CHAPTER 2
SUMMARY

2.1 PURPOSE

This EIR evaluates the proposed 2014 LRDP for the RBC site. To determine specific physical impacts that could reasonably be expected from development of the 2014 LRDP, this EIR includes an Illustrative Development Scenario that represents a reasonable iteration of RBC site development under the proposed 2014 LRDP implementation.

If approved, the proposed 2014 LRDP would provide guidance for continuing and projected development and activities at the RBC site through 2050. Under the proposed 2014 LRDP, the total research and support space area at the RBC site would comprise up to approximately 5.4 million square feet. The 2014 LRDP does not assume an increase in space at specific time periods. Rather, it assumes that development would occur as specific LBNL and UC Berkeley research and development needs and market conditions warrant. The average daily population (adp) of the RBC site would increase to approximately 10,000 through 2050.

2.2 PROJECT LOCATION

The approximately 134-acre RBC site is at 1301 South 46th Street in the South Shoreline area of the City of Richmond, approximately 5 miles northwest of the UC Berkeley campus and the LBNL site in Berkeley. The RBC site is composed of two University-owned parcels: a 109.8-acre RFS parcel composed of 96.8 acres of uplands and 13 acres of Western Stege Marsh and a transition zone, and a recently acquired 24.0-acre developed parcel along Regatta Boulevard immediately west of the RFS upland area.[2] The University also owns two other parcels in Richmond that comprise tidal lands and open waters in the San Francisco Bay. Those two parcels are 46.1 and 15.6 acres and would not be part of the RBC.

The proposed RBC property is bounded on the west by a PG&E service station, on the north/northwest by Regatta Boulevard, on the northeast by Meade Street, on the east by South 46th Street, and on the south by the San Francisco Bay. Interstate 580 (I-580) runs parallel to Meade Street along the northeastern boundary of the RBC site.

Land uses surrounding the RBC site include industrial and office uses, a major interstate freeway, and low- to medium-density residential neighborhoods. Regatta Boulevard, along the northern/northwestern boundary of the RBC, is adjacent to a railroad spur and a business complex developed with one- to two-story buildings. Bio-Rad Laboratories, a private research equipment manufacturing company, is immediately west of the RBC site. The adjacent property to the east is the location of former chemical production operations previously owned by several entities, including Stauffer and Zeneca, and is currently owned by Cherokee Simeon Venture I, LLC.

The Marina Bay residential neighborhood, across Meeker Slough and southwest of the RBC site, consists of a mix of multi- and single-family residences. Low- and medium-density residential uses are across I-580, north of the Meade Street boundary of the RBC site.

[2] The two RBC parcels total about 134 acres; however, the city-owned 2.7-acre Regatta Boulevard right-of-way between the Regatta and Richmond Field Station parcels is included in the RBC land use map for the purposes of this analysis. The University is working with the City of Richmond to acquire that roadway parcel and, in return, to provide the City with right-of-way for Regatta Boulevard on the western boundary of the proposed campus. The resulting acreage within the Richmond Bay Campus would remain approximately 134 acres following the proposed realignment of Regatta Boulevard.

2.3 PROJECT DESCRIPTION

The proposed project is development of a University campus at University properties in Richmond in accordance with the proposed 2014 LRDP.

The proposed 2014 LRDP addresses sustainability, land use, access and circulation, utilities and infrastructure, and open space and landscaping. Development and operational activities pursuant to the proposed 2014 LRDP include construction, development, and demolition projects and operational, research, and maintenance activities through the planning year 2050. The proposed LRDP provides for up to 5.4 million square feet of new research, development, and support space at the RBC site and a population at buildout of approximately 10,000. The proposed project includes construction, expansion, or improvement of utility infrastructure and roadway improvements. Past activities have resulted in the deposition of chemical contaminants affecting both soil and groundwater at the part of the proposed RBC site comprised of portions of the University's RFS currently under an investigation and cleanup order issued by the DTSC. The proposed project includes management of these contaminants in accordance with a proposed RAW, including a soil management plan, contingent upon DTSC approval, or in accordance with the existing DTSC investigation and cleanup order for the RFS. These actions are described in detail in Section 3.9 and are evaluated in this EIR for their environmental effects in Chapter 5.

Planning principles in the proposed LRDP feature preservation of the site's important natural open spaces, including the marsh and coastal grasslands. The site plan organizes development into distinctive groupings to promote a sense of community within the site, particularly during initial phases of campus growth. The proposed LRDP includes policies that would guide building design and configuration to maximize opportunities for informal interaction between occupants.

Building heights across the RBC are expected to vary, with lower buildings at the Bay-facing edge and taller buildings farther inland. Four- and five-story buildings are expected to be a common building module, with heights of 100 feet for a five-story building with tall floor-to-floor heights that allow building systems to be easily altered as laboratory uses change. Campus "neighborhoods" may also feature iconic buildings that help establish a sense of place. An example would be Sather Tower (the Campanile) at UC Berkeley that is 303 feet high.

The proposed 2014 LRDP demonstrates commitment to sustainability through site design, building design, and infrastructure. As the RBC site is developed, the campus itself would be open to the community, providing community resources such as auditorium, exhibit, and event space for educational programs. The proposed 2014 LRDP describes and highlights the multiple connections to the RBC site by road, bicycle, and pedestrian path, and it incorporates a robust transportation demand management system to facilitate site access.

The RBC site is in the Southern Gateway and Regatta/Marina Bay change areas of the City of Richmond's South Shoreline Specific Plan Area, envisioned by the City as a revitalized hub of innovation. The proposed RBC 2014 LRDP emphasizes connectivity beyond the site and the importance of the campus as a catalyst for its vicinity.

2.3.1 Anticipated Research Programs

In the near term, existing programs at the site in sustainable transportation and earthquake engineering, among others, will continue; the site will also continue to house important collections of the University library and UC Berkeley museums. New programs under consideration may establish the campus as a hub of joint research in advanced manufacturing and energy storage. In addition, the programs at the RBC will maintain a close connection to the research conducted on the main campuses of LBNL and UC Berkeley. The RBC will strengthen

opportunities for partnerships with private industry. In the longer term, the RBC research would be likely to span energy, environmental sciences and technology, computing sciences, nuclear and particle physics, engineering and materials sciences, chemical sciences, accelerator sciences, climate sciences, and other disciplines. This research would be done on a scale that would be housed in buildings such as those described in Section 3.7, Illustrative Development Scenario. UC Berkeley expects that student research and teaching programs would be housed at the site as part of the educational mission of the campus.

2.3.2 Campus Population Projections

The University projects that the campus population would increase incrementally over time as the RBC is developed over the approximately 40-year planning period of the 2014 LRDP, from approximately 300 in 2012 to approximately 10,000 in 2050.

2.3.3 Building Space Projections

Table 2-1, LRDP Building Space Projections, summarizes the existing building space and the projected building space on the RBC at full 2014 LRDP implementation. Total building space on the RBC is projected to increase from approximately 1,050,000 gsf currently to 5,400,000 gsf at the 2014 LRDP planning horizon year.

Table 2-1
LRDP Building Space Projections

LRDP Use	Existing (2012)	Proposed (2050)	Change
Research, Education, and Support			
Existing Space	1,050,000 gsf	300,000 gsf	-750,000 gsf
New NRLF Space		350,000 gsf	350,000 gsf
New Research, Education, & Support Space		4,750,000 gsf	4,750,000 gsf
Total	**1,050,000 gsf**	**5,400,000 gsf**	**4,350,000 gsf**

gsf Gross square feet
NRLF Northern Regional Library Facility

Of the existing 1,050,000 gsf built space, about 750,000 gsf would be demolished and about 300,000 gsf would be retained. The retained space would include the US Environmental Protection Agency (EPA) building (46,000 gsf) and the Northern Regional Library Facility (NRLF) (254,000 gsf). The new building space would include about 350,000 gsf for the expansion of the NRLF and about 4,750,000 gsf of research, education, and support facilities for occupancy by LBNL, UC Berkeley, and partner institutions.

2.3.4 Sustainability

The University envisions the RBC being a showcase of sustainable design and operations to motivate and inspire staff, the community, the nation, and the world. The RBC would assert and enhance the University's reputation as a hub of energy efficiency research and best practice. RBC facilities would demonstrate building efficiency technology innovations developed by the University and its industry partners in a fully functional laboratory environment.

In August 2011, the University updated its UC Sustainable Practices Policy[3] that set goals to advance environmental practices for both construction and operation in eight areas: green building, clean energy, transportation, climate protection, sustainable operations, waste reduction and recycling, environmentally preferable purchasing, and sustainable food service. All projects at the RBC would meet or exceed the goals defined in this, or any successor, UC sustainability policy.

In May 2011, DOE approved DOE Order 436.1, which defines requirements and responsibilities for managing sustainability in DOE facilities. In addition to satisfying the UC sustainability policy, all DOE-funded projects at the RBC also would meet or exceed the goals defined in this DOE Order.

Energy

Physical development at the RBC would incorporate principles of energy efficiency in all capital projects, renovation projects, operations, and maintenance within budgetary constraints. If the type of facility, such as a laboratory or data center, is not required to meet code requirements for energy consumption, the project would be designed to meet specific energy and carbon performance metrics such as those defined by the "Labs21" (DOE and EPA), "Smart Labs" (UC Irvine), or similar successor programs.

Water

To minimize water use to the extent practicable, the RBC would implement measures such as installing water-efficient landscaping and drip or other efficient irrigation systems, using water-efficient fixtures in new construction, and capturing rainwater and stormwater for irrigation.

Municipal Solid Waste

The RBC would strive for zero waste by creating a robust on-site recycling program for diverting municipal solid waste from landfills.

Materials

Building materials would be selected to reduce embodied energy, maximize building lifespan, and be recyclable or reusable. Material use overall would be minimized, whether in buildings or in other site operations (e.g., paper) and recycled wherever practicable. Materials would be locally sourced and from renewable sources to the degree feasible, including re-used and recycled materials from structures proposed for demolition.

Transportation

In addition to providing shuttle access improvements, the RBC would implement a Transportation Demand Management (TDM) program including alternate mode use incentives, such as discounted transit passes, parking cash-out, Guaranteed Ride Home, and flexible car-share programs.

Landscape

The RBC would support bio-diversity and habitat conservation through using native plant materials wherever possible, using low-impact development design techniques and Bay-Friendly landscape design (see www.stopwaste.org), making stormwater management a site feature, and maintaining natural open spaces.

[3] http://www.universityofcalifornia.edu/sustainability/policy.html

2.3.5 Land Use Plan

The proposed 2014 LRDP identifies two land use designations to form the pattern of development at the RBC: (1) Research, Education, and Support; and (2) Natural Open Space. Definitions for each land use designation are provided below. The land use plan also includes realigning Regatta Boulevard to the western edge of the RBC site.

2.3.6 Research, Education, and Support

The Research, Education, and Support land use designation applies to project site areas that are either currently developed with facilities that would remain in their present form or be expanded, or that would be developed with new facilities. This land use would include approximately 107.6 acres of the RBC site, which is sufficient to meet projected program needs. The types of facilities that would be allowed in designated Research, Education, and Support areas include:

- Laboratory, classroom, office, and administration buildings for researchers, faculty, postdocs, students, and non-University public and private entities.
- Product and process development space for private sector startups, small businesses, and industry counterparts that are synergistic with UC Berkeley and LBNL research areas.
- Support infrastructure and facilities for operations, transportation, utilities, renewable power generation, firefighting, security, safety, hazardous materials management, and corporation yard uses, including vehicle and materials shops and storage. Support facilities for specialized research programs such as plant and animal research facilities, greenhouses, and clinical spaces.
- Community outreach and education resources, including exhibit, lecture and event spaces, and conference facilities and meeting rooms focused on public education.
- Amenities such as dining, short-term accommodation facilities (for visiting researchers), retail, and recreation facilities.
- Transportation-related facilities including parking lots and structures, bus and shuttle stops, and roadways and circulation pathways. Parking structures may house parking administration offices, bicycle support facilities, and utility structures such as distributed central plants.
- Developed open spaces that would be usable by the campus population and visitors, ranging from courtyards, terraces, and quad-like spaces, to walkways, tree groves, and recreational fields. Existing non-native landscaping, such as eucalyptus trees, may be removed and replaced. Open spaces in this zone may be paved or landscaped, with or without seating or other site furnishings. They would range in scale from larger areas for outdoor gatherings to smaller spaces for small group interaction or individual reflection. Stormwater would be managed in these zones with swales and other landscaping. Small structures such as pavilions or overlook platforms may be placed in these areas.
- Transition zones would buffer site buildings from the natural open space areas allowing for maintenance access and minimizing the transference of non-native species or noise or light intrusion. These buffer zones would not allow permanent structures within 25 feet of the natural open space areas. Paving would be pervious wherever practicable and any planting would consist of native or non-invasive species.

2.3.7 Natural Open Space

The RBC site includes natural areas such as the Western Stege Marsh, and coastal grasslands. Human engagement and disruption to these spaces would be limited, with the intent to protect, restore, and maintain these resources in their natural condition. Activities would be limited to

interpretation, education, maintenance, and research. Improvements in this zone would be limited to minor access roads for maintenance vehicles and limited boardwalks or pathways, consistent with conservation goals. Approximately 25 acres would be designated Natural Open Space to encompass those natural areas that the University plans to protect from development and maintain in their natural condition.

2.3.8 RFS Contamination

Historical chemical manufacturing operations at the California Cap Company and industrial operations at neighboring properties released or deposited chemicals onto the uplands, marsh, and transition areas of the RFS site. Under DTSC oversight, the University has undertaken investigation of those contaminated media over several years. In connection with development under the LRDP, the University would conduct environmental actions to ensure there are no unsafe or unwarranted exposures to historic contaminants at the RBC site from former operations at the RFS. Because these actions will be concurrent with the development of certain portions of the RBC site, they are considered part of the proposed project and would be implemented in concert with development under the 2014 LRDP.

The actions would be conducted pursuant to a proposed RAW establishing the remedy for certain portions of the project site that are defined as developable and designated for Research, Education, and Support land use in the 2014 LRDP, if approved by DTSC, or pursuant to the existing DTSC investigation and remediation order that currently applies to those portions of the RBC site. The RAW also includes the remedy for groundwater for the entire RFS portion of the RBC site.

The remedy would include site-wide prescriptive requirements consisting of land use controls: deed restrictions and a soil management plan. The remedy would also include specific actions: soil excavation at an area with mercury contamination from historical production of mercury fulminate, soil excavation at select locations with polychlorinated biphenyl (PCB) contamination, and groundwater remediation at Building 280B. Remediation of groundwater impacted by TCE originating from the adjacent former Zeneca property will be addressed under the cleanup order of the adjacent former Zeneca site under the DTSC Site Investigation and Remediation Order (IS/E-RAO 06/07-005). The soil excavation areas are in the southern portion of the site, while the groundwater remediation would occur in the north-central portion of the RBC site. Continued investigation within the Natural Open Space area will continue under the DTSC Docket No. IS/E-RAO 06/07-004 for the Richmond Field Station (DTSC Order).

2.4 PROJECT NEED AND OBJECTIVES

The LBNL main site is in the Berkeley hills on approximately 202 acres of UC land. The main site comprises approximately 1.6 million gsf in permanent facilities and temporary trailers. Main LBNL site structures are at full occupancy. LBNL currently leases approximately 371,100 gsf of commercial property in eight off-site locations and occupies an additional 47,333 sf of research and administration space on the UC Berkeley campus. The University determined that an additional campus site could accommodate future growth of existing or new LBNL and UC Berkeley programs.

LBNL and UC Berkeley have determined that co-location of UC Berkeley with LBNL at the RBC site would benefit both institutions. The histories of UC Berkeley and LBNL have been intertwined since the founding of the Laboratory by Ernest Orlando Lawrence in 1931, and both have richly benefited from co-location and synergies at their existing sites in Berkeley. Hundreds of UC Berkeley faculty members hold joint appointments at LBNL; many UC Berkeley

undergraduate and graduate students do research at LBNL as part of their degree programs and for employment. The partnership helps both institutions recruit and retain top students and scientists from around the world. The RBC would further build that synergistic relationship for the benefit of both LBNL and UC Berkeley and create resiliency through research partnerships and engagement beyond traditional university bounds.

The proposed 2014 LRDP provides land use designations and identifies developable area to support new research and educational initiatives. It creates a framework to support program expansion through 2050.

The University's vision for the RBC is that it would be "A state-of-the-art, inspirational, sustainable place to produce world-class collaborative science for healthy living and sustainable communities."

The purpose of the new campus and the associated LRDP is to support existing or new LBNL and UC Berkeley program growth; to address constraints on locating new research activities at the LBNL main site; to achieve the UC Berkeley's 2002 working paper goal for creating a premiere research facility supporting and complementing UC Berkeley teaching, research, and public service programs at the Richmond property; to reduce UC Berkeley and LBNL fiscal and programmatic costs related to leasing space and dispersed programs; and to allow for successful facilities development for LBNL, UC Berkeley, and other public and private entities in a manner that supports LBNL and UC missions in a time of funding constraints and that continues their history of successful scientific collaboration.

To accomplish the purpose and need, the University has these project objectives. The project should:

- Be within an approximately 20- to 25-minute commute from the existing LBNL main entrance at Blackberry Gate on Hearst Avenue; or an approximately 20 minute commute from UC Berkeley's main entrance at Oxford and University Avenue.
- Have development capacity for approximately 5.4 million gsf of laboratory, office, and support facilities and related utility and transportation infrastructure to support the University's research, teaching, and public service mission.
- Be in a safe and welcoming community with a positive civic expression of interest in development of the site.
- Be readily accessible to a variety of modes of public transportation, inclusive of local buses, mass transit (BART, Amtrak, and AC Transit), and shuttle services, and allow safe bicyclist access from designated bicycle routes.
- Allow for electrical, natural gas, and water utilities for the lowest possible cost.
- Allow for establishment of a design framework for development of a state-of-the-art research campus that will be the location of choice for internationally recognized researchers.
- Foster synergy and collaboration between UC Berkeley and LBNL in and across disciplines and institutions in both the public and private sectors.
- Provide sustainable land use and circulation patterns that maximize density to reduce overall building footprints and conserve open space, and maximize bicycle, pedestrian and shuttle services and allow for placement and massing of buildings to maximize shared views.

- Facilitate efficient constructability of facilities (buildings, parking structures, bridges, etc.), infrastructure development (roads, underground utilities, pedestrian walkways, etc.), and open space.
- Foster connectivity with the surrounding community.
- Leverage capital investment for environmental stewardship.

2.5 AREAS OF CONTROVERSY KNOWN TO THE UNIVERSITY

According to Section 15123 of the CEQA Guidelines, an EIR shall identify "known areas of controversy to the lead agency, including issues raised by agencies and the public." For the 2014 LRDP, the issues most frequently raised during scoping involved: (1) increasing development among or near sensitive natural communities, and (2) developing in or nearby an area with a history of hazardous materials use and contamination.

Specific areas of controversy raised in NOP comments include:

- Potential impacts to wetlands, including impacts to Western Stege Marsh
- Potential impacts to remaining bay grass habitats and their dependent species
- Impacts from previous uses related to the continued remediation of hazardous materials, and potential hazards to construction and operation of the RBC.
- Impacts to the existing transportation network, including local intersections and transit systems.
- Impacts to the Bay Trail and nearby parks, open space, and recreation areas.
- Applicability of local plans and policies

The EIR includes discussion of these and related areas of controversy. Each resource section in Chapter 4 includes a summary of relevant NOP comments and analysis of each resource area addressing these comments. Mitigation measures, where necessary to address potential impacts, are identified.

2.6 ALTERNATIVES

CEQA requires that an EIR include an evaluation of the comparative effects of "a reasonable range of potentially feasible alternatives." One primary criterion for selecting such alternatives is that they "would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines Section 15126.6(a)). The range of alternatives is governed by the "rule of reason" that requires the EIR to analyze only those alternatives necessary to permit a reasoned choice (CEQA Guidelines Section 15126.6(f)). Evaluation of a No Project Alternative and identification of an environmentally superior alternative are required. The significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the proposed project (CEQA Guidelines Section 15126.6(d)).

Chapter 6 of this EIR considers a full range of alternatives. Alternatives that were considered infeasible and not studied in detail are briefly addressed. The 2014 LRDP alternatives analyzed in detail in Chapter 6 are described in the subsections that follow.

2.6.1 Alternative 1: Alternate Development Program

Under the Alternate Development Program, the 2014 LRDP would be modified to include a future scientific facility with certain unique features, characteristics, and utility demands. Even

though this facility would be included in the modified LRDP, the total occupiable space on the RBC would increase in a manner similar to the proposed project, from approximately 1,050,000 gsf currently to 5,400,000 gsf at full implementation. The same amount of existing occupiable space as under the proposed project would be demolished and retained. The campus population would increase in the same manner as the proposed project from approximately 300 in 2012 to approximately 10,000 in 2050. Under this alternative, approximately 108 acres of the upland parcels on the RBC would be developed, and approximately 25 acres of the upland parcels would be designated as natural open space. Land uses under this alternative would be the same as those under the proposed project.

2.6.2 Alternative 2: Reduced Growth Program

Under the Reduced Growth Program, the 2014 LRDP would be revised to reflect a smaller RBC building program as compared with the proposed LRDP. The amount of occupiable space under the Reduced Growth Program alternative would increase from 1,050,000 gsf currently to 3,600,000 gsf at full implementation of the 2014 LRDP. The total site population would increase from the current population of 300 to an estimated 8,400 at full implementation. Under this alternative, approximately 108 acres of the upland parcels on the RBC would be developed, and approximately 25 acres of the upland parcels would be designated as natural open space. Land uses under this alternative would be the same as those under the proposed project but the density of development within the developed area would be lower.

2.6.3 Alternative 3: Alameda Point Alternative

Under the Alameda Point Alternative, the new campus would be developed in the City of Alameda at Alameda Point (a portion of the former Naval Air Station [NAS] Alameda). The Alameda Point site consists of approximately 124 acres. Development would be guided by an LRDP that would provide for the development of 5,400,000 gsf of occupiable building space at full implementation of the LRDP. The campus population would be approximately 10,000 in 2050. Development at this location would be guided by planning principles and objectives similar to those identified for the proposed project. Under this alternative, almost all 124 acres would be developed. Figure 6-1 shows the development footprint for this alternative.

2.6.4 Alternative 4: No Project Alternative

State CEQA Guidelines require consideration of a No Project Alternative. The No Project Alternative would posit that the 2014 LRDP would not be adopted for any site. The amount of building space and the employee population at the proposed RBC site would remain at their current levels.

Should any development activities be proposed by UC Berkeley or LBNL at the RBC site, any required CEQA documentation would be prepared on a project-by-project basis.

2.7 IMPACT SUMMARY

Table 2-2 on the following pages summarizes the impacts and mitigation measures for each environmental resource. Table 2-3 summarizes the environmental protection practices that could be implemented to reduce the magnitude of less than significant impacts.

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
AESTHETICS AND VISUAL QUALITY			
LRDP Impact AES-1 Development under the 2014 LRDP could substantially degrade the existing visual character and quality of the RBC site and its surroundings.	S	**LRDP MM AES-1:** The University shall develop and implement a Physical Design Framework that protects the visual quality of both the on- and off-campus environments through provisions that address building scale, materials, and color schemes. The Physical Design Framework shall include best management practices and procedures for avoiding or minimizing aesthetic nuisances in demolition, construction, and operational phases of the project. Design review processes for planning of new buildings and development shall be clearly articulated and followed throughout the life of the project. Increased RBC scale and density would be addressed in a number of ways through the Physical Design Framework and subsequent plans: buildings would be restricted in height and height zones would further restrict heights in certain locations. Building facades would be broken up by architectural and design features so as to minimize the appearance of mass and bulk. Reflective material would be restricted, which, would minimize the appearance of the new buildings particularly at greater distances. Trees and other landscaping features would be used to further break up, obscure, or minimize RBC development. Aesthetically objectionable appurtenances such as stacks, machinery, tanks, and HVAC systems on top of buildings would be sheltered from view wherever practical. Demolition debris and long-term construction supplies and equipment would be stored such that – to the extent practicable – they would not be visually intrusive from off-site viewpoints.	LTS
LRDP Impact AES-2 Development under the 2014 LRDP would not adversely affect any scenic vistas at the RBC site and its vicinity.	LTS	None required	LTS
LRDP Impact AES-3 Development under the 2014 LRDP would create new sources of light and glare that would not adversely affect regional day or nighttime views.	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
AIR QUALITY			
LRDP Impact AIR-1 Criteria pollutant emissions associated with the construction and demolition activities under the 2014 LRDP would not violate an air quality standard or contribute substantially to an existing or projected air quality violation.	LTS	None required	LTS
LRDP Impact AIR-2 Operational activities associated with development under the 2014 LRDP would result in criteria pollutant emissions that would exceed Bay Area Air Quality Management District California Environmental Quality Act thresholds and therefore potentially violate an air quality standard or contribute substantially to an existing or projected air quality violation.	S	**LRDP MM AIR-2:** When the University has developed 1,000,000 square feet of building space on the RBC site, before approving the construction of another building, the University shall prepare and implement an operational emissions minimization program that will be composed of campus-wide programs to minimize emissions from mobile and area sources, and project-specific emissions control measures, based on project-specific analysis, to minimize emissions from area and stationary sources. <u>Campus-wide Control Measures</u> Campus-wide programs would include, but not be limited to, the following: • Implement an enhanced transportation demand management program to minimize vehicular traffic. The transportation demand management program shall include the continued implementation of existing transportation demand management measures such as provision of preferential carpool/vanpool parking; secure bike parking; showers and changing facilities; transit subsidies Guaranteed Ride Home Program; and information to employees and students regarding alternative transportation modes. The transportation demand management program will be expanded, following an evaluation of campus population and trip generation, to incorporate additional measures such as car share services; free transit passes; parking cash-out; daily parking charge; employee telecommuting program; compressed work schedules; infrastructure that allows employees to interact or conduct meetings and business without traveling; and a dedicated transportation coordinator. • Convert campus fleet to low-emission, alternative fuel, and electric vehicles over time. • Use electric equipment for landscape maintenance.	SU

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		• Implement an educational program for faculty and staff and distribute information to students and visitors about air pollution problems and solutions. • Develop centralized utilities such as a central plant (in place of individual boilers in buildings). <u>Stationary and Area Source Control Measures</u> When the University has developed 1,000,000 square feet of building space on the RBC site, if and when a specific building project is proposed that would add new stationary or area sources of emissions to the RBC site, the University will conduct a project-specific air quality impact assessment. If significant impacts are identified, project-specific mitigation measures will be implemented, which would include, but not be limited to, the following: • Select solar or low-emission boilers. • Select low-emission cooling towers. • Other control measures determined appropriate for the specific project based on project-specific analysis.	
LRDP Impact AIR-3 Construction and demolition associated with development under the 2014 LRDP would not expose people to substantial levels of toxic air contaminants or expose sensitive receptors to substantial pollutant concentrations in excess of the relevant Bay Area Air Quality Management District California Environmental Quality Act thresholds.	LTS	None required	LTS
LRDP Impact AIR-4 Operational activities associated with development under the 2014 LRDP would expose people to substantial levels of toxic air contaminants or expose sensitive	S	**LRDP MM AIR-4a:** Implement LRDP MM AIR-2 to minimize the operational emissions of fine particulate matter ($PM_{2.5}$) from mobile and stationary sources and toxic air contaminant emissions from on-site stationary sources. **LRDP MM AIR-4b:** To reduce the effects from RBC laboratory emissions of formaldehyde and chloroform, the University shall implement one of the following measures in conjunction with every	SU

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
receptors to substantial pollution concentrations in excess of the relevant Bay Area Air Quality Management District California Environmental Quality Act thresholds.		laboratory project that involves the use of these chemicals: • Implement one or more emission control technologies on laboratory fume hoods or stacks. Controls will be limited to portions of the laboratory that involves the use of formaldehyde and chloroform. Controls will be selected specific to the chemical emissions to be controlled (formaldehyde or chloroform or both chemicals), and in the case of laboratory stacks, may include, as appropriate, activated carbon filters, scrubbers, biofilters, flares, catalytic converters, cryogenic condensers, vapor recovery systems, and thermal oxidizers. • Demonstrate that the project's use of formaldehyde and chloroform will be at least 10 percent below that assumed for the LRDP human health risk assessment. In the event that neither measure can be implemented, the laboratory project shall demonstrate by preparing a new human health risk assessment that the maximum acute hazard from project emissions, in conjunction with existing site emissions and future emissions under the 2014 LRDP, will not exceed a hazard index of 1.0.	
LRDP Impact AIR-5 Development under the 2014 LRDP would conflict with or obstruct implementation of the applicable air quality plan.	S	Implement LRDP MM AIR-2	SU
LRDP Impact AIR-6 Development under the 2014 LRDP would not create objectionable odors affecting a substantial number of people.	LTS	None required	LTS
LRDP Impact AIR-7 Development under the 2014 LRDP would not create a carbon monoxide hotspot, an area where the carbon monoxide concentration would exceed the state ambient air quality standards.	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
BIOLOGICAL RESOURCES			
LRDP Impact BIO-1 Development under the 2014 LRDP would not have a substantial adverse effect on special-status plant species.	LTS	None required; nonetheless LRDP MM BIO-5 would reduce any potential impact	LTS
LRDP Impact BIO-2 Development under the 2014 LRDP could adversely affect special-status bird species protected under the Migratory Bird Treaty Act, Endangered Species Act, and/or California Endangered Species Act and result in nest abandonment and reproductive failure.	S	**LRDP MM BIO-2:** Avoid construction, demolition, or renovation activities in areas adjacent or nearby to marshland nesting bird habitat during the nesting season (February 1 – August 31) and specify that construction schedules make efforts to further reduce noise and vibration during known nesting periods If construction, demolition, or renovation were proposed to occur during the nesting season, a nesting bird survey shall be performed by a qualified biologist up to approximately 7 days prior to work commencing, up to 100 feet beyond the project boundary. If no birds or evidence of birds are found, no further action is required, provided work commences within approximately 1 week of the survey to prevent "take" of individual birds that may have begun nesting after the survey. If nesting birds with eggs or young are observed during the pre-construction surveys, construction, demolition, or renovation in the affected project area shall not commence within 100 feet of the occupied nest until after the young have fledged. Engage in Endangered Species Act Section 7 or Section 10 consultation (formal or informal, as appropriate) with the US Fish and Wildlife Service for implementation level LRDP components (depending on whether those components constitute a federal or state action, e.g., approvals or funding) to address any potential impacts on California clapper rail. Develop appropriate measures with the US Fish and Wildlife Service and implement them. Establish a 150-foot-wide temporary "no disturbance" buffer around the wetland/upland boundary of Western Stege Marsh/Meeker Slough when construction occurs during the breeding season (mid-March to July). This buffer would protect and buffer potential California clapper rail habitat and nesting areas during construction by prohibiting entry into this area. To prevent take of individuals, as required under the Migratory Bird Treaty Act, Endangered Species Act, California Endangered Species Act, and California Fish and Game Code, which includes harm and harassment under the Endangered Species Act, a buffer zone of an appropriate size to prevent substantial adverse effects from construction would be established through	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		consultation with the US Fish and Wildlife Service. Post interpretative California clapper rail signs in and near Western Stege Marsh/Meeker Slough. Signs should include seasonal use restrictions (e.g., stay on designated trails, pets on leash), to reduce disturbance potential during construction and operations.	
LRDP Impact BIO-3 During the bat breeding season, tree and building removal and other construction activity associated with development under the proposed 2014 LRDP could result in a substantial adverse effect on bats.	S	**LRDP MM BIO-3:** 2014 LRDP implementation projects shall avoid disturbance to special-status bats' maternity roosts during the breeding season in accordance with the following procedures for Pre-Construction Special-Status Bat Surveys and Subsequent Actions. No more than 2 weeks prior to commencement of any concrete breaking or similarly noisy construction/demolition activity during the breeding season (March 1 through August 31), a qualified bat biologist shall conduct pre-demolition surveys of all potential special-status bat breeding habitat in the disturbance vicinity. Depending on the survey findings, the following actions shall be taken to avoid potential adverse effects on breeding special-status bats: 1. If active roosts are identified during pre-construction surveys, a no-disturbance buffer shall be created by the qualified bat biologist, in consultation with the California Department of Fish and Wildlife, around active roosts during the breeding season. The size of the buffer shall take into account factors such as: a. Noise and human disturbance levels at the project site and the roost site at the time of the survey and the noise and disturbance expected during the construction, b. Distance and amount of vegetation or other screening between the project site and the roost, and c. Sensitivity of individual nesting species and the behaviors of the bats. 2. If pre-construction surveys indicate that no roosts of special-status bats are present, or that roosts are inactive or potential habitat is unoccupied, no further mitigation is required. 3. Pre-construction surveys are not required for demolition or construction scheduled to occur during the non-breeding season (September 1 through February 28). 4. Noisy demolition or construction as described above (or activities producing similar substantial increases in noise and activity levels in the vicinity) commencing during the non-breeding season and continuing into the breeding season do not require surveys (as it is assumed that any bats taking up roosts would be acclimated to project-related activities already under way). However, if trees are to be removed during the breeding season, the trees shall be surveyed for roosts prior to their removal, according to the survey and protective action	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		guidelines 1a through 1c, above. 5. Bat roosts initiated during demolition or construction are presumed to be unaffected by the activity, and a buffer is not necessary. 6. Destruction of roosts of special-status bats and overt interference with roosting activities of special-status bats shall be prohibited. 7. The noise control procedures for maximum noise, equipment, and operations identified in Section 4.10, Noise, shall be implemented.	
LRDP Impact BIO-4 Development under the 2014 LRDP would not have a substantial adverse effect on monarch butterfly.	LTS	None required	LTS
LRDP Impact BIO-5 Development under the 2014 LRDP could have a substantial adverse effect on sensitive natural communities.	S	**LRDP MM BIO-5:** Mitigation for LRDP-related impacts on grasslands will expand as the campus grows. a) Once the RBC LRDP is approved for implementation, UC Berkeley shall commence initial phase implementation of a Coastal Terrace Prairie Management Plan that addresses exotics removal, tree and Baccharis (a genus in the Aster family) removal, weed management, and programs for native plant stock preservation to aid in preservation and enhancement of the grassland portion of the Natural Open Space area. See Appendix G for the 2014 Richmond Bay Campus Coastal Terrace Prairie Management Plan. b) As initial projects under the LRDP are implemented, proactive (not passive) measures to improve the quality of the native grasslands in the Natural Open Space area shall be funded and undertaken. This may take the form of support for research and education into effective restoration. Possible fund sources include the UC Berkeley Capital Renewal Program, which assesses a four percent fee on all capital budgets (UC Berkeley 2013). c) Once a project is proposed that may alter high quality grassland within the Natural Open Space land use zone by constructing minor access roads, structures, or boardwalks, the University shall update its Coastal Terrace Prairie Management Plan to guide conservation and enhancement efforts, as well as the siting of boardwalks and minor access roads and structures in a resource-sensitive manner. The plan shall include weed management actions, annual monitoring and reporting, and adaptive management sufficient to maintain or improve the quality of the grasslands preserved in the designated Natural Open Space. The effectiveness of	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		the plan shall be continually evaluated and the plan adjusted as needed. d) Prior to approving any action to develop the Northwest Meadow or to develop on other high, medium, or low quality grasslands outside of the Natural Open Space land use zone, the University shall conduct a site-specific native plant survey. All survey results would be published to the University environmental website for the RBC. The University would apply the results of such surveys to implement a program that would use the native plant stock from such area to aid enhancement and restoration in Natural Open Space grassland areas, and to develop or restore meadow acreage elsewhere. Possible locations include formal landscaped open areas of the RBC, rooftops of buildings at the RBC, demonstration meadows at UC Berkeley or in the city of Richmond that help explain the former extent of regional coastal terrace prairie grasslands.	
LRDP Impact BIO-6 Development under the 2014 LRDP could have a substantial adverse effect on federally protected wetlands.	S	**LRDP MM BIO-6:** **BIO-6a:** 2014 LRDP development projects shall avoid, to the extent feasible, the filling of or discharging to potentially jurisdictional waters. Therefore, during the design phase of any future development project that may affect potentially jurisdictional waters, a preliminary evaluation of the project site shall be made by a qualified biologist to determine if the site is proximate to potentially jurisdictional waters and, if deemed necessary by the biologist, a wetlands delineation shall be prepared and submitted to the US Army Corps of Engineers for verification. Because the US Army Corps of Engineers' preferred mitigation for impacts to jurisdictional waters is avoidance, to the extent practicable, 2014 LRDP development shall be located to avoid the filling of or discharging to jurisdictional waters. **BIO-6b:** Any unavoidable loss of jurisdictional waters shall be compensated for through the development and implementation of a project-specific wetland mitigation plan. If a 2014 LRDP development project were to potentially impact jurisdictional waters, impact compensation would be based on the US Army Corps of Engineers -verified wetlands delineation identified in Mitigation Measure BIO-6a. During the permit application process for specific development projects that would impact jurisdictional waters, the University would consult with the US Army Corps of Engineers, Californai Department of Fish and Wildlife, and San Francisco Bay Regional Water Quality Control Board. The consultation would be to identify the most appropriate assessment and mitigation methods to adequately address losses to wetland function that could occur from the development projects. A project-specific wetland mitigation plan would be developed prior to project implementation and submitted to permitting agencies for their approval. The plan may include on-site or off-site restoration or creation or purchasing of credits from a	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		wetland mitigation bank. All mitigation work proposed in existing wetlands on- or off-site shall be authorized by applicable permits. **BIO-6c:** To the extent feasible, construction projects that might affect jurisdictional drainages or wetlands shall be scheduled for dry-weather months. Avoiding ground-disturbing activities during the rainy season would further decrease the potential risk of construction-related discharges to jurisdictional waters.	
LRDP Impact BIO-7 Development under the 2014 LRDP would not have a substantial adverse effect on fish and wildlife movement, migratory corridors, or nursery sites.	LTS	None required	LTS
LRDP Impact BIO-8 Development under the 2014 LRDP would not conflict with any local applicable policies protecting biological resources.	LTS	None required	LTS
CULTURAL RESOURCES			
LRDP Impact CR-1 Development under the 2014 LRDP could result in significant impacts on previously undiscovered, unevaluated, or unrecorded archaeological resources or human remains during construction and clearing.	S	**LRDP MM CR-1:** Prior to any project-related excavation or construction, the University shall adequately survey all relevant disturbance areas for archaeological resources and assess the potential for buried resources based on past land use, site records, and proximity to known resources and landforms. Depending on the resulting level of suspected archaeological sensitivity, archaeological testing shall be done and/or qualified archaeological monitors will be present during ground disturbing activities. Prior to any ground disturbing activities that could disturb potentially existing archaeological resources, the University would prepare a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan to be implemented if an unanticipated discovery is made. At a minimum, the plan would detail the following elements: • Worker and supervisor training in the identification of cultural remains that could be found in	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		the proposed project area • Worker and supervisor response procedures to be followed if there is an unanticipated discovery, including appropriate points of contact for professionals qualified to make decisions about the potential significance of any find • Identities of persons authorized to stop or redirect work that could affect the discovery, and their on-call contact information • Procedures for monitoring construction activities in archaeologically sensitive areas • A minimum radius (typically a minimum of 50 feet) around any discovery in which work would be halted until the significance of the resource has been evaluated and mitigation implemented as appropriate • Procedures for identifying and evaluating the historical significance of a discovery • Procedures for consulting Native Americans when identifying and evaluating the significance of discoveries involving Native American cultural materials • Procedures to be followed for treatment of discovered human remains per current state law, including appropriate notification and consultation with Native American groups or individuals If any suspected human bone is found during construction, all work should stop and the Contra Costa County coroner should be notified immediately per State law and the Discovery Plan. If the remains are determined to be Native American, the Native American Heritage Commission shall be notified for determination of the most likely descendent and tribal affiliation for disposition. No additional work shall take place near the find until the identified actions have been implemented.	
LRDP Impact CR-2 Development under the 2014 LRDP would result in significant impacts on historic Buildings 150 and 175 through demolition or visual intrusion from new building construction.	S	**LRDP MM CR-2:** Because demolition of Buildings 150 and 175 cannot be avoided, historic documentation would be completed by professionals meeting the Secretary of the Interior's Professional Qualification Standards for architectural history. Recording each structure to the standard established for the National Park Service's Historic American Building Survey or Historic American Engineering Record would include high resolution digital photographs taken of historic buildings in their current condition. Up to 20 archival black and white prints would be prepared as part of the recordation package. Construction or as-built drawings (if available) would be reproduced on archival paper.	SU

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
LRDP Impact CR-3 Development under the 2014 LRDP could result in significant impacts on historic structures that have not been identified or that would become of historic age over the life of the plan.	S	**LRDP MM CR-3:** **CR-3a:** Prior to any project construction or demolition activities, the University shall ensure that all buildings and structures in the construction footprint have been adequately inventoried. If any of the inventoried structures are found to be historically significant and are to be retained, the University shall develop reuse or maintenance plans to identify the historic features of the building and prepare design guidelines based on the Secretary of Interior's Standards and Guidelines for the Treatment of Historic Properties and to ensure that the buildings retain their historic, character–defining features. **CR-3b:** If avoidance of direct or indirect impacts on (as yet unidentified) historic buildings is not possible, the University shall determine site specific mitigation measures. Historic documentation would be completed by professionals meeting the Secretary of the Interior's Professional Qualification Standards for architectural history. Structures would be recorded to the standard established for the National Park Service's Historic American Building Survey or Historic American Engineering Record. This would include high resolution digital photography of historic buildings in their current condition. Up to 20 archival black and white prints would be prepared as part of the recordation package. Construction or as-built drawings (if available) would be reproduced on archival paper.	SU
GEOLOGY AND SOILS			
LRDP Impact GEO-1 Development under the 2014 LRDP would not expose people and structures to substantial adverse effects from seismic hazards such as ground shaking and earthquake-induced ground failure at the RBC site.	LTS	None required	LTS
LRDP Impact GEO-2 Development under the 2014 LRDP would result in construction on soils that could be subject to erosion and instability.	S	**LRDP MM GEO-2:** **GEO-2a:** A site-specific, design-level geotechnical investigation shall be completed during the design phase of each new building project and prior to construction approval on the RBC site. This investigation shall be conducted by a licensed geotechnical engineer and shall include an evaluation of potential soils hazards and appropriate measures to minimize these hazards. Geotechnical	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		recommendations shall subsequently be incorporated into building design. **GEO-2b:** Construction under the LRDP shall comply with the Association of Bay Area Government's Manual of Standards for Erosion and Sediment Control Measures, and the California Stormwater Quality Association's Stormwater Best Management Practice Handbook for Construction (CASQA 2003) (or subsequent editions thereof). Construction under the LRDP shall use construction BMPs and standards to control and reduce erosion. These measures could include, but are not limited to, restricting grading to the dry season, protecting all finished graded slopes from erosion using such techniques as erosion control matting and hydroseeding, or other suitable measures. **GEO-2c:** All LRDP construction projects shall include, as appropriate, revegetation of disturbed areas (including slope stabilization projects) using native shrubs, trees, or grasses.	
GREENHOUSE GAS EMISSIONS			
LRDP Impact GHG-1 Development under the 2014 LRDP would generate greenhouse gas emissions that would result in a significant impact on the environment.	S	**LRDP MM GHG-1:** The University will develop a climate action plan for the RBC site within three years of the adoption of the 2014 LRDP or before construction on the first project under the 2014 LRDP commences, whichever comes first. The climate action plan will include campus-wide greenhouse gas reduction measures as well as a suite of project-level greenhouse gas reduction measures that will be incorporated into each building project, as appropriate, during the planning, design and construction of the project. The climate action plan will include target emission rates per service person that are consistent with AB 32 and Executive Order S-3-05 emissions targets. The climate action plan will also implement specific control measures and programs to achieve these targets. These control measures and programs will be developed specifically for each project based on its siting and design needs, but they will at minimum address these general topics: • Energy Efficiency: minimize energy consumption to the extent possible through measures such as design guidelines for new buildings that require specific levels of energy efficiency, incentive programs for employees or departments to reduce energy use, programs to track energy use and discover opportunities to reduce waste, and landscaping or other features that provide shade or otherwise help reduce energy use. • Renewable Energy Generation: investigate and develop opportunities for renewable energy generation on campus, whether solar, wind, or other sources. • Vehicle Trip Minimization: encourage the use of carpools, shuttles, bicycles, or public transportation that provide resources for employees to access and use alternative	SU

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		transportation, and provide infrastructure that allows employees to interact or conduct meetings and business without traveling. • Renewable Fuel Vehicles: encourage or require the use of renewable fuel vehicles such as by providing electric vehicle charging and compressed natural gas fueling stations, purchasing renewable fuel vehicles for the campus fleet, and providing preferential parking or other incentives for drivers using renewable fuel or hybrid vehicles. • Waste Reduction: implement waste reduction, aggressive recycling goals with incentives, composting systems for general buildings and dining areas, guidelines for low waste construction and purchasing, and educational programs.	
LRDP Impact GHG-2 Development under the 2014 LRDP would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.	S	**LRDP MM GHG-2:** Implement LRDP MM GHG-1	SU
HAZARDS AND HAZARDOUS MATERIALS			
LRDP Impact HAZ-1 Development under the 2014 LRDP would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LTS	None required	LTS
LRDP Impact HAZ-2 Development under the 2014 LRDP would not create a significant public or environmental hazard through reasonably foreseeable upset and accident conditions involving the release of hazardous materials	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
into the environment.			
LRDP Impact HAZ-3 Development under the 2014 LRDP would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LTS	None required	LTS
LRDP Impact HAZ-4 The RBC would be on a site included on a list of hazardous materials sites compiled pursuant to the California Government Code Section 65962.5, but this would not create a significant hazard to the public or the environment.	LTS	None required	LTS
LRDP Impact HAZ-5 Development under the 2014 LRDP would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	LTS	None required	LTS
HYDROLOGY AND WATER QUALITY			
LRDP Impact HYD-1 Stormwater runoff and dewatering associated with 2014 LRDP-related construction activities could result in a violation of water quality	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
standards.			
LRDP Impact HYD-2 Development under the 2014 LRDP would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.	LTS	None required	LTS
LRDP Impact HYD-3 Development under the 2014 LRDP would not substantially alter the existing drainage pattern of the RBC site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.	LTS	None required	LTS
LRDP Impact HYD-4 Development under the 2014 LRDP would not substantially alter drainage patterns in a manner which would result in flooding on- or off-site.	LTS	None required	LTS
LRDP Impact HYD-5 Development under the 2014 LRDP would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
substantial additional sources of polluted runoff.			
LRDP Impact HYD-6 Development under the 2014 LRDP would not place structures within a 100-year flood hazard area which would impede or redirect flood flows or expose people or structures to a significant risk of loss, injury, or death involving flooding.	LTS	None required	LTS
LRDP Impact HYD-7 Development under the 2014 LRDP would not expose people or structures to inundation by seiches, tsunamis, or mudflows.	LTS	None required	LTS
LAND USE AND PLANNING			
LRDP Impact LU-1 Development under the 2014 LRDP would not physically divide an established community.	NI	None required	NI
LRDP Impact LU-2 Development under the 2014 LRDP would not result in development that would conflict with land use plans applicable to the project site or with land use plans for properties adjacent to the project site.	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
NOISE			
LRDP Impact NOISE-1 Construction activities associated with development under the 2014 LRDP could generate and expose people to noise levels exceeding Richmond Community Noise Ordinance standards.	S	**LRDP MM NOISE-1:** **NOISE-1a:** Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum sound levels at the surrounding properties shall not exceed the dBA levels set forth in the Richmond Municipal Code Section 9.52.110. **NOISE-1b:** The following measures shall be implemented for all construction equipment in accordance with Richmond Municipal Code Section 9.52.060. Quiet construction equipment, particularly air compressors, shall be used whenever possible. Construction equipment powered by internal combustion engines shall be properly muffled and maintained. Stationery noise-generating construction equipment such as tree grinders and air compressors are to be as far as is practical from existing residences. Unnecessary idling of internal combustion engines shall be prohibited. Sources of impulsive sound and jack hammers shall not be used on Sundays and holidays, except for emergencies. **NOISE-1c:** If after implementing NOISE-1a and -1b, construction noise creates a disturbance or results in noise complaints from adjacent property, additional noise reduction strategies shall be evaluated and the necessary practicable technically and economically feasible noise mitigating measures would be implemented, sufficiently to ensure meeting City Noise Ordinance requirements.	LTS
LRDP Impact NOISE-2 Development under the 2014 LRDP would not generate or expose people to excessive groundborne vibration.	LTS	None required	LTS
LRDP Impact NOISE-3 Development under the 2014 LRDP could generate and expose people to noise levels exceeding Richmond Community Noise Ordinance standards or result in a substantial permanent increase in ambient project vicinity noise	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
levels.			
POPULATION AND HOUSING			
LRDP Impact POP-1 Development under the 2014 LRDP would incrementally increase the RBC site population over the LRDP's approximately 40-year planning period, but would not induce substantial population growth.	LTS	None required	LTS
PUBLIC SERVICES AND RECREATION			
LRDP Impact PS-1 Development under the 2014 LRDP would increase the demand for fire services and could result in the construction of new or expanded fire stations. The impacts from the construction of a fire station would be less than significant.	LTS	None required	LTS
LRDP Impact PS-2 Development under the 2014 LRDP would increase police services demand that could necessitate construction of new police facilities on the RBC site, but such construction would not result in significant environmental impacts.	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
LRDP Impact PS-3 Development under the 2014 LRDP would not result in the need for new or physically altered public school facilities.	LTS	None required	LTS
LRDP Impact PS-4 Development under the 2014 LRDP would not trigger construction, substantially increase demand, or substantially degrade parks and recreational facilities.	LTS	None required	LTS
TRANSPORTATION AND TRAFFIC			
LRDP Impact TRA-1 Development under the 2014 LRDP would conflict with an applicable plan, ordinance, or policy establishing effectiveness measures for circulation system performance and would cause an exceedance of a level of service standard established for the study intersections under 2035 conditions.	S	**LRDP MM TRA-1:** The University shall develop and implement a campus traffic mitigation program, a multi-component program to monitor trip generation, reduce peak-hour trips to the extent feasible, or participate in intersection improvements to mitigate off-site impacts at the intersections affected by the proposed project. Each component of this program is described below. Transportation Demand Management. To reduce on- and off-campus vehicle trips and resulting impacts, the University shall develop and implement a travel demand management program in consultation with the City of Richmond. The program will be adopted by the University following The Regents' approval of the RBC LRDP. The transportation demand management program will include measures to increase transit and shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking policies that reduce demand, and other mechanisms that reduce vehicle trips to and from the campus. The University shall monitor the performance of RBC transportation demand management strategies through annual surveys. The University shall report on implementation of adopted transportation demand management strategies, whether defined in the LRDP or in a stand-alone transportation demand management program, annually following completion of an initial traffic-inducing project under the RBC LRDP. Transit Enhancement. To enhance transit systems serving the campus, the University shall work cooperatively with AC Transit and other local agencies to coordinate service routes with existing and proposed shuttle and transit programs. Sustainability and Monitoring. The University shall review individual projects proposed under the	SU

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
		2014 LRDP for consistency with UC sustainable transportation policy and the RBC transportation demand management program to ensure that bicycle and pedestrian improvements, alternative fuel infrastructure, transit stops, and other project features that promote alternative transportation are incorporated into each project to the extent feasible. Campus Traffic Impact Monitoring. The University shall conduct traffic counts at key RBC gateway locations no less frequently than every 5 years to determine campus-generated traffic. The University may undertake such traffic counts in connection with specific development projects at the RBC in order to inform signal warrant analyses and to help guide the selection of improvements that would mitigate significant traffic impacts. Mitigation Payments. The University shall contribute funding on a fair-share basis (to be determined in consultation with the City of Richmond and Caltrans) for improvements to signalized and unsignalized intersections, roadway segments, and in connection with railroad crossings that are necessary to mitigate the RBC's significant traffic impacts. Those improvements may include, but are not limited to, new traffic signals, conversion of intersection approaches, conversion or optimization of traffic signal operations, and advance queue warning signs. The University's contribution, which shall be proportional to the University's responsibility for any traffic increases that necessitate mitigation, shall include funds for the design and construction of required improvements. When determining the University's contribution, the University's proportional responsibility for traffic impacts shall be measured through comparison to the traffic conditions that prevailed at the time of the LRDP's approval, as described and analyzed in the LRDP EIR's discussion of existing traffic conditions. With respect to unsignalized intersections specifically, the University shall contribute funding on a fair-share basis—following University approval of traffic-inducing development at the RBC—for signal warrant analyses at unsignalized intersections significantly impacted by traffic resulting from the approved development. Data from the University's campus traffic impact monitoring counts, described above, may inform the signal warrant analyses. Those analyses would be used by the City to determine when a signal is needed. When signal warrant analyses show that a signal is warranted and the City determines that the required intersection improvements are needed, the University shall reimburse the City on a fair-share basis for the required mitigation, including new traffic signals and related improvements at the intersection impacted by the project. Should the City determine that alternative mitigation strategies may reduce or avoid the significant impact, the University shall work with the City and Caltrans to identify and implement such alternative feasible measures on a fair-share basis.	

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
LRDP Impact TRA-2 Development under the 2014 LRDP would conflict with an applicable plan, ordinance. or policy establishing effectiveness measures for circulation system performance and would cause an exceedance of a level of service standard established for the study intersections under existing conditions.	S	LRDP MM TRA-2:Implement LRDP MM TRA-1.	SU
LRDP Impact TRA-3 Development under the 2014 LRDP would conflict with an applicable plan, ordinance, or policy establishing effectiveness measures for circulation system performance and would cause an exceedance of a level of service standard established for Congestion Management Plan facilities (freeways) under 2035 conditions.	S	**LRDP MM TRA-3:** Implement LRDP MM TRA-1. No freeway capacity projects are currently planned by Caltrans for this section of Interstate 580. As the feasibility of freeway widening is not known, this impact is considered to be significant and unavoidable.	SU
LRDP Impact TRA-4 Development under the 2014 LRDP would not conflict with an applicable plan, ordinance, or policy establishing effectiveness measures circulation system performance and would not cause an exceedance of a level of service standard established for Congestion Management Plan facilities (freeways) under	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
existing conditions.			
LRDP Impact TRA-5 Development under the 2014 LRDP would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	LTS	None required	LTS
LRDP Impact TRA-6 The 2014 LRDP would not increase hazards due to a design feature or incompatible use, create unsafe conditions for pedestrians or bicycles, or result in inadequate emergency access.	LTS	None required	LTS
LRDP Impact TRA-7 Traffic associated with the 2014 LRDP campus facilities construction would temporarily and intermittently adversely affect the road network near the RBC site.	S	**LRDP MM TRA-7:** Prepare a construction traffic management plan for each RBC construction project to reduce construction impacts on traffic and parking. The University shall work with City of Richmond in preparing the plan, which will address: • Proposed truck routes • Hours of construction and limits on number of truck trips during peak commute periods (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) if traffic conditions demonstrate the need to reduce construction traffic so as to avoid causing significant delays. • Parking management plan for construction workers; • Tools to provide safe access for pedestrians, bicyclists, automobiles, and emergency access vehicles. • Identification of alternative routes for temporary closure of streets or paths during construction.	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
UTILITIES, SERVICE SYSTEMS, AND ENERGY			
LRDP Impact UTL-1 Development under the 2014 LRDP would not result in the need for new or expanded water supply entitlements.	LTS	None required	LTS
LRDP Impact UTL-2 Development under the 2014 LRDP would not require or result in new or expanded water treatment facilities.	LTS	None required	LTS
LRDP Impact UTL-3 Development under the 2014 LRDP would require the construction of new or expanded water delivery systems. The construction of new or expanded water delivery systems would not result in significant environmental effects.	LTS	None required	LTS
LRDP Impact UTL-4 Development under the 2014 LRDP would require the construction of new or expanded wastewater treatment facilities.	S	**LRDP MM UTL-4:** When a project under the 2014 LRDP is proposed that would increase wastewater flows discharged from the RBC site, the University shall work with the City of Richmond to evaluate the impact of the specific project on both the sewer mains and at the Richmond Municipal Sewer District wastewater treatment plant, and if necessary based on the results of the evaluation, the University will compensate the City for the cost of implementing improvements such as slip-lining sewer pipelines downstream of the project site to reduce infiltration and inflow volumes equivalent to or greater than the incremental volume of wastewater generated by the project, or if necessary would construct underground vaults on the RBC site to detain wastewater to reduce peak flows to sewer mains during wet weather.	LTS
LRDP Impact UTL-5 Development under the 2014	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
LRDP would require the construction of new or expanded wastewater conveyance systems. The construction of new or expanded wastewater conveyance systems would not result in significant environmental effects.			
LRDP Impact UTL-6 Development under the 2014 LRDP would require the construction of new or expanded stormwater drainage facilities. The construction of new or expanded stormwater drainage facilities would not result in significant environmental effects.	LTS	None required	LTS
LRDP Impact UTL-7 Development under the 2014 LRDP would generate solid waste, but not enough to require new or expanded permitted landfill capacity.	LTS	None required	LTS
LRDP Impact UTL-8 Development under the 2014 LRDP would comply with all applicable federal, State, and local statutes and regulations related to solid waste.	LTS	None required	LTS
LRDP Impact UTL-9 Development under the 2014 LRDP would require the construction of new or expanded	LTS	None required	LTS

Table 2-2
Summary of Impacts and Mitigation Measures

Impact	Impact Significance Before Mitigation	Mitigation Measures	Impact Significance With Mitigation
electrical distribution facilities. The construction of new or expanded electrical distribution facilities would not result in significant environmental effects.			
LRDP Impact UTL-10 Development under the 2014 LRDP would require the construction of new or expanded natural gas distribution facilities. The construction of new or expanded natural gas distribution facilities would not result in significant environmental effects.	LTS	None required	LTS
LRDP Impact UTL-11 Development under the 2014 LRDP would not result in the wasteful, inefficient, or unnecessary energy use.	LTS	None required	LTS

LEGEND:

SU = Significant and unavoidable impact
S = Significant impact
LTS = Less than significant impact
NI = No impact

Table 2-3
Summary of Environmental Protection Practices

Impact	Environmental Protection Practices
AESTHETICS AND VISUAL QUALITY	
LRDP Impact AES-3 2014 LRDP implementation would create new sources of light and glare that would not adversely affect regional day or nighttime views	**LRDP ENVIRONMENTAL PROTECTION PRACTICE AES-3a:** Lighting for new development projects could be designed to include shields and cut-offs that minimize light spill onto unintended surfaces and minimize atmospheric light pollution. **LRDP ENVIRONMENTAL PROTECTION PRACTICE AES-3b:** To reduce off-site lighting impacts, lighting at the campus could be restricted to areas where it would be required for safety, security, and operation. Exterior lights could be hooded, and lights could be directed on-site so significant light or glare would be minimized. For areas where lighting is not required for normal operation, safety, or security, switched lighting circuits could be provided, allowing these areas to remain dark at most times, minimizing the amount of lighting potentially visible off-site. In parking lots, lights could be equipped with motion sensors that reduce the lights to half of their brightness when no motion is detected. **LRDP ENVIRONMENTAL PROTECTION PRACTICE AES-3c:** As part of the design review procedures, light and glare could be given specific consideration, and measures could be incorporated into the project design to minimize both. In general, exterior surfaces would not be reflective; architectural screens and shading devices are preferable to reflective glass.
BIOLOGICAL RESOURCES	
LRDP Impact BIO-4 Development under the 2014 LRDP would not have a substantial adverse effect on monarch butterfly.	**LRDP ENVIRONMENTAL PROTECTION PRACTICE BIO-4:** The University could develop and implement a successional tree planting plan that would maintain the availability of monarch butterfly wintering habitat at the RBC site.
LRDP Impact BIO-5 Development under the 2014 LRDP could have a substantial adverse effect on sensitive natural communities.	**LRDP ENVIRONMENTAL PROTECTION PRACTICE BIO-5:** Currently, and continuing if the LRDP is adopted, the University would mow open space areas consistent with the 2008 report, Richmond Field Station Remediation and Restoration Project Habitat Restoration Progress Report 2003 – 2007, Appendix 2 "Guidelines for Mowing Harding Grass Within and Adjacent to Coastal Terrace Prairie Habitat at the University of California, Richmond Field Station."

Table 2-3
Summary of Environmental Protection Practices

Impact	Environmental Protection Practices
HAZARDS AND HAZARDOUS MATERIALS	
LRDP Impact HAZ-1 Development under the 2014 LRDP would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	**LRDP ENVIRONMENTAL PROTECTION PRACTICE HAZ-1:** In implementing the 2014 LRDP, UC Berkeley and LBNL shall continue the same (or equivalent) health and safety plans, programs, practices and procedures related to the use, storage, disposal, and transportation of hazardous materials and wastes (including chemical, radioactive, and bio-hazardous materials and waste) as are currently practiced at the UC Berkeley main campus and at the LBNL hill site. These include, but are not limited to, UC Berkeley and LBNL requirements for safe transportation of hazardous materials; Environmental Health and Safety training programs; the requirement that laboratories have chemical hygiene plans; a chemical inventory; a toxic use reduction program; a spill prevention, control, and countermeasure plan; monitoring of underground storage tanks; a waste minimization program; a biosafety program; a waste management program (including medical and biohazardous waste); a radiation safety and/or protection program; compliance with radioactive air emission regulations (40 CFR 61) and compliance with US Department of Energy Orders for LBNL activities; compliance with the National Institutes of Health Guidelines for Research Involving Recombinant DNA Molecules; and compliance with US Department of Agriculture requirements for open-field-based research involving transgenic plants.
UTILITIES, SERVICE SYSTEMS, AND ENERGY	
LRDP Impact UTL-7 Development under the 2014 LRDP campus development would generate solid waste, but not enough to require new or expanded permitted landfill capacity.	**LRDP ENVIRONMENTAL PROTECTION PRACTICE UTL-7:** LBNL and UC Berkeley shall develop and implement a plan to maximize diversion of construction and demolition materials from landfill disposal. The plan would set a goal of a minimum of 75 percent diversion, consistent with the UC Sustainable Practices Policy.