>CRT Impact BIO-4: Removal of trees and other proposed construction activities during the breeding season would not result in direct mortality of special-status bats. In addition, construction noise could cause maternity roost abandonment and subsequent death of young. (Less than Significant)</p>	<p>LRDP MM BIO-4: Project implementation under the 2006 LRDP shall avoid disturbance to the maternity roosts of special-status bats during the breeding season in accordance with the following procedures for Pre-Construction Special-Status Bat Surveys and Subsequent Actions. No more than two weeks in advance of any demolition or construction activity involving concrete breaking or similarly noisy or intrusive activities, that would commence during the breeding season (March 1 through August 31), a qualified bat biologist, acceptable to the CDFG, shall conduct pre-demolition surveys of all potential special-status bat breeding habitat in the vicinity of the planned activity. Depending on the survey findings, the following actions shall be taken to avoid potential adverse effects on breeding special-status bats:</p> <ol style="list-style-type: none"> 1. If active roosts are identified during pre-construction surveys, a no-disturbance buffer will be created by the qualified bat biologist, in consultation with the CDFG, around active roosts during the breeding season. The size of the buffer will take into account factors such as the following: <ol style="list-style-type: none"> a. Noise and human disturbance levels at the project site and the roost site at the time of the survey and the noise and disturbance expected during the construction activity; 	<p>Facilities Planning</p> <p>Where construction is scheduled during breeding season (February 1 through July 31), shall engage a qualified wildlife biologist to conduct pre-construction survey (s) and identify appropriate treatment in accordance with the procedures delineated here for Pre-Construction</p>	<p>Prior to construction for all applicable projects under 2006 LRDP</p>	<p>Considered complete upon receipt by LBNL of biologist's final report.</p>

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Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>CRT Impact BIO-4 (continued)</p>	<p>b. Distance and amount of vegetation or other screening between the project site and the roost; and</p> <p>c. Sensitivity of individual nesting species and the behaviors of the bats.</p>	<p>Special-Status Bat Surveys and Subsequent Actions. The wildlife biologist shall prepare a report upon the completion of survey (if no nests of special-status birds are present or nests are inactive or potential habitat is unoccupied) or upon completion of construction activity that could disturb special-status birds that are present. The biologist shall have the authority to initiate protective action in accordance with the procedures described herein.</p>		
	<p>2. If pre-construction surveys indicate that no roosts of special-status bats are present, or that roosts are inactive or potential habitat is unoccupied, no further mitigation is required.</p> <p>3. Pre-construction surveys are not required for demolition or construction activities scheduled to occur during the non-breeding season (September 1 through February 28).</p> <p>4. Noisy demolition or construction activities as described above (or activities producing similar substantial increases in noise and activity levels in the vicinity) commencing during the non-breeding season and continuing into the breeding season do not require surveys (as it is assumed that any bats taking up roosts would be acclimated to project-related activities already under way). However, if trees are to be removed during the breeding season, the trees would be surveyed for roosts prior to their removal, according to the survey and protective action guidelines 1a through 1c, above.</p> <p>5. Bat roosts initiated during demolition or construction activities are presumed to be unaffected by the activity, and a buffer is not necessary.</p> <p>6. Destruction of roosts of special-status bats and overt interference with roosting activities of special-status bats shall be prohibited.</p> <p>7. The noise control procedures for maximum noise, equipment, and operations identified in Section 4.9, Noise, of this [LRDP] EIR shall be implemented.</p>			

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Significant Impact	Mitigation Measure			Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>CRT Impact BIO-5: Construction of the proposed project would not result in take or harassment of Alameda whipsnake. (Less than Significant)</p>	<p>LRDP MM BIO-5a: With the approval of the USFWS on a case-by-case basis, relocate any snake encountered during construction that is at risk of harassment; cease construction activity until the snake is moved to suitable refugium. Alternatively, submit a general protocol for relocation to the USFWS for approval prior to project implementation.</p>			<p>Facilities Planning</p> <p>Where whipsnake (s) are found, shall engage a biologist qualified to relocate whipsnakes. The biologist shall prepare a report regarding any relocation.</p>	<p>When (and if) Alameda whipsnakes were found during construction projects under 2006 LRDP.</p>	<p>Considered complete upon receipt by LBNL of biologist's final report.</p>

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Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>CRT Impact BIO-5: (continued)</p>	<p>LRDP MM BIO-5b: Conduct focused pre-construction surveys for the Alameda whipsnake at all project sites within or directly adjacent to areas mapped as having high potential for whipsnake occurrence. Project sites within high potential areas shall be fenced to exclude snakes prior to project implementation. This would not include ongoing and non-site-specific activities such as fuel management.</p> <p>Methods for pre-construction surveys, burrow excavation, and site fencing shall be developed prior to implementation of any project located within or adjacent to areas mapped as having high potential for whipsnake occurrence. Such methods would be developed in consultation or with approval of USFWS for any development taking place in USFWS officially designated Alameda whipsnake critical habitat. Pre-construction surveys of such project sites shall be carried out by a permitted biologist familiar with whipsnake identification and ecology (Swaim 2002).</p> <p>These are not intended to be protocol-level surveys but designed to clear an area so that individual whipsnakes are not present within a given area prior to initiation of construction at sites where the project footprint would not be contained entirely within an existing developed area footprint and natural vegetated areas would be disturbed, any existing animal burrows shall be carefully hand-excavated to ensure that there are no whipsnakes within the project footprint. Any whipsnakes found during these surveys shall be relocated according to the Alameda Whipsnake Relocation Plan. Snakes of any other species found during these surveys shall also be relocated out of the project area. Once the site is cleared, it shall then be fenced in such a way as to exclude snakes for the duration of the project. Fencing shall be maintained intact throughout the duration of the project.</p>	<p>Facilities Planning</p> <p>Where applicable, shall engage a biologist qualified to survey for whipsnakes. The biologist shall prepare a report regarding any relocation.</p>	<p>Prior to the start of construction of applicable projects under the 2006 LRDP.</p>	<p>Considered complete upon receipt by LBNL of biologist's final report.</p>

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Significant Impact	Mitigation Measure			Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>CRT Impact BIO-5: (continued)</p>	<p>LRDP MM BIO-5c: (1) A full-time designated monitor shall be employed at project sites that are within or directly adjacent to areas designated as having high potential for whipsnake occurrence, or (2) Daily site surveys for Alameda whipsnake shall be carried out by a designated monitor at construction sites within or adjacent to areas designated as having moderate potential for whipsnake occurrence.</p> <p>Each morning, prior to initiating excavation, construction, or vehicle operation at sites identified as having moderate or high potential for whipsnake occurrence, the project area of applicable construction sites shall be surveyed by a designated monitor trained in Alameda whipsnake identification to ensure that no Alameda whipsnakes are present. This survey is not intended to be a protocol-level survey. All laydown and deposition areas, as well as other areas that might conceal or shelter snakes or other animals, shall be inspected each morning by the designated monitor to ensure that Alameda whipsnakes are not present. At sites in high potential areas, the monitor shall remain on site during construction hours. At sites in moderate potential areas, the monitor shall remain on call during construction hours in the event that a snake is found on site. The designated monitor shall have the authority to halt construction activities in the event that a whipsnake is found within the construction footprint until such time as threatening activities can be eliminated in the vicinity of the snake and it can be removed from the site by a biologist permitted to handle Alameda whipsnakes. The USFWS shall be notified within 24 hours of any such event.</p>			<p>Facilities Planning</p> <p>Where applicable, shall engage a monitor trained to survey for the presence of Alameda whipsnakes. If warranted, a biologist shall prepare a report regarding any relocation.</p>	<p>During construction of applicable projects under the 2006 LRDP.</p>	<p>Considered complete after construction and/or upon receipt by LBNL of biologist's final report.</p>

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Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
BIOLOGICAL RESOURCES (continued)				
CRT Impact BIO-5: (continued)	<p>LRDP MM BIO-5d: Alameda whipsnake awareness and relevant environmental sensitivity training for each worker shall be conducted by the designated monitor prior to commencement of on-site activities. All on-site workers at applicable construction sites shall attend an Alameda whipsnake information session conducted by the designated monitor prior to beginning work. This session shall cover identification of the species and procedures to be followed if an individual is found on-site, as well as basic site rules meant to protect biological resources, such as speed limits and daily trash pickup.</p> <p>LRDP MM BIO-5e: Hours of operation and speed limits shall be instituted and posted. All construction activities that take place on the ground (as opposed to within buildings) at applicable construction sites shall be performed during daylight hours or with suitable lighting so that snakes can be seen. Vehicle speed on the construction site shall not exceed 5 miles per hour.</p> <p>LRDP MM BIO-5f: Site vegetation management shall take place prior to tree removal, grading, excavation, or other construction activities. Construction materials, soil, construction debris, or other material shall be deposited only on areas where vegetation has been mowed. Areas where development is proposed under the 2006 LRDP are subject to annual vegetation management involving the close-cropping of all grasses and ground covers; this management activity would be performed prior to initiating project-specific construction. Areas would be re-mowed if grass or other vegetation on the project site becomes high enough to conceal whipsnakes during the construction period. In areas not subject to annual vegetation management, dense vegetation would be removed prior to the onset of grading or the use of any heavy machinery, using goats, manual brush cutters, or a combination thereof.</p>	<p>Facilities Planning Where applicable, shall engage a qualified trainer to instruct work crews who may encounter whipsnakes.</p> <p>PD&C Where applicable, shall instruct construction crews regarding construction hours and speed limits, and shall document violations.</p> <p>PD&C Shall oversee project site vegetation management and laydown activities.</p>	<p>Prior to the start of construction of applicable projects under 2006 LRDP.</p> <p>Prior to and during construction activities of applicable projects.</p> <p>Prior to and during construction activities of applicable projects.</p>	<p>Construction complete upon receipt by LBNL of trainer's documentation.</p> <p>Considered complete upon completion of each project and documentation by LBNL Project Manager of construction crew compliance.</p> <p>Considered complete upon documentation by Project Manager.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p>	<p>LRDP MM BIO-6a: Floristic surveys for special-status plants shall be conducted at specific project sites where suitable habitat is present. Floristic surveys shall also be conducted in designated Perimeter Open Space. All occurrences of special-status plant populations, if any, shall be mapped. Although no special-status plants have been observed at LBNL during past biological resource surveys, the distribution and size of plant populations often vary from year to year, depending on climatic conditions. Therefore, a baseline survey of all non-developed areas, including the designated Perimeter Open Space areas, where there is potential for future development or vegetation management activities, should be conducted in accordance with USFWS and CDFG guidelines by a qualified botanist during the period of identification for all special-status plants. During this initial survey, any special-status plant populations found, as well as areas with high potential for supporting special status plants (i.e., less disturbed areas, rock outcrops and other areas of thin soils, areas supporting a relatively high proportion of native plant species) would be identified and mapped. Thereafter, surveys of Perimeter Open Space areas where ongoing vegetation management (i.e., active vegetation removal to minimize potential wildland fire damage to facilities and personnel) activities would be undertaken, and that are mapped as supporting or having potential to support special-status plant species, would be conducted in April and June every five years.</p> <p>In those proposed LRDP development sites where suitable habitat is present for special status species identified as having a moderate to high potential for occurrence, protocol-level rare plant surveys would be conducted prior to construction. Surveys should be conducted during the periods of identification for all species under consideration at each applicable development site, the timing, and scope to be directed by a qualified botanist. During the initial survey, any special-status plant populations found, as well as all areas with high potential for supporting special-status plants (i.e., less disturbed areas, rock outcrops and other areas of thin soils, areas supporting a relatively high proportion of native plant species) would be identified and mapped.</p>		<p>Facilities Planning</p> <ul style="list-style-type: none"> -Where applicable, shall engage a qualified plant biologist to conduct an initial floristic survey. The biologist shall prepare a report documenting the survey findings. -Shall engage a qualified plant biologist to conduct site-specific surveys of development sites prior to the start of construction and of vegetation management areas where the potential for special-status plants is documented in the initial survey. -Shall engage a qualified plant biologist to conduct directed studies every five years. 	<ul style="list-style-type: none"> -Baseline survey at beginning of 2006 LRDP period. Site-specific surveys during project design and environmental review process. -Periodic surveys every five years in April / June beginning five years after initial baseline survey. 	<p>Considered complete upon receipt by LBNL of survey(s).</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>BIOLOGICAL RESOURCES (continued)</p> <p>LRDP MM BIO-6b: Seeds or cuttings shall be collected from sensitive plant species found within developable areas and open space and at risk of being adversely affected, or sensitive plants found in these areas shall be transplanted.</p> <p>If special-status plants are found during floristic surveys and are at risk of being adversely affected, a qualified botanist working in conjunction with an expert in native plant horticulture, CNPS, and CDFG, would collect seeds, bulbs, and cuttings for propagation and planting in specific project revegetation efforts as well as restoration of native habitat within designated Open Space. Perennial species could be transplanted, if found in undeveloped locations that have a high likelihood for future development. Due to its unreliability, translocation alone should not be relied upon as a sole means of mitigation; however, healthy individuals of any special-status plant species should be transplanted to areas of suitable habitat that are protected in perpetuity. The relocation sites may be located either on or off the LBNL hill site. If the areas for transplanting are located off site, they should be within a 20-mile radius of the project site. Plants should be relocated to areas with ecological conditions (slope, aspect, microclimate, soil moisture, etc.) as similar to those in which they were found as possible. Existing plants could also be held in containers for specific post-project revegetation efforts on site.</p>	<p>LRDP MM BIO-6b: Seeds or cuttings shall be collected from sensitive plant species found within developable areas and open space and at risk of being adversely affected, or sensitive plants found in these areas shall be transplanted.</p> <p>If special-status plants are found during floristic surveys and are at risk of being adversely affected, a qualified botanist working in conjunction with an expert in native plant horticulture, CNPS, and CDFG, would collect seeds, bulbs, and cuttings for propagation and planting in specific project revegetation efforts as well as restoration of native habitat within designated Open Space. Perennial species could be transplanted, if found in undeveloped locations that have a high likelihood for future development. Due to its unreliability, translocation alone should not be relied upon as a sole means of mitigation; however, healthy individuals of any special-status plant species should be transplanted to areas of suitable habitat that are protected in perpetuity. The relocation sites may be located either on or off the LBNL hill site. If the areas for transplanting are located off site, they should be within a 20-mile radius of the project site. Plants should be relocated to areas with ecological conditions (slope, aspect, microclimate, soil moisture, etc.) as similar to those in which they were found as possible. Existing plants could also be held in containers for specific post-project revegetation efforts on site.</p>	<p>Facilities Planning</p> <p>Where special-status plants are found at development sites, shall engage a qualified plant biologist or other professional to undertake transplantation. This professional shall prepare a report upon the completion of such activities and any required monitoring.</p>	<p>When applicable, based on surveys detailed in BIO-6a.</p>	<p>When applicable, considered complete upon receipt by LBNL of final transplantation and monitoring report.</p>
<p>CULTURAL RESOURCES</p> <p>CRT Impact CUL-2: The proposed project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5. (Less than Significant)</p>	<p>LRDP MM CUL-3: If an archaeological artifact is discovered on site during construction under the proposed LRDP, all activities within a 50-foot radius shall be halted and a qualified archaeologist shall be summoned within 24 hours to inspect the site. If the find is determined to be significant and to merit formal recording or data collection, adequate time and funding shall be devoted to salvage the material. Any archaeologically important data recovered during monitoring shall be cleaned, catalogued, and analyzed, with the results presented in a report of finding that meets professional standards.</p>	<p>Facilities Planning</p> <p>Upon discovery of archaeological resource(s), shall promptly engage a qualified archaeologist, who shall inspect the resource(s), identify appropriate treatment, and prepare a report.</p>	<p>When applicable during construction, excavation, or ground disturbance.</p>	<p>When applicable, considered complete upon receipt by LBNL of archaeologist's final report.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>CULTURAL RESOURCES (continued)</p> <p>CRT Impact CUL-3: The proposed project would not disturb any human remains, including those interred outside of formal cemeteries. (Less than Significant)</p>	<p>LRDP MM CUL-4: In the event that human skeletal remains are uncovered during construction or ground-breaking activities resulting from implementation of the 2006 LRDP at the LBNL site, <i>State CEQA Guidelines</i> Section 15064.5(e)(1) shall be followed:</p> <p>In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps should be taken:</p> <p>(1) There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:</p> <p>(a) The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and</p> <p>(b) If the coroner determines the remains to be Native American:</p> <p>(1) The coroner shall contact the Native American Heritage Commission within 24 hours; (2) The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American. (3) The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98, or</p>	<p>Facilities Planning</p> <p>Upon discovery of human skeletal remains, shall promptly report findings as directed by this measure.</p>	<p>When applicable, upon discovery.</p>	<p>Considered complete upon contact with coroner and, where applicable, with Native American Heritage Commission and/or most likely descendent.</p>	

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
CULTURAL RESOURCES (continued)	<p>LRDP MM CUL-4: (continued)</p> <p>(2) Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.</p> <p>(a) The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission;</p> <p>(b) The descendant identified fails to make a recommendation; or</p> <p>(c) The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.</p>			
GEOLOGY AND SOILS				
<p>CRT Impact GEO-2: The proposed project would expose people and structures to substantial adverse effects related to seismic ground shaking.</p> <p>CRT Impact GEO-3: The proposed project would not expose people and structures to substantial adverse effects associated with seismic-related liquefaction or landslides</p>	<p>LRDP MM GEO-2: A site-specific, design-level geotechnical investigation shall occur during the design phase of each LBNL building project, and prior to approval of new building construction within the LBNL hill site. This investigation shall be conducted by a licensed geotechnical engineer and include a seismic evaluation of potential maximum ground motion at the site. Geotechnical investigations for sites within either a Seismic Hazard Zone for landslides or an area of historic landslide activity at LBNL, as depicted on Figures IV.E-2 and IV.E-3 (in the LRDP EIR), or newly recognized areas of slope instability at the inception of project planning, shall incorporate a landslide analysis in accordance with CGS Publication 117. Geotechnical recommendations shall subsequently be incorporated into building design.</p>	<p>PD&C Shall engage a qualified geotechnical engineering consultant and shall follow the recommendations of the consultant's report in implementing all subsequent projects.</p>	<p>During project design phase, and prior to the start of excavation or other construction activities for all applicable projects.</p>	<p>Considered complete upon construction in compliance with consultant's report for each subsequent project.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
GEOLOGY AND SOILS (continued)				
CRT Impact GEO-4: The proposed project would not result in substantial soil erosion or loss of topsoil.	LRDP MM GEO-3a: Construction under the LRDP shall be required to use construction best management practices and standards to control and reduce erosion. These measures could include, but are not limited to, restricting grading to the dry season, protecting all finished graded slopes from erosion using such techniques as erosion control matting and hydroseeding or other suitable measures.	PD&C Shall prepare and implement construction BMP's and erosion control plan.	During project design phase, and prior to the start of excavation or other construction activities for all applicable projects.	Considered complete upon documentation of compliance with erosion-control best management practices.
	LRDP MM GEO-3b Revegetation of areas disturbed by construction activities, including slope stabilization sites, using native shrubs, trees, and grasses, shall be included as part of all new projects.	PD&C	Following ground-disturbing activities for all applicable projects.	Considered complete upon completion of revegetation for all subsequent projects.

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
HAZARDS AND HAZARDOUS MATERIALS				
<p>CRT Impact HAZ-1: The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. (Less than Significant)</p>	<p>LRDP MM GEO-1: Seismic emergency response and evacuation plans shall be prepared for each new project at LBNL that is developed pursuant to the 2006 LRDP. These plans shall incorporate potential inaccessibility of the Blackberry Canyon entrance and identify alternative ingress and egress routes for emergency vehicles and facility employees in the event of roadway failure from surface fault rupture.</p>	<p>Environmental Health and Safety Shall prepare plans.</p>	<p>Prior to project approval of new 2006 LRDP projects.</p>	<p>Documented in project file and in Berkeley Lab emergency plans. Information will be shared with City of Berkeley/City of Berkeley Fire Department.</p>
	<p>LRDP MM HAZ-3a: LBNL shall continue to prepare an annual self-assessment summary report and a Site Environmental Report that summarize environment, health, and safety program performance and identify any areas where LBNL is not in compliance with environmental laws and regulations governing hazardous materials, and worker safety, emergency response, and environmental protection.</p>	<p>Environmental Health and Safety</p>	<p>Annually</p>	<p>Documented in annual reports throughout the lifetime of the 2006 LRDP.</p>
	<p>LRDP MM HAZ-3d: LBNL shall continue its waste minimization programs and strive to identify new and innovative methods to minimize hazardous waste generated by LBNL activities.</p>	<p>Environmental Health and Safety</p>	<p>Prior to shipping hazardous materials.</p>	<p>Verification of DOE Order 435.1 throughout the lifetime of the 2006 LRDP.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>HAZARDS AND HAZARDOUS MATERIALS (continued)</p>	<p>LRDP MM HAZ-3e: In addition to implementing the numerous employee communication and training requirements included in regulatory programs, LBNL shall undertake the following additional measures as ongoing reminders to workers of health and safety requirements:</p> <ul style="list-style-type: none"> • Continue to post phone numbers of LBNL EH&S subject matter experts on the EH&S website. • Continue to post Emergency Response and Evacuation Plans in all LBNL buildings. • Continue to post signs, in areas where hazardous materials are handled, with signs reminding users that hazardous materials and wastes cannot be poured down the drain. • Continue to post dumpsters and central trash collection areas where hazardous materials are handled with signs reminding users that hazardous wastes cannot be disposed of as trash. 	<p>Environmental Health and Safety</p>	<p>As appropriate.</p>	<p>Throughout the lifetime of the 2006 LRDP.</p>
	<p>LRDP MM HAZ-3f: LBNL shall update its emergency preparedness and response program on an annual basis and shall provide copies of this program to local emergency response agencies and to members of the public upon request.</p>	<p>Environmental Health and Safety</p>	<p>Annually.</p>	<p>Throughout the lifetime of the 2006 LRDP.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>NOISE</p> <p>CRT Impact NOISE-1: Construction activities would temporarily elevate noise levels at the project site and surrounding areas. (Significant and Unavoidable)</p>	<p>LRDP MM NOISE-1a: To reduce daytime noise impacts due to construction/demolition, LBNL shall require construction/ demolition to implement noise reduction measures appropriate for the project being undertaken. Measures that might be implemented could include, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Construction/demolition activities would be limited to a schedule that minimizes disruption to uses surrounding the project site as much as possible. Such activities would be limited to the hours designated in the Berkeley and/or Oakland noise ordinance(s), as applicable to the location of the project. This would eliminate or substantially reduce noise impacts during the more noise-sensitive nighttime hours and on days when construction noise might be more disturbing. • To the maximum extent feasible, equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible). • Stationary noise sources shall be located as far from adjacent receptors as possible. • At locations where noise may affect neighboring residential uses, LBNL will develop a comprehensive construction noise control specification to implement construction/demolition noise controls, such as noise attenuation barriers, siting of construction laydown and vehicle staging areas, and community outreach, as appropriate to specific projects. The specification will include such information as general provisions, definitions, submittal requirements, construction limitations, requirements for noise and vibration monitoring and control plans, noise control materials and methods. This document will be modified as appropriate for a particular construction project and included within the construction specification. 	<p>PD&C</p> <p>Shall include required noise control standards in contractor specifications, and shall include implementation of noise control measures in project planning, as applicable.</p>	<p>Contractor specifications prior to project bidding process. Planning prior to final project approval. Monitoring during project construction period.</p>	<p>Throughout the lifetime of the 2006 LRDP, and specifically, during construction period for all subsequent projects. Considered complete upon documentation of compliance in project file for each subsequent period.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact NOISE (continued)	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>CRT Impact NOISE-1: (continued):</p>	<p>LRDP MM NOISE-1b: For each subsequent project pursuant to the LRDP that would involve construction and/or demolition activities, LBNL shall engage a qualified noise consultant to determine whether, based on the location of the site and the activities proposed, construction/demolition noise levels could approach the property-line receiving noise standards of the cities of Berkeley or Oakland (as applicable). If the consultant determines that the standards would not be exceeded, no further mitigation is required. If the standards would be reached or exceeded absent further mitigation, one or more of the following additional measures would be required, as determined necessary by the noise consultant.</p> <ul style="list-style-type: none"> Stationary noise sources shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible. Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dB(A). External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dB(A). Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible. Noise from idling trucks shall be kept to a minimum. No trucks shall be permitted to idle for more than 10 minutes if waiting within 100 feet of a residential area. 	<p>PD&C Shall engage a qualified noise consultant, consistent with this mitigation measure. Where applicable, LBNL shall implement the consultant's recommended noise reduction measures and, if recommended, conduct noise monitoring. The consultant shall prepare a report stating, as applicable, that no measures are required, that measures have been implemented and will reduce noise sufficiently, or that measures have been implemented and the results monitored during demolition and/or construction.</p>	<p>Prior to the start of demolition or construction activities on all subsequent development projects.</p>	<p>Considered complete upon receipt by LBNL of consultant's report and implementation, if applicable, of recommended noise control measures</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact NOISE (continued)	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>CRT Impact NOISE-1: (continued)</p>	<p>LRDPM NOISE-1b: (continued)</p> <ul style="list-style-type: none"> If determined necessary by the noise consultant, a set of site-specific noise attenuation measures shall be developed before construction begins; possible measures might include erection of temporary noise barriers around the construction site, use of noise control blankets on structures being erected to reduce noise emission from the site, evaluation of the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings, and monitoring the effectiveness of noise attenuation measures by taking noise measurements. If determined necessary by the noise consultant, at least two weeks prior to the start of excavation, LBNL, or its contractor shall provide written notification to all neighbors within 500 feet of the construction site. The notification shall indicate the estimated duration and completion date of the construction, construction hours, and necessary contact information for potential complaints about construction noise (i.e., name, telephone number, and address of party responsible for construction). The notice shall indicate that noise complaints resulting from construction can be directed to the contact person identified in the notice. The name and phone number of the contact person also shall be posted outside the LBNL boundaries. 			

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>NOISE (continued)</p> <p>CRT Impact NOISE-4: The operation of heating, ventilating, and air conditioning equipment at the CRT site would not result in a substantial long-term increase in ambient noise levels.</p>	<p>LRDP MM NOISE-4: Mechanical equipment shall be selected and building designs prepared for all future development projects pursuant to the 2006 LRDP so that noise levels from future building and other facility operations would not exceed the Noise Ordinance limits of the cities of Berkeley or Oakland for commercial areas or residential zones as measured on any commercial or residential property in the area surrounding the future LRDP project. Controls that would typically be incorporated to attain adequate noise reduction would include selection of quiet equipment, sound attenuators on fans, sound attenuator packages for cooling towers and emergency generators, acoustical screen walls, and equipment enclosures.</p>	<p>PD&C</p> <p>Shall direct architects, mechanical engineers, and other design professionals to ensure that new buildings and facilities employ maximum feasible noise controls for mechanical equipment.</p>	<p>During the design of all subsequent projects.</p>	<p>Considered complete upon documentation of implementation of maximum feasible noise controls in building equipment.</p>	
<p>TRANSPORTATION AND TRAFFIC</p>					
<p>LRDP MM TRANS-1a: LBNL shall work with UC Berkeley and the City of Berkeley to design and install a signal at the Gayley Road/Stadium Rim Way intersection, when a signal warrant analysis shows that the signal is needed. The intersection would meet one-hour signal warrants for peak-hour volume and peak-hour delay under 2025 conditions with implementation of the LBNL 2006 LRDP. LBNL shall contribute funding on a fairshare basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for a periodic (annual or biennial) signal warrant check to allow the City to determine when a signal is warranted, and for installation of the signal.</p> <p>Should the City determine that alternative mitigation strategies may reduce or avoid the significant impact, the Lab shall work with the City and UC Berkeley to identify and implement such alternative feasible measure(s)? See also Mitigation Measure TRANS-1c, development and implementation of a new Transportation Demand Management Program.</p>	<p>Facilities Planning</p> <p>In conjunction with the City of Berkeley and UC Berkeley, shall prepare additional studies through TDM Plan process and continue to monitor intersection level of service upon a determination that the signal warrant is met, the three entities would work to implement installation of a traffic signal and/or undertake alternative mitigation strategies.</p>	<p>Additional studies will begin following finalization of TDM Plan. Additional mitigation will be implemented, as warranted, under the TDM Plan process.</p>	<p>Throughout the lifetime of the 2006 LRDP, at least until such time as the signal warrant is met. Considered complete upon signal installation or upon installation of alternative mitigation strategies.</p>		

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure			Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>TRANSPORTATION AND TRAFFIC (continued)</p> <p>LRDP MM TRANS—1b: LBNL shall work with the City of Berkeley to design and install a signal at the Durant Avenue/Piedmont Avenue intersection, when a signal warrant analysis shows that the signal is needed. LBNL shall contribute funding, on a fairshare basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for a periodic (annual or biennial) signal warrant check to allow the City to determine when a signal is warranted, and for installation of the signal. Should the City determine that alternative mitigation strategies may reduce or avoid the significant impact, the Lab shall work with the City and UC Berkeley to identify and implement such alternative feasible measure(s)? See also Mitigation Measure TRANS-1c, development and implementation of a new Transportation Demand Management Program.</p>		<p>Facilities Planning</p> <p>In conjunction with the City of Berkeley and UC Berkeley, shall monitor intersection level of service. Upon a determination that the signal warrant is met, The three entities would work to implement installation of a traffic signal and/or undertake alternative mitigation strategies.</p>	<p>Additional studies will begin following finalization of TDM Plan. Additional mitigation will be implemented, as warranted, under the TDM Plan process.</p>	<p>Throughout the lifetime of the 2006 LRDP, at least until such time as the signal warrant is met. Considered complete upon signal installation or upon installation of alternative mitigation strategies.</p>		

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>TRANSPORTATION AND TRAFFIC (continued)</p>	<p>LRDP MM TRANS-1c: LBNL shall fund and conduct a study to evaluate whether there may be feasible mitigation (with design standards acceptable to the City) at the intersection of Hearst Avenue at Gayley Road/La Loma Avenue. This intersection is currently signalized, and physical geometric limitations constrain improvements within its current right-of-way. All four corners of this intersection are occupied by existing UC Berkeley facilities, including Foothill Student Housing, Cory Hall, and outdoor tennis courts, as well as the Founders' Rock. The LOS analyses herein used conservative assumptions so as to not underestimate potential project impacts. For example, even though the approach widths at this intersection allow drivers to maneuver past other vehicles as they near the intersection, the absence of pavement striping to delineate separate lanes dictated that the analysis conservatively assume all vehicle movements on each approach are made on a single lane. Similarly, without the certainty that standard lane widths (and adequate storage lengths) could be provided, possible improvement measures were not relied on to judge that significant impacts would be mitigated to less than significant levels. Judging the success of possible mitigation measures with a conservative standard is reasonable, but in consultation with City of Berkeley staff, the Lab will conduct a further study to re evaluate whether there may be feasible mitigation (with design standards acceptable to the City) at this intersection. That additional study will be conducted by the Lab as part of the TDM program set forth below as Mitigation Measure TRANS-1d. If such mitigation is determined by Berkeley Lab to be feasible, then Berkeley Lab shall contribute funding on a fair-share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for the installation of the improvements.</p>		<p>Facilities Planning Shall prepare an annual report on the implementation of its Transportation Demand Management Program.</p>	<p>Annual reporting throughout the lifetime of the 2006 LRDP.</p>	<p>Reports shall be made available to the City of Berkeley and Public via Lab's website. The report may be prepared in conjunction with ongoing LBNL reporting agencies.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
TRANSPORTATION AND TRAFFIC (continued)				
<p>CRT Impact TRANS-2: The proposed CRT project would result in increases in transit ridership. (Less than Significant)</p>	<p>LRDP MM TRANS-1d: LBNL shall develop and implement a new TDM Program to replace its existing TDM program. This enhanced TDM Program has been drafted in consultation with the City of Berkeley, and is proposed to be adopted by the Lab following The Regents' consideration of the 2006 LRDP. The proposed TDM Program includes several implementation phases tied to the addition of parking to LBNL. The final provisions of the TDM Program may be revised as it is finally adopted but will include a TDM coordinator and transportation committee, an annual inventory of parking spaces and a gate count, a study of more aggressive TDM measures, investigation of a possible parking fee, investigation of sharing services with UC Berkeley and an alternative fuels program. The TDM program shall also include funding of a study to reevaluate the feasibility of mitigation at the Hearst and Gayley/LaLoma intersection. The new draft proposed TDM Program also includes a requirement that LBNL conduct an additional traffic study to reevaluate traffic impacts on the earliest to occur of 10 years following the certification of this EIR or the time at which the Lab formally proposes a project that will bring total development of parking spaces pursuant to the 2006 LRDP to or above 375 additional parking spaces.</p>			
<p>CRT Impact TRANS-3: The proposed CRT project would result in increased parking demand that may exceed the available parking supply. (Less than Significant)</p>	<p>LRDP MM TRANS-3: LBNL shall develop and maintain a transportation plan designed to ensure that the current balance of transportation modes is maintained. This plan shall include 1) maintaining the same (or lesser) ratio of parking permits and parking spaces to adjusted daily population (ADP), and 2) ensuring that levels of shuttle bus service and provision of bike racks on shuttle buses are sufficient to accommodate projected demand.</p>	<p>Facilities Planning Shall prepare an annual report on the implementation of its Transportation Demand Management Program.</p>	<p>Annual reporting throughout the lifetime of the 2006 LRDP.</p>	<p>Reports shall be made available to the City of Berkeley and Public via Lab's website. The report may be prepared in conjunction with ongoing LBNL reporting agencies.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure	Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>TRANSPORTATION AND TRAFFIC (continued)</p>	<p>LRDP BP TRANS-5: The construction of the proposed CRT project would temporarily and intermittently result in impacts on vehicles, pedestrians, or bicyclists, and parking. (Less than significant)</p>	<p>LRDP BP TRANS-6a: Early in construction period planning, LNBL shall meet with the contractor for each construction project to describe and establish best practices for reducing construction period impacts on circulation and parking in the vicinity of the project site. The Lab will work with the City of Berkeley Transportation and Public Works Departments to review the truck routes and the Construction Traffic Management Plans, as appropriate. Where construction traffic could interact with traffic from construction traffic from UC Berkeley, UC Berkeley staff would be invited to participate in these discussions between LNBL and the City.</p>		
<p>CRT Impact TRANS-5: (continued)</p>	<p>LRDP BP TRANS-6b: For each construction project, LNBL shall require the prime contractor to prepare a Construction Traffic Management Plan that will include, but will not necessarily be limited to, the following elements:</p> <ul style="list-style-type: none"> • Proposed truck routes to be used, consistent with the City truck route map. • Construction hours, including limits on the number of truck trips during the AM and PM peak traffic periods (7:00 to 9:00 AM and 4:00 to 6:00 PM), if conditions demonstrate the need. • A parking management plan for ensuring that construction worker parking results in minimal disruption to surrounding uses. 			
	<p>LRDP BP TRANS-6c: LNBL shall manage project schedules to minimize the overlap of excavation or other heavy truck activity periods that have the potential to combine impacts on traffic loads and street system capacity, to the extent feasible.</p>			

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure			Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>TRANSPORTATION AND TRAFFIC (continued)</p>	<p>LRDP MM TRANS-8: LBNL shall implement LRDP MM TRANS-1a (work with UC Berkeley and the City of Berkeley to design and install a signal at the Gayley Road/Stadium Rim Way intersection; LBNL would contribute funding on a fair share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, to install the signal) and LRDP MM TRANS-1b (work with the City of Berkeley to design and install a signal at the Durant Avenue/Piedmont Avenue intersection, when a signal warrant analysis shows that the signal is needed; LBNL would contribute funding on a fair-share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, to install the signal and for monitoring to determine when a signal is warranted).</p>			<p>Facilities Planning In conjunction with the City of Berkeley and UC Berkeley, shall prepare additional studies through TDM Plan process and continue to monitor intersection level of service Upon a determination that the signal warrant is met, The three entities would work to implement installation of a traffic signal and/or undertake alternative mitigation strategies.</p>	<p>Additional studies will begin following finalization of TDM Plan. Additional mitigation will be implemented, as warranted, under the TDM Plan process.</p>	<p>Throughout the lifetime of the 2006 LRDP, at least until such time as the signal warrant is met. Considered complete upon signal installation or upon installation of alternative mitigation strategies.</p>

5.0 Mitigation Monitoring and Reporting Program

Significant Impact	Mitigation Measure		Monitoring/Reporting Action(s) Notes	Mitigation Timing	Monitoring Schedule
<p>UTILITIES AND SERVICE SYSTEMS</p>	<p>LRDP MM UTILS-2: LBNL shall implement programs to ensure that additional wastewater flows from the Lab are directed into unconstrained sub-basins, as necessary and appropriate. LBNL shall continue to direct the Lab's existing western effluent flows into sub-basin 17-013. In addition, new flows at the Lab shall be directed into either sub-basin 17-013, sub-basin 17-304, unconstrained portions of sub-basin 17-503, or another sub-basin that has adequate capacity. Final design and implementation of these improvements shall be negotiated between the appropriate parties and shall undergo appropriate environmental review and approval. LBNL shall closely coordinate the planning, approval, and implementation of this mitigation measure with the city of Berkeley and UC Berkeley, as appropriate.</p>	<p>PD&C Shall develop appropriate engineering solutions for new east canyon projects, in consultation with the City of Berkeley and UC Berkeley, as applicable.</p>	<p>Engineering solutions planning prior to approval of east canyon projects that would affect constrained sub-basin. Construction/implementation of engineering solutions complete in time to avoid significant impact to constrained sub-basin.</p>	<p>After mitigation is triggered by Easy Canyon projects, LBNL shall prepare a report on the progress made in accommodating additional wastewater flows of new east canyon projects and shall submit this report to the City of Berkeley and make it publicly available on the Lab's website. The report may be prepared in conjunction with ongoing</p>	
<p>LRDP MM UTILS-4: LBNL shall develop a plan for maximizing diversion of construction and demolition materials associated with the construction of the proposed project from landfill disposal.</p>	<p>PD&C In coordination with EH&S, shall develop plans to minimize the amount of construction and demolition debris sent to landfills.</p>	<p>Annually, if applicable, and throughout the lifetime of the 2006 LRDP.</p>	<p>LBNL reporting activities. LBNL shall report on its progress in implementing this measure as part of ongoing LBNL reporting activities.</p>		

