4.0 AFFECTED ENVIRONMENT

This section presents the affected environment for the Proposed Action and each of the alternatives that have been selected for detailed evaluation in this Environmental Assessment (EA). As noted in **Section 1.0**, the actions proposed by the U.S. Department of Energy (DOE) are to relocate and consolidate federally funded programs and equipment into building space that can meet the programmatic needs of the National Energy Research Scientific Computing Center (NERSC) and the Computational Research Division (CRD), and co-locate a portion of the joint LBNL/UCB Computational Science and Engineering program (CSE) a related program, with NERSC and CRD. To satisfy the programmatic and space needs, the University of California (UC or the University) would construct a new building, the Computational Research and Theory (CRT) facility, on the Lawrence Berkeley National Laboratory (LBNL) site. The construction of the new building would be a consequence of the DOE's Proposed Action. Therefore, in describing the affected environment for the Proposed Action, this section presents existing conditions at the site of the proposed CRT facility. For ease of reference, the CRT facility site is referred to as the Proposed Action site in this EA.

4.1 ISSUES DETERMINED NOT TO WARRANT FURTHER CONSIDERATION

DOE guidance recommends against addressing clearly insubstantial effects in detail and advocates that the EA provide enough information to show why greater consideration of these insubstantial effects is not needed.[1] The following environmental topics were determined not to warrant further consideration for reasons presented below. In the absence of effects, no cumulative effect is possible and therefore these environmental topics are also not discussed in **Section 6.0, Cumulative Effects,** of this EA.

4.1.1 Land Use and Planning

Under the Proposed Action, the CRT facility would be located in the western portion of the LBNL site. The LBNL site is situated in the eastern hills of the cities of Berkeley and Oakland in Alameda County on approximately 200 acres that are owned by the University. Development on the LBNL site is subject to the principles, strategies, and design guidelines in the LBNL 2006 Long Range Development Plan (LRDP) and any other applicable LBNL policies. The 0.91-hectare (2.25-acre) CRT facility site, which is located within the Berkeley city limit, is undeveloped, although portions of the site have been previously disturbed by a road cut and installation of utilities. The site is flanked by Buildings 70 and 70A to the east, the Building 50 complex to the north, open space to the south, and Cyclotron Road and the Blackberry

[1] U.S. Department of Energy (DOE), 2004, Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements, page 3.

Canyon entrance gate to the west. The nearest off-site residential uses (Foothill Student Housing Complex) are located approximately 209 meters (685 feet) southwest of the site on the UC Berkeley campus. There are also multi-family residences and the Tibetan Nyingma Institute located approximately 241 meters (790 feet) south of the project site along Highland Place. The Proposed Action would relocate the Advanced Scientific Computing Research (ASCR)-funded LBNL programs and other related UC Berkeley/LBNL programs into the CRT facility, which would be consistent with the general land uses of LBNL and the applicable policies in the LBNL 2006 LRDP, including policies to cluster similar and related uses near each other. The proposed facility would be constructed by the University and would be exempt from local land use regulations, including general plans and zoning (see Article IX, Section 9 of the California Constitution). As shown by the analysis in other sections of this EA, the Proposed Action would not result in environmental effects that would adversely affect adjacent land uses.

Alternative 1 would result in the development of CRT facility on the Cafeteria Parking Lot site on the LBNL site. Similar to the Proposed Action, this alternative would be consistent and compatible with LBNL policies and plans. As shown by the analysis in other sections of this EA, Alternative 1 would not result in environmental effects that would adversely affect adjacent land uses.

Alternative 2 would be located at the University-owned Richmond Field Station. The alternative site for the CRT facility at UC Berkeley Richmond Field Station (RFS) is an approximately 3.2-acre undeveloped, although disturbed, site that is currently used as a storage area for California Partners for Advanced Transit and Highways research vehicles. The site is in the central portion of RFS and is distant from adjacent land uses. The nearest off site residential development, Marina Bay neighborhood, is located approximately 460 meters (1,500 feet) to the southwest of the alternative site. Land uses associated with Alternative 2 would be compatible with the uses that comprise the RFS, including academic teaching and research. Construction and operation of the facility would be consistent with University policies. As shown by the analysis in other sections of this EA, Alternative 2 would not result in environmental effects that would adversely affect adjacent land uses.

Alternative 3 would be located on the former California Department of Health Services (DHS) site at 2151 Berkeley Way in Berkeley. The site is owned by the University. The portion of the DHS site where the CRT facility would be constructed is occupied by the former DHS building and its parking lot. An apartment complex is located less than 80 meters (263 feet) southeast of the alternative site, on the same city block as the DHS site. Adjacent land uses include other campus facilities as well as non-campus commercial and residential uses. As shown by the analysis in **Section 5.9** of this EA, Alternative 3 would result in construction noise levels that would temporarily exceed acceptable noise levels for adjacent residential land uses. There would be no other effects on adjacent land uses.

Alternative 4 is an existing building located on San Pablo Avenue, between 67th and Folger Streets that would be leased for the CRT facility. The property is made up of parcels that lie within three municipalities (cities of Berkeley, Emeryville, and Oakland). The existing building is surrounded by industrial uses to the north, south, and west. Residential uses are located north and east of the site along San Pablo Avenue and to the south on 67th Street. The use of the existing facility, with some modifications to accommodate the NERSC and add staff offices, would be compatible with surrounding industrial uses. As shown by the analysis in **Section 5.9** of this EA, Alternative 4 would result in construction noise levels that would temporarily exceed acceptable noise levels for adjacent residential land uses. There would be no other effects on adjacent land uses.

Under the No Action alternative, the existing Oakland Scientific Facility (OSF) would continue to be used by NERSC and a new facility would not be constructed. City of Oakland general plan policies would continue to apply to the leased facility. There would be no land use impacts.

4.1.2 Intentional Destructive Acts

In accordance with interim guidance from the Office of NEPA (National Environmental Policy Act) Compliance Policy (part of the DOE Office of General Counsel), the DOE considers intentional destructive acts (i.e., acts of sabotage or terrorism) in all its EAs and environmental impact statements (DOE 2006).

The Proposed Action and Alternative 1 would be located on the LBNL site, which is secured by a fence, and controlled access is available only at three entry gates. Card keys would be used for building access, during both business and non-business hours. The Proposed Action and Alternative 1 would be subject to all LBNL policies and programs related to security and safety. Furthermore, construction and operation activities under the Proposed Action and Alternative 1 would not involve the transportation, storage, or use of radioactive, explosive, or toxic materials, other than diesel fuel stored on site for the emergency generators and batteries to provide backup power to the computers. Given the nature of activities and research to be conducted in the CRT facility, the Proposed Action and Alternative 1 would not offer any particularly attractive targets of opportunity for terrorists or saboteurs to inflict adverse impacts to human life, health, or safety and an intentional destructive act would likely have no significant impact on the human health or the environment. Neither the Proposed Action nor Alternative 1 is expected to require security in addition to that already in place for the LBNL site.

The RFS site where Alternative 2 would be located is surrounded on all sides by chain-link fencing that is at least 6 feet tall. There is one entrance to the site, and access is monitored by a guard booth. There would be controlled entry into and within the building. The security precautions at the RFS site are

considered appropriate given the type of work that is proposed for the CRT facility. Given the nature of activities and research to be conducted in the CRT facility, the potential for the alternative to trigger intentional destructive acts is low.

The DHS site, which is the site under Alternative 3, is not a fenced site and there is no dedicated security at this site. Although there would be no security precautions other than controlled entry into and within the building, given the type of activities and research that would be carried out, the potential for the alternative to trigger intentional destructive acts is low.

The leased facility site under Alternative 4 is not a fenced site and there is no dedicated security at this site. Although there would be no security precautions other than controlled entry into and within the building, given the type of activities and research that would be carried out, the potential for the alternative to trigger intentional destructive acts is low.

The OSF under Alternative 5 is not a fenced site, although access to the facility is controlled with controlled entry**.** Although there are no security precautions other than controlled entry, given the type of work that is carried out at OSF, the potential for the alternative to trigger intentional destructive acts is low.

4.1.3 Aviation Hazards

The Proposed Action and Alternative 1 sites are more than 17.7 kilometers (11 miles) northeast of the Oakland Metropolitan Airport, and are also not located within the vicinity of a private airstrip. Implementation of the Proposed Action or Alternative 1 would pose very little risk to CRT users from aviation hazards.

The RFS site under Alternative 2 is more than 20 kilometers (12.5 miles) north of the Oakland Metropolitan Airport, and is also not located within the vicinity of a private airstrip. Given this, the risk from aviation hazards from implementation of Alternative 2 would be low.

The DHS site under Alternative 3 is more than 15 kilometers (about 10 miles) north of the Oakland Metropolitan Airport, and the site is also not located within the vicinity of a private airstrip. Implementation of Alternative 3 would pose very low risk of aviation hazards to the CRT facility.

The Alternative 4 site is more than 13 kilometers (8 miles) north of the Oakland Metropolitan Airport and the site is also not located within the vicinity of a private airstrip. Implementation of Alternative 4 would pose minimal risk to facility users from aviation hazards.

OSF Alternative 5 is more than 9 kilometers (5.5 miles) from the Oakland Metropolitan Airport and the site is also not located within the vicinity of a private airstrip. Implementation of Alternative 5 would pose minimal risk to facility users from aviation hazards.

4.2 ISSUES DETERMINED TO WARRANT FURTHER CONSIDERATION

4.2.1 Geology and Soils

Proposed Action

Site Geology

The LBNL site is located in the Berkeley Hills region of California's Coast Ranges geomorphic province (LBNL 2010). Bedrock at LBNL consists primarily of Cretaceous and Miocene sedimentary and volcanic units. These units form a northeast-dipping, faulted homocline, which underlies most of the facility, and has been disrupted in places by ancient and modern landslides. From the structurally lowest to structurally highest units, the homocline includes the Great Valley Group, the Orinda Formation, and the Moraga Formation. The Great Valley Group and Orinda Formation consist of mudstones and fine- to medium-grained sandstones at the LBNL site. The Moraga Formation is a resistant ridge-forming unit that is composed primarily of andesitic volcanic rocks. **Figure 4.0-1, Bedrock Geologic Map of LBNL** shows the bedrock geology of the LBNL site based on data from surface outcrops, construction excavations, trenches, and numerous borings. **Figure 4.0-2, Geologic Cross Section Through the LBNL Site,** is a geologic cross section through the LBNL site (LBNL 2010). As shown on **Figure 4.0-1**, the project site is underlain by the Great Valley Group (LBNL 2010). The LBNL site is located in an area where no significant mineral or aggregate deposits are present (LBNL 2007).

Seismicity and Faults

The Proposed Action site is located approximately 122 meters (400 feet) east of the eastern trace of the Hayward fault, one of several major active fault zones in the San Francisco Bay Area. The site is located within the Earthquake Fault Zone defined for the Hayward fault by the State of California pursuant to the Alquist-Priolo Earthquake Fault Zoning Act. However, a fault investigation did not identify any active fault traces at the CRT building site (Kleinfelder 2009).

The most recent major earthquake on the Hayward fault occurred in 1868 (on the southern portion of the fault, near Mills College). The United States Geological Survey (USGS) Working Group on California Earthquake Probabilities estimates that there is a 27 percent chance that the Hayward–Rodgers Creek

Fault System[2] will experience an earthquake of magnitude 6.7 or greater by 2032 (USGS 2003). A major earthquake on the Hayward fault is anticipated to produce violent to very violent ground shaking at the LBNL site (LBNL 2008).

Additionally, the San Andreas Fault parallels the Hayward fault approximately 27 kilometers (17 miles) west of the LBNL site, and the Great Valley–Concord–Calaveras fault zone is located about 21 kilometers (13 miles) to the east. Taken together, along with other faults in the area, there is a 62 percent probability of at least one magnitude 6.7 or greater earthquake striking the San Francisco Bay Area (Bay Area) before 2032 (USGS 2003). The intensity of ground shaking at the LBNL site would be reduced as the distance from the epicenter of the earthquake increases; however, a major earthquake on any of the active Bay Area faults could still produce violent shaking at the LBNL site (LBNL 2008).

Seismically Induced Landslides and Other Landslides

Earthquake shaking can trigger slope failures in steep hillside areas, particularly those already prone to failure. Seismic hazards mapping issued by the State of California pursuant to the Seismic Hazards Mapping Act shows much of the Berkeley hills rangefront, including portions of the UC Berkeley campus and the LBNL site, as within the zone of seismically induced landslide hazard (California Geological Survey [CGS] 2003). The seismically induced landslide hazard zone includes the locations of existing landslides and areas where geological and geotechnical data and analyses indicate that slopes may be susceptible to earthquake-induced failure.

Some unstable slopes on the LBNL site have experienced ground failure. To address the risk of future landsliding, UC LBNL completed a detailed mapping program to locate slide-prone areas (LBNL 2008). Based on the mapping, UC LBNL has implemented an ongoing program to mitigate the risk of future landsliding. The program includes installation of hydraugers (horizontal drains), vertical wells, and subdrains to maintain low groundwater levels, and construction of retaining walls in slide-prone areas. An array of hydraugers is present between Cyclotron Road and the southern portion of the Building 50 complex in the site vicinity. These drains were installed in the late 1980s and serve to drain groundwater from the slope to help limit the potential for landslide movement (LBNL 2008).

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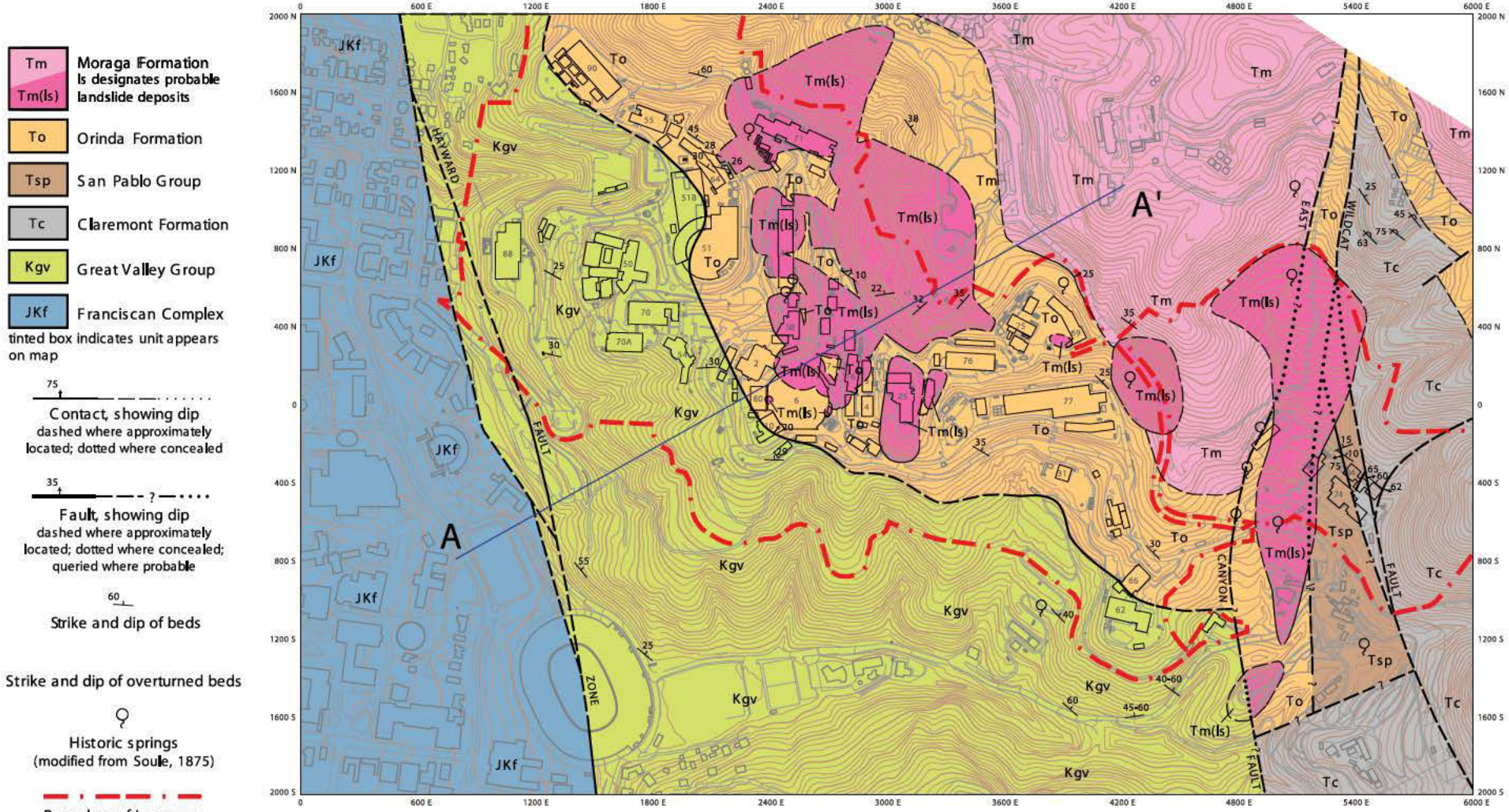
2 The Rodgers Creek fault, located north of San Pablo Bay, is widely considered to be the northward extension of the Hayward fault, and the two faults are often discussed as a single combined system.

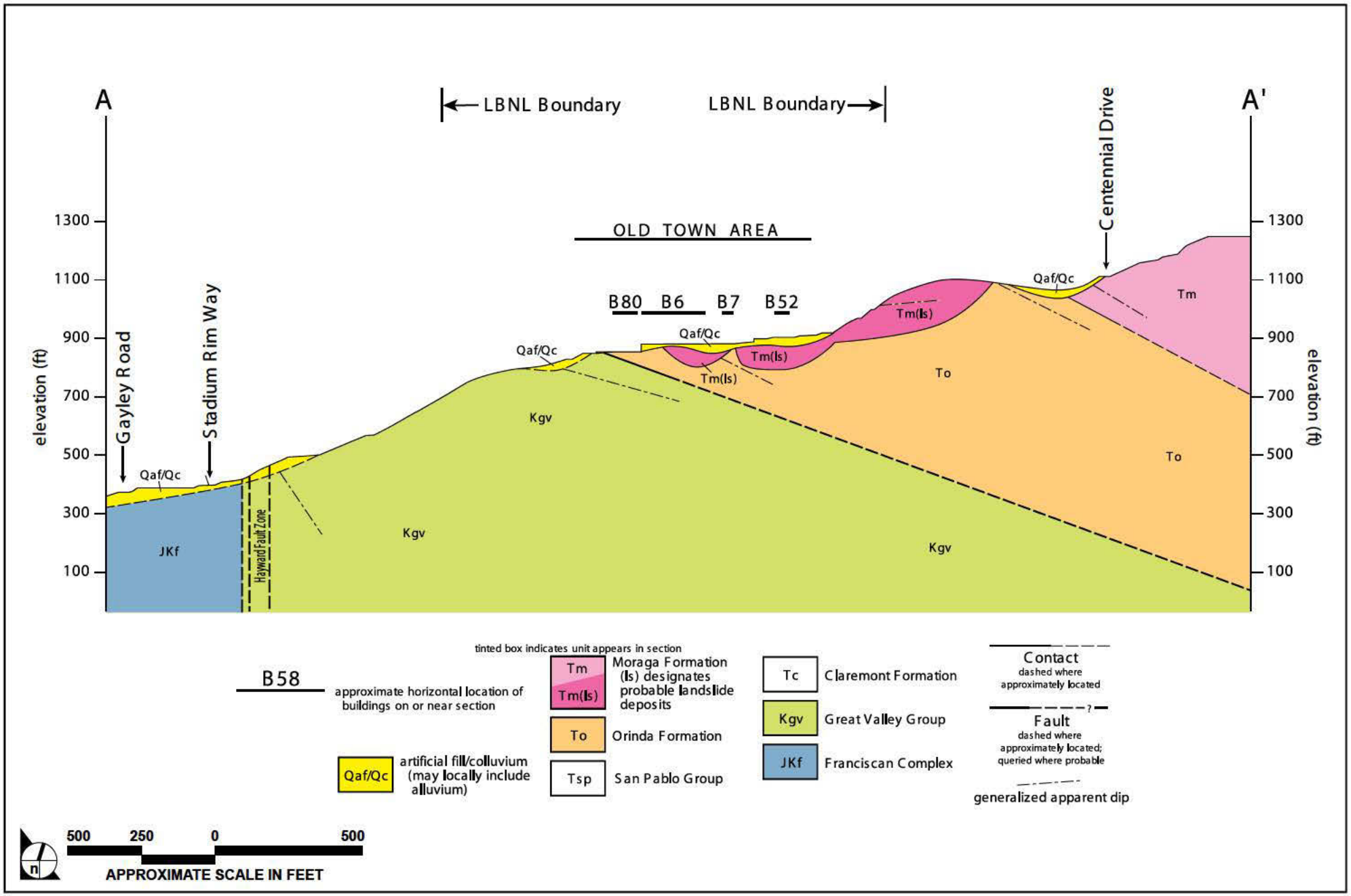


SOURCE: Parsons Engineering Science, Inc, and UC LBNL – June 2010

FIGURE **4.0-1**

Bedrock Geologic Map of LBNL

924-006•07/10



SOURCE: Parsons Engineering Science, Inc, and UC LBNL – June 2010

FIGURE **4.0-2**

Geologic Cross Section Through the LBNL Site

924-006-09/10

The project site includes two areas designated as "medium risk" for landsliding on the LBNL slope stability evaluation map, and trenches excavated as part of the fault-trace investigation identified evidence of a dormant landslide at the project site (Kleinfelder 2009). A portion of the site is underlain by a small landslide repair performed in the 1970s. A seismic slope stability investigation conducted at the project site in accordance with CGS Special Publication 117 (Guidelines for Evaluating and Mitigating Seismic Hazards) confirmed there is a low probability of earthquake-induced landslide at the project site (Kleinfelder 2010).

Other Geologic Hazards

Other geologic hazards such as tsunami, seiche,[3] liquefaction, and settlement are unlikely to affect the Proposed Action site. Tsunamis and seiches would not affect the site because of the elevation of the site and the distance from San Francisco Bay and other enclosed water bodies. The LBNL site is not within a Seismic Hazard Zone defined by the State of California pursuant to the Seismic Hazards Mapping Act (CGS 2003), but localized liquefaction hazards may be present at the LBNL site in areas underlain by shallow groundwater and poorly engineered fill or alluvial materials. This is not the situation at the Proposed Action site, where relatively thin soils overlie shallow bedrock; liquefaction risk at the site is accordingly considered low. The risk of seismically induced settlement is also considered low due to the relatively thin soils and shallow depth to bedrock at the site (LBNL 2008).

Soils and Mineral Resources

The CRT facility site lies almost entirely in an area of Maymen loam soils, although the easternmost portion overlies soils assigned to the Xerorthents-Millsholm complex. Both are relatively thin soils (less than 2 feet thick) on bedrock, and are well drained with rapid runoff and high erosion potential due to steep slopes. Both soil types have low shrink-swell potential. Soils in the eastern portion of the project area have likely been highly disturbed due to past grading and construction of Buildings 50, 50A, 50B, 70, and 70A and associated parking areas and roads (LBNL 2008).

Alternative 1, Cafeteria Parking Lot Site

Please refer to the conditions of the LBNL site described above under Proposed Action. The Cafeteria parking lot site is similar to the Proposed Action site in terms of risk from seismic ground shaking and differential settlement. However, the site is not within an area that has the potential for earthquake-induced landslides. In addition, unlike the Proposed Action, the Alternative 1 site is not

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3 A seiche is a standing wave in an enclosed or partially enclosed body of water. Seiches can occur in response to earthquake shaking.

located within the state-defined Earthquake Fault Zone for the Hayward fault. As identified above, the LBNL site is located in an area where no significant mineral or aggregate deposits are present (LBNL 2007).

Alternative 2, RFS Site

The RFS site is located 3.5 kilometers (2.2 miles) from the Hayward fault and within 1.6 kilometers (1 mile) of San Francisco Bay. The alternative site is located in a topographically flat area, and a portion of the site has been excavated and backfilled with imported soil. The site is underlain by Holocene (Recent) alluvium (UC Berkeley 2008). Based on soil boring data, the University concluded that the liquefaction potential for the upland area of the RFS is not high (UC Berkeley 2003). In addition, based on maps prepared by the Association of Bay Area Governments (ABAG), the site is located in an area that has a moderate to very low susceptibility for liquefaction due to water saturation (ABAG 2009). The alternate site is not located in an area of landslide risk. The RFS is located in an area where no significant mineral or aggregate deposits are present.

Alternative 3, Former DHS Site

The Hayward fault runs through the eastern portion of the UC Berkeley campus. The former DHS site is located west of the Campus Park, roughly 1 kilometer (0.6 mile) from the Hayward fault and outside the state-defined Earthquake Fault Zone for the Hayward fault. Therefore, the site is similar to the Proposed Action site in terms of risk of substantial seismic ground shaking. The blocks adjacent to the campus, including the DHS site, are not located in a liquefaction hazard zone (UC Berkeley 2009). The DHS site is not located in an area of landslide risk. The DHS site is located in an area where no significant mineral or aggregate deposits are present.

Alternative 4, Leased Facility on San Pablo Avenue

This alternative would use an existing building on San Pablo Avenue in Berkeley, approximately 3.9 kilometers (2.4 miles) west of the Hayward fault, and 27 kilometers (17 miles) east of the San Andreas Fault (USGS 2006). The building was constructed in 1956, and was constructed in accordance with the then-current edition of the Uniform Building Code. The site is located in an area that is moderately susceptible to liquefaction due to water saturation (ABAG 2009), and has, per the ABAG maps, a low potential for seismically induced liquefaction (ABAG 2001). The alternative is not located in an area of landslide risk (CGS 2003). The leased facility is located in an area where no significant mineral or aggregate deposits are present.

Alternative 5, No Action

The existing Oakland Scientific Facility (OSF) building was constructed in 1964 in accordance with the Uniform Building Code and City of Oakland Building Code. The building was renovated in 1999 to meet NERSC's needs. The building is not located in an area at risk of damage from liquefaction, ground settlement, fault rupture, or landslides. The site would be subject to substantial ground shaking in the event of a major earthquake on any of the faults in the Bay Area. The site is not located in an area where mineral or aggregate deposits are present.

4.2.2 Water Resources

Proposed Action

Drainage and Surface Water Quality

The Proposed Action is located in the Blackberry Canyon area. Storm water from the Proposed Action site flows into an unnamed drainage locally known to the LBNL community as Cafeteria Creek. Cafeteria Creek drains to a culvert just downstream of the CRT facility site (near the LBNL Blackberry Canyon Gate), which eventually drains to Strawberry Creek on the UC Berkeley campus.

All development at the LBNL site is subject to best management practices (BMPs) as detailed in the LBNL Storm Water Pollution Prevention Plan (SWPPP) to control the quality and quantity of storm water runoff. Steeply sloping open space areas on the site have the potential to contribute sediment (turbidity) to receiving waters, although there is no outward indication of instability on the vegetated slopes of the project site.

To avoid adverse impacts on surface water quality, UC LBNL uses only one type of herbicide, which is applied locally (no broadcast spraying) to prevent re-sprouting of cut eucalyptus trunks. Pesticide use is restricted to non-flying insects within buildings (no spraying), and rodents are controlled by non-pesticide methods (trapping). Only licensed contractors are hired to administer pesticides and herbicides in compliance with all applicable regulations. The UC LBNL Environmental Health and Safety Division (EH&S) reviews these practices annually (LBNL 2008).

Flooding

The LBNL site is not within a 100-year flood zone as mapped by the Federal Emergency Management Agency (FEMA).

Groundwater and Groundwater Quality

Groundwater depths at the LBNL site vary from at the ground surface (where springs occur) to approximately 30 meters (100 feet) below ground surface (bgs). At the Proposed Action site, depth to groundwater is estimated to be approximately 15 meters (50 feet) bgs, with a westerly flow direction. The groundwater at LBNL is not used for domestic, irrigation, or industrial purposes; potable water is supplied by the East Bay Municipal Utility District (EBMUD). There is no known groundwater contamination at the Proposed Action site. Information related to groundwater contamination is discussed in **subsection 4.2.3** below**.** Groundwater in the vicinity of the LBNL site is not used as a source of potable water.

Alternative 1, Cafeteria Parking Lot Site

Please refer to the conditions of the LBNL site under the Proposed Action. Storm water runoff from the Cafeteria parking lot currently drains to Cafeteria Creek. There is no known groundwater contamination at this site (LBNL 2008). Similar to the Proposed Action, this site is not within a 100-year flood zone or in an area at risk for inundation due to sea level rise in the next century.

Alternative 2, RFS Site

The RFS is located in a small-unnamed watershed that primarily drains the neighboring City of Richmond properties to the west and north. The watershed is almost completely urbanized and consists of housing, light industry, commercial and institutional facilities, and some small parks. On-site stormwater drainage is by overland flow that is conveyed from the upland area through a series of culverts and open swales. Two subcatchments on the RFS drain to two storm drain outlets at the edge of Western Stege Marsh, known as the Eastern Storm Drain and the Western Storm Drain. These storm drains discharge into a series of tidal salt marsh channels that drain to Meeker Slough (UC Berkeley 2008).

According to the Current Conditions Report prepared for the RFS site, at least three water-bearing zones are present at the RFS: a shallow groundwater zone, from approximately 3 to 6 meters (10 to 20 feet) bgs, an intermediate groundwater zone, from approximately 9 to 23 meters (30 to 74 feet) bgs, and a deeper-groundwater zone, from approximately 27 to 30 meters (90 to 100 feet) bgs. Based on groundwater monitoring well observations, groundwater flow is generally south toward San Francisco Bay (UC Berkeley 2008). Groundwater contamination is discussed in **subsection 4.2.3** below.

According to the sea level rise map prepared by the San Francisco Bay Conservation and Development Commission (BCDC), the Alternative 2 site is not at risk of inundation from sea level rise expected in the next century (BCDC 2008b).

Alternative 3, Former DHS Site

All overland flow in the area of the DHS site is collected by curb-and-gutter systems and delivered through side inlets to the storm drainage culverts beneath local streets. The culverts drain into lower Strawberry Creek at locations west of the Campus Park. Storm water generated at the DHS site is subject to the UC Berkeley storm water management plan. The DHS site is not within a 100-year flood zone (UC Berkeley 2009). The site is not located in an area at risk for inundation due to sea level rise in the next century (BCDC 2008a).

Alternative 4, Leased Facility on San Pablo Avenue

The alternative would use an existing building at 6701 San Pablo Avenue, Berkeley. The alternative site is completely developed with impervious surfaces. According to the sea level rise map prepared by the BCDC, the Alternative 4 site is not at risk of inundation from sea level rise expected in the next century (BCDC 2008a). The alternative site is outside the FEMA 100-year flood zone (ABAG 2010).

Alternative 5, No Action

The alternative would continue to lease the OSF site in the City of Oakland. The site is not within a 100-year flood zone or an area that would be affected by sea level rise.

4.2.3 Hazards, Human Health, and Accidents

Proposed Action

Hazardous Materials

Hazardous materials are grouped into the following four categories, based on their properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases). Some hazardous materials are used in facility operations and maintenance, while others are used for research. UC LBNL complies with applicable federal, state, and local laws and regulations for the handling, storage, and disposal of hazardous materials and wastes to minimize worker exposure and environmental impact. Compliance with these requirements also minimizes the potential for release of hazardous materials to

the environment in the event of a fire or earthquake. There is no history of hazardous materials use, storage, or disposal on the Proposed Action site (LBNL 2008).

Soil and Groundwater Contamination

In 1991, LBNL began a rigorous evaluation of potential historical releases of contaminants to the environment as part of an investigation under RCRA, which was required by its Part B hazardous waste facility permit. This process revealed contamination in soil and groundwater due to past site activities.

The chemicals of concern detected in the soil and groundwater consisted of chlorinated volatile organic compounds (VOCs), mostly degreasing solvents used to clean equipment and their degradation products. Other detected chemicals included polychlorinated biphenyls (PCBs), petroleum hydrocarbons, semi-volatile organic compounds (SVOCs), and metals. All identified areas of soil contamination were cleaned up to levels consistent with LBNL operations (designated as institutional land use) and acceptable to regulatory oversight agencies (LBNL 2007). LBNL has a groundwater monitoring and cleanup program in place to remediate VOC-contaminated groundwater and prevent its migration off site (LBNL 2008). This program is being conducted under the regulatory oversight of the California Environmental Protection Agency DTSC. The radionuclide tritium was also detected in the groundwater at the LBNL site. The cleanup of the tritium-contaminated groundwater is overseen by the DOE.

The Proposed Action site does not overlie an area of groundwater contamination, and there are no known areas of soil contamination underlying the site. The nearest area of contaminated groundwater is approximately 0.3 kilometer (0.2 mile) northeast of the site, near Building 51.

Fire Hazards

The northern and eastern boundary of the LBNL site is located along a portion of the interface between wildlands and developed lands in the East Bay hills. Under LBNL's vegetation management program, vegetation is treated annually on the LBNL site such that ground fuels cannot produce flame heights in excess of 1 meter (3 feet), and ground plantings within 3 meters (10 feet) of buildings and roadways produce even lower flame heights; trees are "limbed up" so that flammable branches are at least 2.5 to 3 meters (8 to 10 feet) above the ground, and bushes that would allow ground-based fires to rise into tree canopies are removed (LBNL 2008). Buildings on the LBNL site are constructed and designed to conform with requirements for fire resistive construction defined by the California Building Code and fire code safety requirements.

The LBNL site is provided firefighting services by the Alameda County Fire Department, which staffs a fire station (Station 19) on the LBNL site. This fire station and associated Alameda County Fire

Department services are fully paid for by LBNL funds. The Alameda County Fire Department has mutual aid agreements with other agencies, including the cities of Berkeley and Oakland and the East Bay Regional Park District, which can be activated in the event of a major emergency (LBNL 2008).

The Proposed Action site is located in a stand of predominantly eucalyptus trees and a grassland understory. Areas adjacent to the site have similar vegetation communities. The Proposed Action site is within 0.5 kilometer (0.3 mile) of Station 19.

LBNL Emergency Response Plan

UC LBNL has developed a Master Emergency Program Plan (MEPP) that establishes policies, procedures, and an organizational structure for responding to and recovering from a major disaster at the LBNL site. The MEPP utilizes the National Incident Management System, which is a nationwide standardized approach to incident management prescribed by Homeland Security Presidential Directive 5 and the Standardized Emergency Management System for managing response to multi-agency and multi-jurisdiction emergencies in California. The MEPP includes a hazard analysis and assessment, which finds that the primary hazards for the LBNL site are a major earthquake along the Hayward fault and a major urban-wildland fire. In view of these primary hazards, the plan includes four phases of emergency management, including mitigation, preparedness, response, and recovery. Mitigation includes activities that eliminate or reduce the occurrence or effects of a disaster.

The MEPP also includes a Wildland Fire Evacuation/Relocation Plan. This plan presents the steps that UC LBNL will implement in the event that any portion of the site is threatened by a major fire. In such an emergency, UC LBNL will order an evacuation of the site either by vehicle or foot, order relocation of employees from one area to another, more protected area, or provide instructions to employees to remain in place and await further instructions. The plan outlines the steps involved in a vehicular evacuation, which include traffic control and use of those gates, and routes that are not threatened by fire. For evacuation by foot, the plan identifies all evacuation routes including the use of the Blackberry Canyon gate near the CRT facility site, and an assembly area on the UC Berkeley campus from where the evacuated employees would be transported by bus to a Bay Area Rapid Transit (BART) station (LBNL 2008).

Alternative 1, Cafeteria Parking Lot Site

The alternative would involve the same hazards as those described above for the Proposed Action. There is no known contamination at the site.

Alternative 2, RFS Site

The southeast portion of the RFS site was used for explosive manufacturing from 1840s until 1945. Soils and sediments at the RFS site contain levels of metals, PCBs, and pesticides above the California hazardous waste Total Threshold Limit Concentration criteria. Most of the contamination within the alternative site at RFS has been remediated (UC Berkeley 2008). However, the University is currently conducting an investigation of pyrite cinders contamination at the site and plans to remediate the site in compliance with DTSC requirements.[4]

The Current Conditions Report provides an evaluation of the groundwater contaminants present at the RFS site. Contamination, including metals, VOCs, and PCBs, has been identified within the shallow-zone groundwater, and fewer contaminants are identified in lower zones (UC Berkeley 2008).

The fire hazard at the alternative site is typical of all urban areas. The site does not have a high potential for wildland fires because the surrounding area does not contain conditions that could result in wildland fires.

Alternative 3, Former DHS Site

The former DHS building contained some contamination associated with its former use, some of which was removed prior to demolition and the remaining in conjunction with the demolition of the building. The UC Berkeley Office of Environment, Health, and Safety (EH&S) has primary responsibility for coordinating the management of hazardous materials on campus in compliance with applicable laws, regulations, and standards. The EH&S Emergency Response Team (ERT), staffed by health and safety professionals, hazardous materials technicians, and licensed hazardous materials drivers, responds to most hazardous materials incidents reported on campus. Currently, the ERT is able to respond to an incident within 15 minutes. In the infrequent cases when outside assistance is required, the ERT may request assistance from other nearby agencies, including the Berkeley Fire Department (BFD) and Alameda County Fire Department (ACFD), or from emergency response contractors (UC Berkeley 2009).

Alternative 4, Leased Facility on San Pablo Avenue

The existing building on San Pablo Avenue that would be leased was constructed in 1956 and was formerly occupied by the Smith-Corona Marchant Corporation (SCM) Data Processing Division. SCM activities at the site included manufacturing of calculating machines, storage and drayage businesses, metal fabrication operations, a neon sign factory, and a storage yard for painting contractors. DTSC has

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4 Communications between Impact Sciences and Karl Hans, UC Berkeley, Environmental Health and Safety.

approved a Removal Action Workplan to remove potential volatile organic compounds and solvent contaminants detected in the groundwater at the site (DTSC 2010). The University currently holds a long-term lease on a portion of the warehouse. The leased facility site is served by the BFD. The site does not have a high potential for wildland fires because the surrounding area does not contain conditions that could result in wildland fires.

Alternative 5, No Action

The alternative involves continued leasing of the existing OSF in Oakland. The site is served by the Oakland fire department and is not at risk from wildland fires.

4.2.4 Biological Resources

Proposed Action

The LBNL site is characterized by clusters of development interspersed with open space that contains a mosaic of vegetation types and wildlife habitats, including oaks and mixed hardwood forests, native and non-native grasslands, chaparral, coast scrub, marsh and wetland communities, and riparian scrubs and forests.

The Proposed Action site is located on a hillside vegetated with approximately 75 trees, primarily eucalyptus, and an understory of annual grassland. Eucalyptus trees may provide roosting and nursery sites for several bat species, including fringed myotis (*Myotis thysanodes*), long-eared myotis (*Myotis evotis*) and pallid bat (*Antrozous pallidus*). The fringed myotis and long-eared myotis are species designated as "Special Animals" by the state. The pallid bat is listed on the California Species of Special Concern. Portions of the site have been previously disturbed in conjunction with the construction of the nearby buildings. There are no creeks, seeps, wetlands or other site features potentially subject to United States Army Corps of Engineers (USACE) and/or California Department of Fish and Game (CDFG) jurisdiction at the CRT facility site (LBNL 2008). The facility site's closest point is approximately 9 meters (30 feet) from the 50-foot buffer of the Cafeteria Creek riparian corridor.

The Proposed Action site is not within or contiguous to any US Fish and Wildlife Service (USFWS) designated Critical Habitat for the Alameda whipsnake (*Masticophis lateralis euryxanthus*, a species listed as threatened both at the state and federal levels). Numerous biological surveys have been conducted of the Proposed Action site and its surroundings, including a June 28, 2007, site-specific suitability analysis of the Proposed Action site for Alameda whipsnake. In the latter analysis, the Proposed Action site was found to be nearby to areas containing high-quality Alameda whipsnake habitat. Specifically, coastal scrub vegetation and open space grasslands occur along south-facing slopes to the south of the project

site. While core habitat does not occur within the project boundary and Alameda whipsnake is not expected to permanently reside there, and while the species has never been observed on or adjacent to the Proposed Action site, it is possible that the species may temporarily occur on or nearby to the Proposed Action site (LBNL 2008).

LBNL has developed several SPFs for preventing the incidental taking of the Alameda whipsnake during construction and similar activities at the LBNL site. These SPFs were developed over a period of years and are based on site visits and informal consultation with the USFWS along with the assistance of biologists specializing in the Alameda whipsnake species. These are LBNL SPFs BIO-5(a) through BIO-5(f).

Alternative 1, Cafeteria Parking Lot Site

Please refer to the biological setting for the LBNL site, as described above under the Proposed Action. The Alternative 1 site is almost entirely paved and some of the site is landscaped with trees. The trees on the site include 19 pine trees (*Pinus* sp.), five willow trees (*Salix* sp.), and five other trees.

Alternative 2, RFS Site

The alternative site is disturbed and a portion of it is developed with Building 167 and a parking lot. The habitat on the alternative site is composed of disturbed native and non-native grassland, ornamental trees, eucalyptus trees, and a drainage ditch that is potentially a jurisdictional feature. The grassland at the site provides potential habitat for western burrowing owl (*Athene cunicularia hypugaea*, a state species of concern) and foraging habitat for loggerhead shrike (*Lanius ludovicianus*, a state species of special concern). The eucalyptus grove provides nesting habitat for white tailed kite (*Elanus leucurus,* a state species of concern, fully protected) (UC Berkeley 2003). Native grasslands that occur at the site include California Oatgrass Bunchgrass Grassland (*Danthonia californica*) and purple needlegrass (*Nassella pulchra*). Both grassland types are considered a sensitive natural community by the CDFG "List of California Terrestrial Communities Recognized by the California Natural Diversity Database" (UC Berkeley 2003). No federally listed plant or wildlife species occur on the site.

Alternative 3, Former DHS Site

The alternative site consists of a developed parcel and is in an urban setting that does not support any natural habitat.

Alternative 4, Leased Facility on San Pablo Avenue

The alternative site consists of a developed parcel and is in an urban setting that does not support any natural habitat.

Alternative 5, No Action

The existing facility in Oakland is in an existing building in an urban area that does not support any natural habitat.

4.2.5 Cultural Resources

Proposed Action

Field surveys and archival research at the California Historical Resources Information System's Northwest Information Center have been undertaken to determine whether any archaeological resources have been discovered on the LBNL site. The Northwest Information Center has indicated there is a "low potential for Native American sites in the project area" and thus "a low possibility of identifying Native American or historic-period archaeological deposits in the project area." Additionally, field studies conducted at various times on the LBNL site have not encountered any archaeological resources. Native American archaeological sites in this portion of Alameda County tend to be situated on terraces along ridgetops, midslope terraces, alluvial flats, near ecotones, and near sources of water, including springs. The LBNL site is situated on a steep slope adjacent to Strawberry Creek. Therefore, there is a low-to-moderate potential for Native American sites to be present on the project site (LBNL 2008). In March of 2010, archaeologists from Condor Country Consulting inspected and surveyed the study area to assess the potential for any intact archaeological sites to be present within the project area. No archaeological or historic resources were encountered other than one isolated fragment of obsidian found in a highly disturbed context on the side of a steep slope. It is probable that this is an imported item and/or deposited from the construction of Building 70A that is located upslope (Condor Country Consulting 2010).

The project site does not include any existing buildings or structures other than the Building 50 stairway. The stairway is not currently listed on the National Register of Historic Places (National Register) or the California Register of Historical Resources (State Register). The wooden stairway structure was built in the last 50 years and has been altered many times. The staircase is not exceptional in its appearance. Therefore, it is unlikely to be found eligible for the National or State Register (LBNL 2008). Other LBNL buildings located adjacent to the Proposed Action site include Buildings 50, Buildings 65, 65A and 65B, Building 70 and 70A and Building 88. None of these buildings is recorded as archaeological sites/historic

resources. Building 50 was previously evaluated and it was determined that it was not eligible for inclusion in the National Register. Buildings 65A and B are not eligible for inclusion in the National Register because they were built in 1984 and 1983 and are not over 45 years old and therefore are not eligible. Building 65 was built in 1952. Building 65 is an administrative building and has no association with any events or the lives of persons of significance in the history of this area. In addition, none of the architectural and engineering elements of these buildings embody unique or significant design characteristics. Although Buildings 70 and 70A have some associations with Nobel laureates and other prominent Laboratory scientists and researchers, much of their hands-on scientific work occurred in other research facilities. Building 88, constructed between 1958 and 1962, may be eligible for inclusion in the National Register under Criterion A and Criteria Consideration G.

Alternative 1, Cafeteria Parking Lot Site

Please refer to Proposed Action for a description of archaeological resources on the LBNL site. This alternative site is extensively disturbed by the construction of the parking lot and adjacent buildings. There are no structures on the Cafeteria parking lot that would be removed or altered by this alternative.

Alternative 2, RFS Site

This alternative site is in an area that has previously been disturbed. Building 167, which is present on the alternative site, is less than 50 years old and is therefore unlikely to be considered a historic resource. Furthermore, the construction of CRT facility would not require the removal of or alterations to Building 167. Based on a records search conducted by the Northwest Information Center (NWIC) of the California Historic Resources Information System (CHRIS), NWIC concluded that although there are no known pre-historic or historic resources present on the alternative site, due to its location near the bay shore, there is a moderate to high potential of encountering unrecorded prehistoric archaeological resources and a moderate potential of encountering historic-period archaeological resources in the proposed CRT site at RFS (**Appendix 2**).

Alternative 3, Former DHS Site

The building on the former DHS site was not listed as a historic resource either locally or at the state or federal level. There are no archaeological resources known to exist in the vicinity of the former DHS site (UC Berkeley 2009).

Alternative 4, Leased Facility on San Pablo Avenue

The leased facility site on San Pablo Avenue is developed with a warehouse type building constructed in 1956 by the Marchant Calculator Company and parking spaces. According to a records search conducted at the NWIC and consultation with NWIC staff, an architectural evaluation of the Marchant Building located on the project site was conducted in 2006, which concluded that the building was potentially eligible for the National Register of Historic Places. The building has not been recorded with the State Office of Historic Preservation at this time (**Appendix 2**). The alternative would involve alterations to a potential historic resource. There are no archaeological resources known to exist on the site.

Alternative 5, No Action

Under the No Action alternative, the existing LBNL facility in Oakland would continue to be leased and a new building would not be constructed.

4.2.6 Visual Resources

Proposed Action

The LBNL site is located on the steeply sloping hillsides of the Berkeley-Oakland hills, rising from an elevation of about 152 meters (500 feet) near the Blackberry Canyon Gate entrance to about 305 meters (1,000 feet) at the northern border of the site. The hills provide a semi-natural, vegetated open space backdrop to the LBNL facilities. The entire LBNL site cannot be viewed from any single off-site vantage point. However, portions of the LBNL site are visible from residential neighborhoods, public roadways, and public vantage points in the areas that adjoin LBNL. Views of individual buildings or groups of buildings are available from public vantage points such as Memorial Stadium, the Lawrence Hall of Science, and Grizzly Peak Road, and from nearby elevated off-site locations. The visual character of the LBNL's built environment is eclectic. Many buildings display an industrial look and utilitarian quality (LBNL 2008).

The CRT facility site is located on the hillside slope immediately north of the Blackberry Canyon Gate. The project site is currently occupied by a grove of predominantly eucalyptus trees. Partial views of the site are available from portions of the UC Berkeley campus and the City of Berkeley to the south and southeast. These views of the site are partially or fully screened by the trees on and to the south of the site. Views of the site from other directions are obstructed by topography, other buildings, and tree cover.

Alternative 1, Cafeteria Parking Lot Site

The Alternative 1 site is located to the east and upslope from the Proposed Action site. Views of this site from all locations off the LBNL site are obstructed by Building 54 to the south, Buildings 2 and 70 to the west, and by trees and intervening topography to the north and east of the parking lot.

Alternative 2, RFS Site

Views of the RFS site are primarily available from two public viewpoints: the Bay Trail along the southern end of the RFS and the Marina Bay Residential Housing complex southwest of the property (UC Berkeley 2003). Because the alternative site is located in the center of RFS and there are intervening buildings between the viewers and the alternative site, direct views of the alternative site are not available from the Marina Bay viewpoint. Although the site is visible from points along the Bay Trail, it is partially screened by existing buildings.

Alternative 3, Former DHS Site

The area surrounding the alternative site consists of a grid of city blocks developed with a dense but almost entirely low-rise mix of residential, commercial, and institutional buildings. One- to four-story buildings with street level shops and services and office or residences on upper floors predominate along arterials, while interior blocks tend to be exclusively residential. Because it is closer to downtown Berkeley, the immediate vicinity of the alternative has slightly taller buildings. The structures at the DHS site that have been demolished included a tower that was eight stories and 38 meters (125 feet) tall (UC Berkeley 2009).

Alternative 4, Leased Facility on San Pablo Avenue

The leased facility site is located in a highly urbanized area and is surrounded largely by industrial uses, although some residences are present on 67th Street and San Pablo Avenue. Given the density and nature of development in the area around the facility, persons with views of the facility are not expected to be sensitive to changes at the site.

Alternative 5, No Action

Under this alternative, OSF would continue to use the building in Oakland with no changes made to the existing building.

4.2.7 Air Quality

Proposed Action

The LBNL area is subject to air quality planning programs developed in response to both the Federal Clean Air Act (CAA) and the California Clean Air Act (CCAA). Within the San Francisco Bay Area, air quality is monitored, evaluated, and regulated by the U.S. Environmental Protection Agency (US EPA), the California Air Resources Board (CARB), and Bay Area Air Quality Management District (BAAQMD). The LBNL site is located in Alameda County, which, along with eight other counties, is within the San Francisco Bay Area Air Basin (SFBAAB or Basin).

Air pollutants typically are categorized as criteria pollutants or toxic air contaminants (TACs). The criteria pollutants are those regulated at the federal level by US EPA and at the state level by CARB. These include ozone (O_3), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), and lead (Pb). O_3 is a secondary pollutant formed during photochemical reactions with precursor pollutants. As such, O_3 is measured by assessing emissions of its precursors, reactive organic gases (ROG) and NO_x.

Air pollutants are emitted by a variety of sources, including mobile sources such as automobiles; stationary sources such as manufacturing facilities, power plants, and laboratories; and area sources such as homes and commercial buildings. Sources of criteria pollutants at the LBNL site include vehicles, heating and cooling equipment, and emergency generators.

TACs are airborne pollutants for which there are no air quality standards but that are known to have adverse human health effects. Examples include aromatic and chlorinated hydrocarbons, certain metals, and asbestos. Adverse health effects can be carcinogenic, short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles and trucks, particularly diesel-fueled vehicles; and area sources, such as farms, landfills, construction sites, and residential areas. Sources of TACs around the LBNL site include diesel buses and trucks, laboratory vent emissions, boilers in individual buildings, emergency generators, and painting operations.

Certain groups of people are considered more sensitive to adverse effects from air pollution than the general population. These groups are termed sensitive receptors. Sensitive receptors include children, the elderly, and people with existing health problems who are more often susceptible to respiratory infections and other air quality-related health problems. Residences, schools, childcare centers, hospitals,

and nursing homes are all considered sensitive receptors. Air pollution impacts are assessed, in part, based on potential effects on sensitive receptors.

Air quality in the Basin is monitored by the BAAQMD and CARB. Based on pollutant concentrations measured at monitoring stations within the Basin, the SFBAAB is classified as being in attainment or non-attainment of federal and state air quality standards. The SFBAAB is designated nonattainment for the state O_3 1-hour standard, the federal O_3 8-hour standard, the state PM_{10}, and the state $PM_{2.5}$ standards. The SFBAAB was recently designated non-attainment for the new federal $PM_{2.5}$ standard. For all other federal and state standards, the SFBAAB is in attainment or unclassified.

The Proposed Action site is located in the southwestern portion of the LBNL site and is approximately 208 meters (685 feet) from the Foothill Student Housing Complex, which is the nearest off-site sensitive receptor to the southwest of the site, and about 240 meters (790 feet) from the multi-family residences that are the nearest off-site sensitive receptors to the west.

Alternative 1, Cafeteria Parking Lot Site

This alternative would be located in the same air basin and general geographic area as the Proposed Action, and the same air quality conditions would apply to the site as are described above for the Proposed Action. The alternative site is located upslope of the Proposed Action site and is approximately 335 meters (1,100 feet) from the Foothill Student Housing Complex, the nearest off-site sensitive receptor to the southwest of the site and about 365 meters (1,200 feet) from the multi-family residences, the nearest off-site sensitive receptors to the west.

Alternative 2, RFS Site

This alternative would be located in the same air basin as the Proposed Action, and the same regional air quality conditions would apply to this site as are described above for the Proposed Action. The alternative site is located near the center of RFS and is approximately 460 meters (1,509 feet) from the nearest off-site sensitive receptors in the Marina Bay neighborhood and the residences to the northeast of I-580.

Alternative 3, Former DHS Site

This alternative would be located in the same air basin as the Proposed Action, and the same air quality conditions would apply to this site as are described above for the Proposed Action. The alternative site is about 100 meters (328 feet) from the nearest sensitive receptors, which are the apartments located at

1910 Oxford at the southeast corner of the DHS site (UC Berkeley 2009). Other nearby sensitive receptors are residences located on Hearst Avenue and on Walnut Street.

Alternative 4, Leased Facility on San Pablo Avenue

This alternative would be located in the same air basin as the Proposed Action, and the same air quality conditions would apply to the site that are described above for the Proposed Action. The alternative site is located about 30 meters (82 feet) from the nearest sensitive receptors on 67th Street and approximately 40 meters (132 feet) from the nearest sensitive receptors on San Pablo Avenue.

Alternative 5, No Action

This alternative would be located in the same air basin and general geographic area, and the same air quality conditions would apply to the site as are described above for the Proposed Action.

4.2.8 Greenhouse Gases

Proposed Action

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere and influence the earth's temperature. This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. While the emission of GHGs in general, and CO_2 in particular, into the atmosphere is not of itself an adverse environmental effect, the increased concentrations of GHGs in the atmosphere due to human activities and the associated changes in global climate, represent adverse environmental effects.

The most common GHGs are carbon dioxide and water vapor. However six gases have been identified as the principal contributors to human-induced global climate change are carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). GHGs are released into the earth's atmosphere through a variety of human activities, including combustion of fossil fuel in transportation, electrical generation, and industrial processes, and certain agricultural activities.

Efforts are underway at the international, national, state, and local levels to control the emissions of GHGs. In 2006, Assembly Bill 32 (AB 32) was signed into law by the Governor. AB 32 requires that California cap its GHG emissions at 1990 levels by 2020. This legislation requires CARB to establish a program for statewide GHG emissions reporting and monitoring/enforcement of that program. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

The Proposed Action site is undeveloped at this time. No uses that generate GHG emissions are present on the site. GHG emissions are currently generated at the OSF site in Oakland (see **Alternative 5**, **No Action** below). With the implementation of the Proposed Action, the operations that generate these emissions would transfer to the new location on the LBNL site. This change is discussed in **Section 5.0, Environmental Consequences**.

Alternative 1, Cafeteria Parking Lot Site

Because climate change is a global phenomenon, the same conditions that are described above for the Proposed Action would apply to this alternative. This site is a parking lot, a land use that does not directly generate any GHG emissions.

Alternative 2, RFS Site

Because climate change is a global phenomenon, the same conditions that are described above for the Proposed Action would apply to this alternative. The site at RFS is undeveloped at this time. No uses that generate GHG emissions are present on the site.

Alternative 3, Former DHS Site

Because climate change is a global phenomenon, the same conditions that are described above for the Proposed Action would apply to this alternative. The site was formerly occupied by a building that has been demolished recently. No uses that generate GHG emissions are present on the site at this time.

Alternative 4, Leased Facility on San Pablo Avenue

Because climate change is a global phenomenon, the same conditions that are described above for the Proposed Action would apply to this alternative. The site is developed with a building. Therefore, some amount of GHG emissions is currently associated with this site.

Alternative 5, No Action

The existing operation of OSF at its present site generates approximately 11,325 $MTCO_2e$ per year. Under the No Action alternative, these emissions would continue to occur.

4.2.9 Noise

Proposed Action

Within the boundaries of the LBNL site, ambient noise levels are generated by vehicular traffic on the road network; heating, ventilation and air conditioning equipment associated with buildings; and other stationary equipment such as pumps, cooling towers, generators, and machine shop equipment. Ongoing construction projects also raise noise levels in the vicinity of the construction sites.

Sensitive receptors are noise-sensitive locations where project construction or operational noise could be experienced and could detract from or interfere with normal activities. Certain land uses are considered more sensitive to ambient noise levels than others are. Typical sensitive receptors include residences, schools, medical facilities, parks, and outdoor recreation areas.

The Proposed Action site is located in the western portion of the LBNL site, and is flanked by Buildings 70 and 70A to the east, the Building 50 complex to the north, and Cyclotron Road, the Blackberry Canyon entrance gate, and the 88-inch Cyclotron to the west. LBNL is surrounded by a mix of land uses, including open space; institutional, residential, and commercial uses; the UC Berkeley campus; and the Tilden Regional Park. The noise sensitive receptors located off the LBNL site that are closest to the CRT facility site are students who live in the Foothill Student Housing Complex located below and about 208 meters (685 feet) to the southwest of the project site. The Greek Theater, an entertainment venue on the campus, is located adjacent to Foothill Student Housing Complex. There are also multi-family residences and the Tibetan Nyingma Institute located approximately 240 meters (790 feet) west of the Proposed Action site along Highland Place.

Noise in the project area results primarily from vehicular traffic on the road network. Noise from intermittent high-altitude jet aircraft overflights also contributes to the ambient noise levels. Measured noise levels are shown in **Table 4.0-1, Measured Noise Levels in the Project Vicinity,** and measurement locations are shown on **Figure 4.0-3, Noise Measurement Locations and Location of Sensitive Receptors**. Noise measurements are reported in A-weighted sound level or dB(A).

Data for Site 11 represents the project site. The average noise level measured at the project site during the daytime was 66 dB(A) L_{eq}, and noise levels ranged from 48 dB(A) L_{90} to 83 dB(A) L_{max}. Site 2, at the Foothill Student Housing parking lot above the housing on Cyclotron Road, represents the noise environment at that receiver location for the closest sensitive receptor to the CRT site off the LBNL site. During the daytime, the average noise level was 57 dB(A) L_{eq}, and noise levels ranged from 49 dB(A) L_{90} to 67 dB(A) L_{max}. During midday, the average noise level measured was 52 dB(A) L_{eq}, and noise levels ranged from 49 dB(A) L_{90} to 64 dB(A) L_{max}. Site 3 was at the north side of the Tibetan Nyingma Institute, representing another sensitive receptor. The average daytime noise level at this site was 48 dB(A), and

noise levels ranged from 46 dB(A) L_{90} to 57 dB(A) L_{max}. The Nyingma Institute adjoins Hearst Avenue. The south and west facades of the building and outdoor areas on the south and west sides of the building would be oriented towards the CRT construction site and are also oriented towards Hearst Avenue. Ambient noise measurements along Hearst Avenue at Highland Place near the Nyingma Institute show an average noise level of 64 dB(A), with noise levels ranging from 57 to 80 dB(A) as vehicle traffic fluctuates.

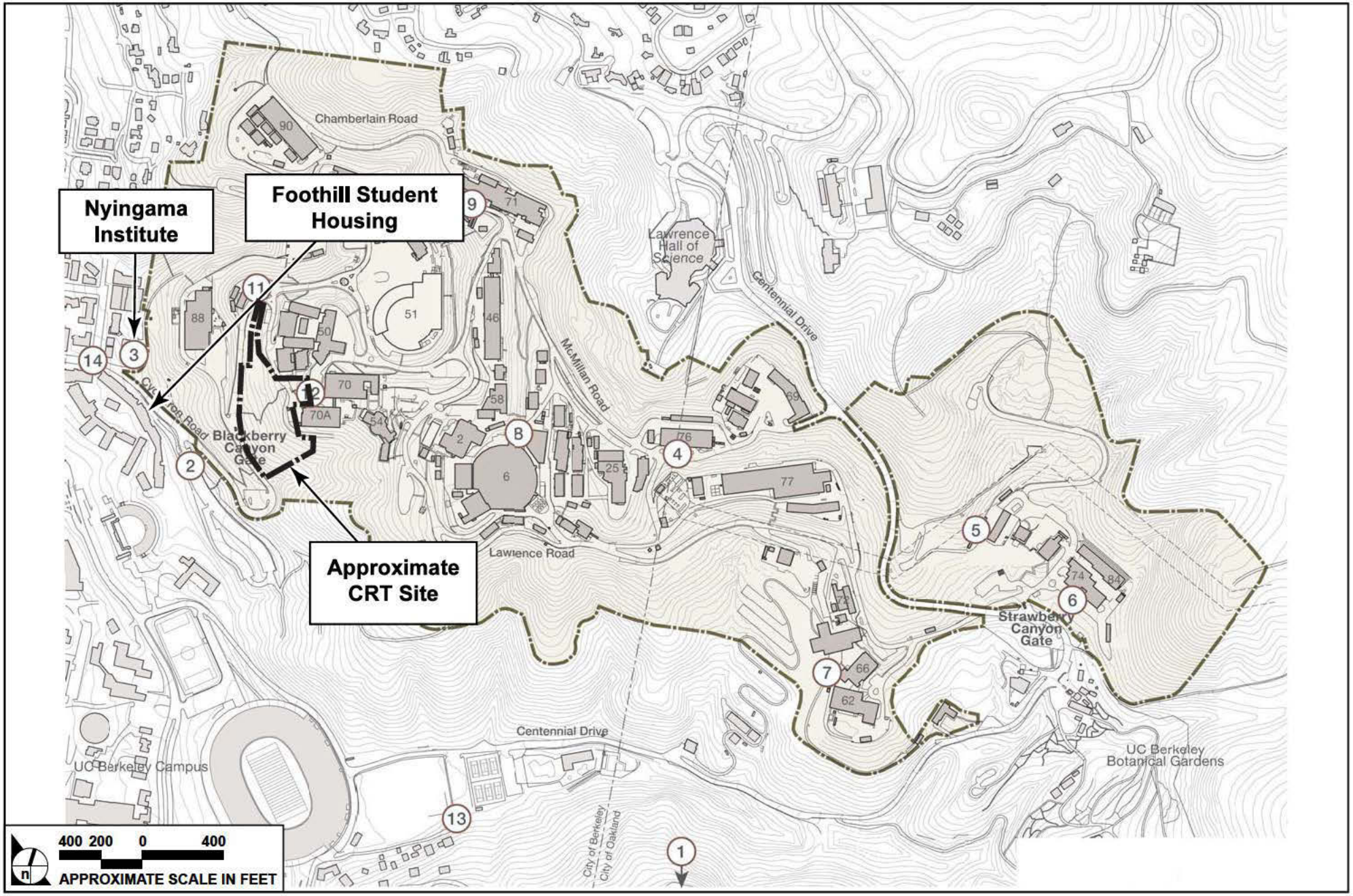
Table 4.0-1
Measured Noise Levels in the Project Vicinity

		Noise Level in dB(A)[a]			
Site No.[b]	**Measurement Location**	L_{eq}	L_{max}	L_{10}	L_{90}
Based on 15-Minute Noise Measurement Data					
1	299 Panoramic Way	46	53	NM	NM
2	Foothill Parking Lot	57	67	58	49
3	Tibetan Nyingma Institute (n. side)	48	57	49	46
4	LBNL Building 76	68	81	68	64
5	LBNK Building 85	53	72	51	46
6	LBNL Building 74	64	81	63	59
7	LBNL Buildings 62 and 63	54	71	53	45
8	LBNL Buildings 6 and 7	58	68	60	54
9	LBNL Building 71	60	74	62	46
10	LBNL Buildings 56 and 61	52	61	54	49
11	LBNL Building 65	66	83	70	48
12	LBNL Building 70A	58	73	59	50
13[c]	End of Canyon Road	58	68	60	53
14[c]	Hearst Avenue at Highland Place	64	80	55	57

a L_{eq} = equivalent steady-state noise level over a 1-hour period produced by the same noise energy as the variable noise levels during that period; L_{max} = instantaneous maximum noise level; L_{10} = noise level exceeded 10 percent of the time; L_{90} = noise level exceed 90 percent of the time.
*b Measurement locations correspond to those shown in **Figure 4.0-3**.*
c Noise measurement reported in UC Berkeley LRDP EIR, Table 4.9-3.
NM = Not Measured
Source: Environmental Science Associates 2003 and 2004; UC Berkeley 2004.

Alternative 1, Cafeteria Parking Lot Site

Please refer to noise setting information for the Proposed Action. This alternative site is located upslope, to the east of the Proposed Action site, and therefore is more than 335 meters (1,100 feet) from the Foothill Student housing and 366 meters (1,200 feet) from the Tibetan Nyingma Institute, the two nearest off-site sensitive receptors.



SOURCE: LBNL; ESA – 2007, Perkins+Will – September 2007, Impact Sciences, inc. – February 2010

FIGURE **4.0-3**

Noise Measurement Locations and Location of Sensitive Receptors

924-002-07/10

Alternative 2, RFS Site

Traffic noise on the street network and I-580 freeway dominates the noise environment at RFS; although the central portion of the RFS is distant from the roadways and adjacent industrial uses, and the ambient noise levels in this area are low. Land uses surrounding the RFS are largely industrial. A residential neighborhood, Marina Bay neighborhood, is located to the southwest of the RFS. However, this neighborhood is at least 460 meters (1,500 feet) from the alternative site, which is located near the center of the RFS. There are several intervening buildings between the alternative site and the homes in this neighborhood, and a clear line of sight is not available.

Alternative 3, Former DHS Site

In the vicinity of the alternative site, traffic noise on the street network dominates the noise environment. Along Shattuck Avenue, typical hourly average noise levels range from 68 to 71 dB(A) during the daytime and drop to about 55 dB(A) at night. The measured day/night average noise (L_{dn}) level on Shattuck Avenue in the Campus Park area was 71 dB(A) L_{dn}. Short-term measurements made along other streets in the areas adjacent to the Campus Park showed similar noise levels (UC Berkeley 2009).

Alternative 4, Leased Facility on San Pablo Avenue

Traffic noise on the street network dominates the noise environment in the vicinity of the alternative sites. Noise levels around the project site are generally high due to traffic volumes along San Pablo Avenue. The alternative site is located approximately 30 meters (82 feet) from the nearest noise-sensitive receptors, which are residences on 67th Street, and 40 meters (132 feet) from the noise-sensitive residences on San Pablo Avenue. Given the volume of traffic on San Pablo Avenue, noise levels are expected to range from 68 to 70 dB(A) during the daytime hours, dropping to 45 to 50 dB(A) at night.

Alternative 5, No Action

The OSF site is located in uptown Oakland adjacent to two major arterials. Therefore, traffic noise dominates the noise environment in the vicinity of the OSF site and noise levels are expected to range from 68 to 70 dB(A) during the daytime hours, dropping to 45 to 50 dB(A) at night.

4.2.10 Transportation and Traffic

Proposed Action

The LBNL site is located close to three regional highways: Interstate 80/580 about 5 kilometers (3 miles) to the west and State Routes (SR) 24 and 13 about 3 kilometers (2 miles) to the south. Access to I-80/580 is via

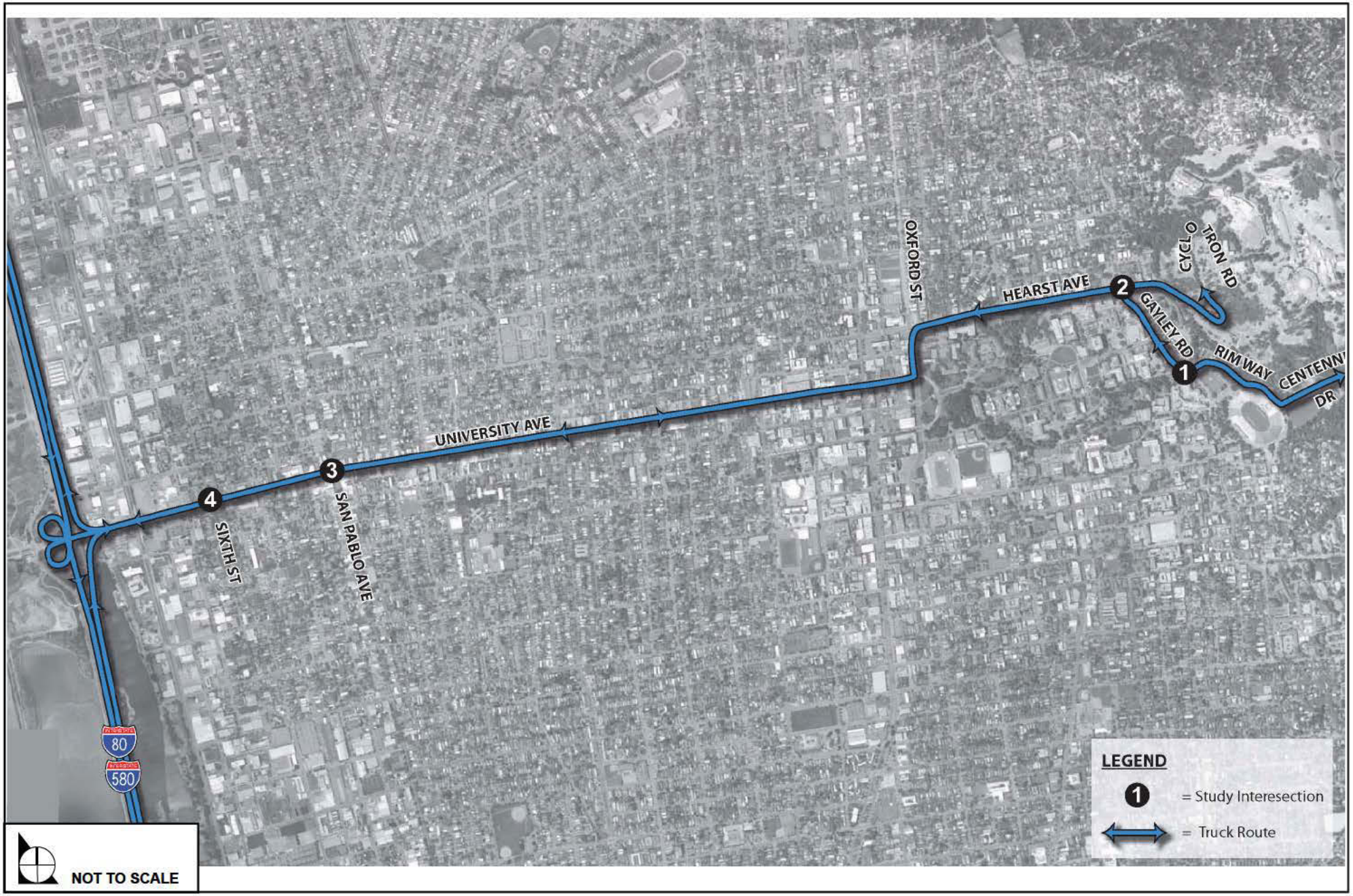
arterial roads in the City of Berkeley and Oakland, including University Avenue, Ashby Avenue, Hearst Avenue, Gayley Road, and College Avenue. Access to SR-24 and SR-13 is via Tunnel Road.

The LBNL site is served by three roadway entrances: (1) the Blackberry Canyon Gate, which is the main entrance to the site and is on Cyclotron Road, north of the intersection of Hearst Avenue and Gayley Road in the southwestern portion of the LBNL site; (2) Strawberry Canyon Gate, which is located at the eastern end of the LBNL site and is accessed via Centennial Drive; and (3) Grizzly Peak Gate, located along the northern boundary of LBNL and accessed via Centennial Drive. Internal circulation on the LBNL site is provided by an east-west roadway system that generally follows the site contours.

Traffic counts conducted in 2002 indicated that roughly 5,700 one-way vehicle trips are generated daily by the approximately 4,000 employees at the LBNL site (LBNL 2007). Approximately 40 percent of UC LBNL staff use alternative (i.e., non-single occupancy vehicle) modes of transportation, including LBNL shuttle, bicycle, Bay Area Rapid Transit (BART), and carpool.

Level of service (LOS) is a general measure of traffic operating conditions, whereby a letter grade from A (the best) to F (the worst) is assigned to roadway intersections. These grades represent the comfort and convenience associated with driving from the driver's perspective. To assess the worst-case traffic conditions, LOS is measured during morning (generally 7:00 AM to 9:00 AM) and afternoon (generally 4:00 PM to 6:00 PM) peak commute times. The LOS standard for City of Berkeley intersections is LOS D. Of the four intersections that are near the LBNL site and would likely experience Proposed Action-related traffic increases, two intersections—Stadium Rimway/Gayley Road and Bancroft Way/Piedmont Avenue—operate at LOS E and F respectively under existing conditions.

The City of Berkeley has established designated truck routes to manage the movement of construction vehicles on its streets. The designated truck routes that would be used by construction vehicles associated with LBNL projects, including the proposed project, are shown in **Figure 4.0-4, Designated Truck Routes To and From LBNL.** In 2009, UC LBNL conducted a study of the truck routes. This study found that under existing conditions, the four most congested intersections along the truck route operate at acceptable LOS (LOS D or better under City of Berkeley standards) during the AM peak hour. During the PM peak hour, however, three of the four intersections operate at unacceptable levels.



SOURCE: Fehr and Peers 2009, Impact Sciences, Inc. – February 2010

FIGURE **4.0-4**

Designated Truck Routes To and From LBNL

924-006•07/10

Alternative 1, Cafeteria Parking Lot Site

Traffic conditions for the Alternative 1 site are similar to those described above for the Proposed Action.

Alternative 2, RFS Site

The RFS site is accessible via I-80 and I-580. There are three interchanges on I-580 that provide access to the RFS–Marina Bay Parkway interchange, Regatta Boulevard interchange, and Bay View Avenue interchange. Regatta Boulevard and Frontage Road provide access to the RFS main entrance gate at 46th Street. The Regatta Boulevard interchange is about 0.56 meter (0.35 mile) from the main entrance and provides the most direct access to and from the freeway (UC Berkeley 2003). The intersection of Regatta Boulevard and Meade Street is the only major intersection between the Regatta interchange and the RFS main gate. This intersection is signalized and currently operates at an acceptable LOS.

The RFS site is served by Alameda-Contra Costa Transit District (AC Transit) bus number 71, which links the RFS to Richmond BART station, and by the AC Transit RFS bus, that provides service between RFS and the El Cerrito Del Norte BART station.

Alternative 3, Former DHS Site

The regional traffic conditions for the DHS site are similar to those described for the Proposed Action, although intersections affected by the alternative are in the area of downtown Berkeley. According to the UC Berkeley 2020 LRDP EIR, the following intersections in the City of Berkeley near the former DHS site currently operate at unacceptable conditions (LOS E or LOS F) during the morning and/or evening peak hours:

- San Pablo Avenue and Marin Avenue
- University Avenue and Sixth Street
- University Avenue and San Pablo Avenue.
- Bancroft Way and Piedmont Avenue,
- The Derby Street and Warring Street
- Gilman Street and Sixth Street intersection

The site is three city blocks away from the Downtown Berkeley BART station, and is also accessible by a number of AC Transit bus lines.

Alternative 4, Leased Facility on San Pablo Avenue

Similar to the LBNL site, the 16791 San Pablo Avenue site is accessible from several regional highways: Interstate 80/580 about 0.9 kilometer (0.5 mile) to the west or 2.6 kilometers (1.6 miles) to the south, and SR-24 about 3.3 kilometers (2.0 miles) to the east. Access to I-80/580 is via Ashby Avenue to the west and via San Pablo Avenue to the south. Access to SR-24 is via Ashby Avenue and Tunnel Road east of the alternative site. The site is approximately 1.6 kilometers (1 mile) west of the Ashby BART station, and is also accessible by six AC Transit bus lines, including 9, 72, 72R, 72M, 802, and J.

According to the Traffic Analysis prepared for the *West Berkeley Project Draft EIR*, the intersections of Ashby Avenue and San Pablo Avenue and Ashby Avenue and Seventh Street operate at LOS D under existing conditions (Wilbur Smith Associates 2010).

Alternative 5, No Action

The alternative involves continued leasing of the existing OSF in Oakland. The OSF is located in uptown Oakland at the corner of Franklin and 20th Streets, adjacent to the 19th Street Oakland BART station. The traffic on Broadway, Franklin, and 20th Streets is moderately heavy. However, all nearby intersections operate at acceptable levels of service.

4.2.11 Utilities and Waste Management

Proposed Action

The facility to be constructed under the Proposed Action would be served by existing utility providers at the LBNL site. All of the utilities that would be needed for the Proposed Action are available in the vicinity of the site.

East Bay Municipal Utility District (EBMUD) provides high-pressure potable and fire protection water at the LBNL site. On the LBNL site, water is distributed by an extensive water distribution system, which provides water not only to the buildings but also for use in cooling towers, for irrigation, and for other uses. In 2003, the total annual water consumption at the LBNL site was approximately 41.6 million gallons. Even though the total building space at LBNL has increased, water usage has declined substantially since 1990 because of water conservation measures that LBNL has implemented in the past few years (LBNL 2008).

Wastewater generated at the LBNL site is collected in a gravity-flow system that eventually discharges into the City of Berkeley's sanitary sewer system through a monitoring station located at Hearst Avenue and a second monitoring station located at Centennial Drive. The volume and quality of effluent at both

monitoring stations is monitored and evaluated for compliance with EBMUD discharge requirements. From these monitoring stations, the discharge continues down into the City's sewer system to be transported to EBMUD's north interceptor sewer and then to the wastewater treatment facility in Oakland. Effluent from the western portion of the LBNL site, including effluent from the CRT site area, flows to the Hearst Monitoring Station, from where it ties into the City of Berkeley's sewer system at City sanitary sewer sub-basin 17-013. Sub-basin 17-013 is not currently constrained during peak wet weather flows (LBNL 2008).

UC LBNL implements an extensive program focused on waste minimization and recycling. A recycling contractor collects all non-hazardous and non-recyclable solid waste generated at LBNL and transports it to a collection facility in Richmond, California, from where the waste is hauled to the Altamont Landfill (LBNL 2008). The landfill has 45,720,000 cubic yards of remaining capacity, which is expected to be available through 2029 (Department of Resources Recycling and Recovery 2010).

UC LBNL purchases electricity through the Western Area Power Administration. Electricity is delivered to LBNL's Grizzly Peak substation via the Pacific Gas & Electric Company (PG&E) transmission system. The Grizzly Peak substation consists of two DOE-owned transformers with a combined capacity of 100 MW. This substation is exclusively for LBNL use. In addition, power can be supplied to LBNL from UC Berkeley's Hill Area substation, located adjacent to the Grizzly Peak substation. The on-site power distribution system at LBNL consists of a 12.47-kV underground system with smaller substations and transformers to reduce voltage. Total electrical power consumption at LBNL in 2006 was 71,100-megawatt hours (MWh). The LBNL site also has a number of stationary and portable emergency electrical generators that are powered by diesel, gasoline, or natural gas. Implementation of the Proposed Action would require upgrades to the existing electricity infrastructure, including modifications at the LBNL Grizzly Peak substation. The electricity for the Proposed Action would be routed through the Grizzly Peak substation and transmission facilities within the LBNL site.

The natural gas supply for the LBNL site is provided by Defense Fuel Supply Center in Oregon gas and delivered by the PG&E system for heating buildings, to operate certain equipment, and for some experimental uses (LBNL 2008). The LBNL natural gas system receives its supply from a 6-inch PG&E line operating at 50 pounds per square inch gauge (psig). The point of delivery is a meter vault with automatic shut off valves near the Foothill parking lot. From the point of delivery, a 6-inch medium pressure gas main provides gas service to the LBNL site. This gas main crosses the Proposed Action site from Cyclotron Road to a point between Buildings 50D and 70A. This gas line would be relocated approximately 100 feet to the north to allow construction of the proposed facility, and new connections would be established to serve the project.

CRD owns and operates the Energy Sciences Network (ESnet) data network that provides a high-speed computer-based communication and information-sharing network for scientists working on DOE-sponsored research.

Alternative 1, Cafeteria Parking Lot Site

The existing utilities infrastructure at the LBNL site is described under the Proposed Action above. All of the necessary utilities are available in the vicinity of the alternative site.

Alternative 2, RFS Site

The RFS is connected to the City of Richmond and local utilities for water, sewer, electric power, and natural gas. EBMUD serves the RFS with one 8-inch domestic water line and two 12-inch fire main lines. These lines enter the RFS from the north, west, and east sides of the property (UC Berkeley 2008).

The Richmond Municipal Sewer District provides wastewater treatment and disposal services to the RFS. Sewer discharge from the RFS flows to the City of Richmond publicly owned wastewater treatment plant, located approximately 3-miles west on Canal Boulevard (UC Berkeley 2008).

PG&E provides electricity to the RFS through an overhead 12-kilovolt electrical line service, with both underground and aerial power lines comprising the electrical service infrastructure. PG&E also provides natural gas service to the RFS through a high-pressure gas main on South 46th Street (UC Berkeley 2008).

Beyond the basic utilities provided at the time of purchase, UC Berkeley installed additional support at the RFS as needed, such as water and sanitary sewer service for restrooms, laboratories, and research projects (UC Berkeley 2008).

On-site stormwater drainage currently flows from the north to the south at the RFS by way of open swales, culverts, and sheet flow into drainages. The storm drain system consists of two main storm drain lines located on the eastern and western sides of the RFS property. An underground line in the central portion of the RFS connects these two systems (UC Berkeley 2008).

The RFS site would require installation of ESnet infrastructure as well as major improvements to electrical transmission facilities, including installation of new power lines (using existing electrical poles or spare conduits) and a substation adjacent to the CRT building at the alternative site.

Alternative 3, Former DHS Site

EBMUD supplies water to the University-owned distribution system from its supply lines and meters along the periphery of the Campus Park. A 20-inch-diameter EBMUD water main runs along Hearst Avenue, Gayley Road, Piedmont Avenue, and Bancroft Way. A 48-inch-diameter water main runs west under Hearst Avenue and Bancroft Way, and south along Oxford Street (UC Berkeley 2009).

Campus wastewater is treated by EBMUD, which has a National Pollutant Discharge Elimination System (NPDES) Direct Discharge permit to discharge treated wastewater into the San Francisco Bay. EBMUD imposes effluent guidelines and discharge limitations on the campus via the local EBMUD ordinance and by the EBMUD discharge permit issued to the campus (UC Berkeley 2009).

The DHS site is not adequately served by high-speed and high-bandwidth networking infrastructure. In addition, the site does not have adequate electricity infrastructure, and upgrades would be needed to meet the power demands under the alternative.

Alternative 4, Leased Facility on San Pablo Avenue

The facility to be leased includes adequate services for water, wastewater, and waste disposal. The site would require installation of ESnet infrastructure as well as major improvements to electrical transmission facilities, including installation of new power lines (using existing electrical poles or spare conduits) and a substation adjacent to the CRT building at the alternative site.

Alternative 5, No Action

The alternative would continue to use the existing OSF site. The facility has adequate services and infrastructure to meet existing demands. The existing facility demands approximately 9.69 million gallons of water per year.

4.2.12 Public Services

Proposed Action

The Proposed Action site is provided public services by UC Berkeley, Alameda County, and other public agencies in the area as described below.

UC LBNL contracts for firefighting services with the ACFD, which staffs a fire station on the LBNL site. The ACFD has mutual aid agreements with other agencies, including the cities of Berkeley and Oakland

and the East Bay Regional Park District. Assistance under these agreements can be activated in the event of a major emergency (LBNL 2008).

Law enforcement services at the LBNL site are provided through a contract with the UC Berkeley Police Department (UCPD). UCPD also coordinates with the City of Berkeley Police Department and the Oakland Police Department.

The Berkeley Unified School District (BUSD) and Oakland Unified School District (OUSD) provide public elementary and secondary school services to dependents of UC LBNL personnel who live in these two communities.

The East Bay Regional Park District (EBRPD) manages a variety of properties, including regional parks, recreational areas, wilderness, shorelines, preserves, and land bank areas within Alameda and Contra Costa counties. The EBRPD regional park properties in the vicinity of the LBNL site include Tilden Park and the Claremont Canyon Preserve. The cities of Berkeley and Oakland also own and/or maintain parks in the vicinity of the LBNL site.

Alternative 1, Cafeteria Parking Lot Site

Please refer to the Proposed Action setting, above.

Alternative 2, RFS Site

UCPD provides law enforcement services at the RFS. UCPD has a mutual aid agreement with the Richmond Police Department. The Richmond Fire Department provides fire protection services for the RFS. Station 64 is the closest station and is located approximately 0.8 kilometer (0.5 mile) east of the alternative site. West Contra Costa Unified School District provides public elementary and secondary school services to school-aged dependents of employees who live in the City of Richmond, adjacent to the alternative site. The EBRPD Bay Trail lies adjacent to the southern boundary of the RFS site.

Alternative 3, Former DHS Site

UCPD provides law enforcement services to the campus, including the former DHS site, with assistance from the City of Berkeley Police Department. The BFD provides fire protection and emergency medical services to a portion of the UC property, including the alternative site. Primary response to the campus area from BFD comes from Station Number 2 at 2129 Berkeley Way. Stations 3 and 5 at 2710 Russell Street and 2680 Shattuck Avenue, respectively, offer supplemental support. The Berkeley Unified School District (BUSD) and Oakland Unified School District (OUSD) provide public elementary and secondary school services to dependents of UC LBNL personnel who live in these two communities.

Alternative 4, Leased Facility on San Pablo Avenue

The BFD provides fire protection and emergency medical services, and the City of Berkeley Police Department provides law enforcement services to the alternative site. The Berkeley Unified School District (BUSD) and Oakland Unified School District (OUSD) provide public elementary and secondary school services to school-aged dependents of employees who live near this site.

Alternative 5, No Action

Fire and law enforcement services are provided to the OSF by the City of Oakland's Fire Department and Police Department, respectively. The BUSD and OUSD provide public elementary and secondary school services to school-aged dependents of UC LBNL personnel who live in these two communities.

4.2.13 Population and Housing, Socioeconomics, and Environmental justice

Proposed Action

The Proposed Action would be located in Berkeley within the San Francisco Bay Area. There were approximately 7.3 million people estimated to live in the nine-county Bay Area region in 2010. The region's population grew at a compound rate of 0.8 percent per year from 2000 to 2010. The Bay Area also experienced substantial decreases in employment opportunities in the 2000s. The number of jobs decreased at a compound rate of –0.7 percent per year, declining from 3.8 to 3.5 million jobs in the nine-county region in 2010 (ABAG 2009). In 2003, there were 3,800 people employed at LBNL (LBNL 2007).

In accordance with guidance from Executive Order 12898, census data were examined to determine whether minority and low-income populations occur in high concentrations in the area of potential effect of the Proposed Action. To determine whether high concentrations of minority or low-income populations are present, demographic and income data for the census tracts (Census Tracts 4216, 4224, 4225, 4226) surrounding the site were compared to the same data for Alameda County as a whole. The data showed that in Alameda County, approximately 59.1 percent of the population is minority, defined as all individuals except white, non-Hispanic persons (U.S. Census Bureau 2000). Minority populations of the census tracts near the CRT facility site range from 19.7 percent to 61.3 percent non-white persons, with only one census tract slightly exceeding the County's average.

With respect to evaluation of the presence of low-income population, data regarding the median household income and percentage population below poverty line were examined. According to the 2000 Census, the 1999 median household income for Alameda County as a whole was $55,946.

Households in all but one-study area census tracts had median household incomes that were much lower than the County average. In addition, while approximately 11 percent of the County population was below the poverty line, several study area census tracts contained a higher percentage of population below the poverty line compared to the County average (U.S. Census Bureau 2000).

Alternative 1, Cafeteria Parking Lot Site

This alternative site is also located in the western portion of the LBNL site, and the regional conditions described for the Proposed Action above apply to this alternative.

Alternative 2, RFS Site

This alternative site is located in the City of Richmond within the Bay Area region, and the regional conditions described above for the Proposed Action also apply to this alternative. The area surrounding the RFS site includes low-income and minority neighborhoods, although, as noted earlier, there are no residential neighborhoods immediately adjacent to the alternative site.

Alternative 3, Former DHS Site

This alternative site is located in the downtown area of the City of Berkeley within the Bay Area region, and the regional conditions described above for the Proposed Action also apply to this alternative. To determine whether high concentrations of minority or low-income populations are present, demographic and income data for the census tracts (Census Tracts 4224, 4225, 4226, and 4229) surrounding the site were compared to the same data for Alameda County as a whole. The data showed that in Alameda County, approximately 59.1 percent of the population is minority, defined as all individuals except white, non-Hispanic persons (U.S. Census Bureau 2000). Minority populations of the census tracts near the former DHS site ranged from 29 percent to 45 percent non-white persons (U.S. Census Bureau 2000), which is less than the County average.

With respect to evaluation of the presence of low-income population, the median household income and percentage population below poverty line were examined. According to the 2000 Census, the 1999 median household income for Alameda County as a whole was $55,946. Households in all study area census tracts had median household incomes that were much lower than the County average. In addition, while approximately 11 percent of the County population was below the poverty line, all of the study area census tracts contained a higher percentage of population below the poverty line compared to the County average (U.S. Census Bureau 2000).

Alternative 4, Leased Facility on San Pablo Avenue

This alternative site is located in the cities of Berkeley, Emeryville and Oakland within the Bay Area region, and the regional conditions described above for the Proposed Action also apply to this alternative. The area surrounding the leased facility site comprises industrial uses; the nearest residential uses are located 30 meters (82 feet) away. To determine whether high concentrations of minority or low-income populations are present, demographic and income data for the census tracts (Census Tracts 4240.02, 4232, 4008, 4251) surrounding the site were compared to the same data for Alameda County as a whole. The data showed that in Alameda County, approximately 59.1 percent of the population is minority, defined as all individuals except white, non-Hispanic persons (U.S. Census Bureau 2000). Minority populations of the census tracts near the San Pablo Avenue site ranged from 51 percent to 73 percent non-white persons (U.S. Census Bureau 2000), which would be greater than the County average.

With respect to evaluation of the presence of low-income population, the median household income and percentage population below poverty line were examined. According to the 2000 Census, the 1999 median household income for Alameda County as a whole was $55,946. Households in all study area census tracts had median household incomes that were much lower than the County average. In addition, while approximately 11 percent of the County population was below the poverty line, all of the study area census tracts contained a higher percentage (13 to 28 percent) of population below the poverty line compared to the County average (U.S. Census Bureau 2000).

Alternative 5, No Action

This alternative is also located in the Bay Area region, and the regional conditions described above for the Proposed Action also apply to this alternative.

4.2.14 Construction Traffic Accidents

Accidents are discussed in various different sections of this EA. For accidents due to earthquakes and landslides, see **subsections 4.2.1** and **5.1, Geology and Soils**. For information about risks from hazardous materials and wildland fires, and a description of emergency response, see **subsections 4.2.3** and **5.3, Hazards, Human Health, and Accidents**. Traffic accidents related to construction trucks are discussed below.

Proposed Action

Accident data for collisions involving trucks along the designated truck route in Berkeley between 2002 and 2004 was obtained from the Department of California Highway Patrol (CHP) and analyzed.

Table 4.0-2 shows roadway names, segment lengths, total number of collisions involving trucks over the three year period of analysis, average number of accidents per year, and the number of accidents where fault was attributed to the truck driver. As shown in the table, the total number of accidents involving trucks is low and the number of accidents where fault was attributed to the truck driver is even lower.

Table 4.0-2
Collisions Involving Trucks Along the Designated Truck Route (2002–2004)

Roadway	Length of Segment	All Accidents		Truck Driver at Fault	
		Total	Per Year	Total	Per Year
University Avenue (Oxford St. to I-80)	2.19	17	5.7	10	3.3
Oxford Street (University Ave. to Hearst Ave.)	0.12	1	0.3	1	0.3
Hearst Avenue (Shattuck Ave. to Highland Pl.)	0.72	1	0.3	1	0.3

US Department of Energy 2010

Alternative 1, Cafeteria Parking Lot Site

The alternative would involve the same truck route for construction trucks as those described above for the Proposed Action.

Alternative 2, RFS Site

The alternative site is close to I-80/580. Construction trucks stop at only one major intersection, Syndicate Street and Meade Street, between the RFS main gate and the Regatta interchange.

Alternative 3, Former DHS Site

Trucks from the Alternative 3 site would use the same truck route as the trucks from the LBNL site. Therefore, collision data presented in **Table 4.0-2** would apply to the former DHS site.

Alternative 4, Leased Facility on San Pablo Avenue

The Alternative 4 site is located approximately 0.9 kilometer (0.5 mile) from Interstate 80/580. Trucks from the Alternative 4 site would use access to I-80/580 via San Pablo Avenue and Ashby Avenue. According to the *West Berkeley Project Draft EIR*, the intersections of Ashby Avenue and San Pablo Avenue and Ashby Avenue and Seventh Street operate at LOS D under existing conditions (Wilbur Smith Associates 2010).

Alternative 5, No Action

There would be no construction trucks associated with the No Action Alternative.