

**UNIVERSITY OF CALIFORNIA, SANTA CRUZ**

**Marine Science Campus (MSC)  
Projects**

**FINAL**

**ENVIRONMENTAL IMPACT REPORT**

**Volume I**

**SCH# 2010062090**

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## INTRODUCTION

This Final Environmental Impact Report (EIR) for the UCSC Marine Science Campus Projects consists of minor revisions to the Draft EIR (State Clearinghouse No. 2010062090) prepared by the University of California, Santa Cruz (“UC Santa Cruz” or “the Campus”) pursuant to the applicable provisions of the California Environmental Quality Act (CEQA) and its implementing guidelines (CEQA Guidelines), and the Amended University of California Procedures for Implementation of the California Environmental Quality Act (UC Procedures), and circulated to the public in accordance with those guidelines and procedures. This Final EIR includes the full text of the Draft EIR, with revisions to correct minor errors in text, and minor additions or deletions for clarification or in response to public and agency comments. None of these changes affects any of the conclusions of the analysis presented in the Draft EIR. Throughout the Final EIR, text deleted from the Draft EIR is shown with strikethrough (~~strikethrough~~), and insertions are indicated with underlining. The Final EIR includes two new chapters: Chapter 8, *Comments and Responses to Comments on the Draft EIR*, includes copies of each of the letters received during the public comment period, responses to each public and agency comment, and a table that lists changes made throughout the EIR in response to comments or to correct minor errors; Chapter 9, *Mitigation Monitoring and Reporting Program*, lists each of the mitigation measures identified in the EIR, and details how each measure will be implemented, monitored and reported.

The University of California (“the University”) is the lead agency for this EIR, which examines the environmental effects of the proposed Marine Science Campus Projects (hereinafter “the MSC Projects” or “the Projects”). The proposed MSC Projects as analyzed in this EIR consisted of the following four related projects and MSC Coastal Long Range Development Plan (CLRDP) Amendment #1:

- Coastal Biology Building Project (“CBB Project”): The construction of a new marine sciences research and teaching laboratory building and greenhouse complex on the UC Santa Cruz Marine Science Campus (MSC).
- Marine Science Campus Infrastructure (“MSCI Project”): Infrastructure upgrades necessary to serve the proposed CBB Project and other future development at the MSC under the previously approved CLRDP.
- Nature Education Facilities Project (“NEF Project”): Public access improvements required by the UC Santa Cruz Marine Science Campus Coastal Long Range Development Plan (CLRDP), some of which are triggered by construction of the CBB Project.
- Specific Resource Plan Phase 1B (“SRP Phase 1B”): Wetland restoration activities under the Phase 1 Specific Resource Plan (SRP), which was developed in compliance with the CLRDP Resource Management Plan (Appendix A of the CLRDP). Some of these activities are triggered by proposed development in the Upper Terrace Development Zone as part of the MSCI Project.

Subsequent to publication of the DEIR, the University determined that it would be appropriate to consider the CBB Project and the MSCI Project as a single project for design and budget approvals. To this end, “the MSCI Project” as described in this EIR has been subsumed into the CBB Project, which thus now includes the elements described in this EIR as the MSCI Project. Similarly, the Campus-funded parking elements described in this EIR as part of the CBB Project have been identified as a separate project for

design and budget approval purposes, “the MSC Parking Phase 1 Project”; while the Campus-funded Environmental Health and Safety (EH&S) storage facility that is described in this EIR as part of the MSC Project has been identified as a separate project for design and approval purposes, “the EH&S Facility Project”. These organizational changes do not alter the scope of the MSC Projects, nor of any aspect of the environmental analysis of the MSC Projects as presented in the Draft EIR, nor do they result in any changes in conclusions regarding environmental effects. The Mitigation Monitoring and Reporting Program presented in Chapter 9 of this FEIR applies to all of the projects, and each of the mitigation measures identified throughout Chapter 3 of this document would be implemented for each element of the MSC Projects that contributes to the identified impact. Thus, as described in the CEQA Findings, “the MSC Projects” now consist of the following:

- The CBB Project, including the CBB research and laboratory building, the greenhouse complex, and the infrastructure elements previously described as the MSC Project, but not including parking lots C and D (previously included in the CBB Project) and not including the EH&S Facility (previously included in the MSC Project).
- The MSC Parking Phase 1 Project: Parking Lots C and D, previously included in the CBB project as described in Chapter 2 of this EIR.
- The MSC EH&S Facility, previously included in the former MSC Project as described in this EIR
- The NEF Project, as described in Chapter 2 (unchanged)
- SRP Phase 1B, as described in Chapter 2 (unchanged).

In addition, this EIR analyzes the potential environmental impacts of CLRDP Amendment #1. This proposed amendment is comprised of 11 actions that would make minor adjustments to some CLRDP figures and to the language of some CLRDP implementation measures. The purpose of the proposed amendment is proposed to resolve minor inconsistencies and implementation issues that have been identified since the final approval of the CLRDP, respond to CLRDP implementation requirements, and to account for refinement in the Campus’ planning for the MSC since approval of the CLRDP.

The proposed MSC Projects are elements of the program of development for the MSC as described in the CLRDP and analyzed in the CLRDP EIR (State Clearinghouse No. 2001112014, UC Santa Cruz 2004), which is incorporated in this document by reference. The Projects are being analyzed together because they are inherently interrelated. A substantial portion of the MSC Project is required to support development of the CBB Project, and the NEF and SRP 1B Projects would implement required elements of the CLRDP, some of which are triggered by development of the CBB and/or MSC Projects. The University anticipates that all ~~four projects~~ of the MSC Projects would be approved concurrently.

As required by the California Environmental Quality Act (“CEQA”), this ~~Draft~~ EIR:

- Assesses the potentially significant environmental effects of the proposed Projects as well as the potentially significant cumulative impacts of the Projects in conjunction with other regional growth.

- Identifies feasible means of avoiding or substantially lessening significant adverse impacts.
- Evaluates a range of reasonable alternatives to the proposed Projects, including the required No Project Alternative.
- The University is the “lead agency” for the MSC Projects. The Board of Regents of the University of California (“The Regents”), or its delegate, has the principal responsibility for approving the Projects.

## PURPOSE OF THE EIR

The University has prepared this ~~Draft~~ EIR for the following purposes:

- To inform the general public; the local community; and responsible, trustee, and federal public agencies of the nature of the proposed project, its potentially significant environmental effects, feasible measures to mitigate those effects, and a range of reasonable and feasible alternatives.
- To enable the University to consider the environmental consequences of approving the proposed project.
- For consideration by responsible agencies in issuing permits and approvals for the proposed project.
- To satisfy CEQA requirements.

As described in CEQA and the CEQA Guidelines, public agencies are charged with the duty to avoid or substantially lessen significant environmental effects, where feasible. In discharging this duty, a public agency has an obligation to balance the project’s significant effects on the environment with its benefits, including economic, social, technological, legal, and other benefits. This EIR is an informational document, the purpose of which is to identify the potentially significant effects of the proposed project on the environment and to indicate the manner in which those significant effects can be avoided or significantly lessened; to identify any significant and unavoidable adverse impacts that cannot be mitigated; and to identify reasonable and feasible alternatives to the proposed project that would eliminate any significant adverse environmental effects or reduce the impacts to a less-than-significant level.

The lead agency is required to consider the information in the EIR, along with any other relevant information, in making its decision on the proposed MSC Projects. Although the EIR does not determine the ultimate decision that will be made regarding implementation of the Projects, CEQA requires the University to consider the information in the EIR and make findings regarding each significant effect identified in the EIR.

The University will consider and certify the Final EIR prior to approving the proposed MSC Projects. Other agencies may also use this EIR in their review and approval processes.

## OVERVIEW OF THE MSC PROJECTS

The proposed MSC Projects are elements of the program of development described in the Marine Science Campus Coastal Long Range Development Plan (CLRDP). This CLRDP is a comprehensive physical development and land-use plan that governs development, land use, and resource protection at the MSC, including Younger Lagoon Reserve (YLR). The adoption of this plan by the University and subsequent certification by the California Coastal Commission in January 2009 resulted in the delegation to the University of the authority to approve most on-Campus development consistent with the plan without a coastal development permit, subject to Commission oversight. The CLRDP is available at <http://ppc.ucsc.edu/cp/projects/11407/planning/CLRDP08> or at the offices of UC Santa Cruz Physical Planning and Construction.

A Long Range Development Plan (LRDP) identifies the physical development needed to achieve the mission and goals of the institution, and the facilities and site improvements required for those aims. The University of California prepares Long Range Development Plans periodically to guide development on the University's main campuses. A CLRDP is provided for under the California Coastal Act of 1976. In addition to the elements normally found in an LRDP, the CLRDP addresses issues arising from coastal proximity, resources specific to this coastal site, and the urban edge location of the campus. Coastal Act policies relevant to these issues are reflected and incorporated throughout the CLRDP along with additional policies that also guide the University's stewardship of its lands.

The CLRDP is a general plan for the physical development of the MSC and is intended as a commitment to plans and policies that relate to general land use, circulation and parking, public access and recreation, stormwater and other environmental management, utilities and services, resource protection, habitat management, and transportation demand management, within the scope and time frames set forth herein. The CLRDP is not intended as a commitment to any specific building project, building construction schedule, or building funding priority. Within the parameters established by the CLRDP, individual buildings and improvements are proposed, considered, and approved on a case-by-case basis and are accompanied by additional environmental analysis and public review, if necessary, to comply with CEQA and/or the California Coastal Act.

Together the MSC Projects include the development of a new, approximately 40,000-gsf Coastal Biology Building (CBB) and ~~8,900~~ approximately 7,500 gsf of greenhouses and associated research support space on the UC Santa Cruz Marine Science Campus (MSC); upgrades to the MSC's circulation, electricity, water distribution, sewer, and stormwater management systems; and improvements to the MSC's public access and education facilities; and habitat restoration in campus wetland areas.

The 98-acre MSC is located at the southwestern corner of the city of Santa Cruz (Figure 1, *Location of the Marine Science Campus*). The proposed CBB lab building would be constructed in the central portion of the MSC (the "Middle Terrace"), east of McAllister Way and north of the existing National Oceanic and Atmospheric Administration (NOAA) facility (Figure 2, *Existing Conditions*). The CBB Greenhouse Complex would be constructed in the Middle Terrace, west of McAllister Way. The proposed MSC circulation improvements would include realignment of a portion of the main MSC roadway (Delaware Avenue Extension); construction of public access trails and a new central pedestrian/bicycle access path;

and construction of three parking lots to meet the parking demand associated with the CBB and to enhance public access to the MSC's coastal resources. The proposed electricity, water distribution, and sewer improvements would be constructed beneath proposed roadways or in existing utility corridors. The infrastructure improvements would include repairs to several existing storm water drainage features, as well as detention basins to manage runoff from the new development. The Projects would also reconnect wetlands W1 and W4<sub>2</sub>, on the Upper Terrace, and implement erosion repair measures downstream of these areas.

The proposed CLRDP Amendment #1 would make revisions to the CLRDP to reflect the incorporation of additional lands into the Younger Lagoon Reserve (YLR) in 2008, as required by the CLRDP; change the boundaries and associated buffers of several wetlands to reflect a recent wetland delineation update required by the CLRDP; modify the requirements for landscaping and restoration plantings in accordance with recommendations of the Scientific Advisory Committee (SAC) for the Resource Management Plan (RMP); revise the routes of public access trails and of fencing at the boundary of YLR to reduce impacts to sensitive habitats; modify the route of the new campus entry road and associated utilities; adjust the timing of certain wetland restoration activities; reflect the refinements in Campus planning for the MSC; and provide increased flexibility in how Campus parking demand is accommodated.

## ANALYSIS TIERED FROM THE CLRDP EIR

The CLRDP program of development was analyzed in the CLRDP EIR. The CLRDP EIR consists of:

- The Final CLRDP EIR, which was certified by The Regents of the University of California in September 2004 in conjunction with approval of the January 2004 Draft CLRDP.
- The University's Addendum #1 to the Final EIR, "Project Refinements and Additions" ("Addendum #1"), which was approved by the University in November 2006.
- The California Coastal Commission November 21, 2007, staff report and April 2008 findings, which are the Coastal Commission's CEQA-equivalent documents for its approval of the CLRDP.

The CLRDP EIR and Addendum #1 are available online at <http://ppc.ucsc.edu/cp/projects/11407/planning/clrdp-deir.pdf> and <http://ppc.ucsc.edu/cp/projects/11407/planning/addendum1.pdf>, or may be reviewed at the offices of UC Santa Cruz Physical Planning and Construction. The Commission determined in April 2008 that the CLRDP is consistent with the policies of the California Coastal Act and approved the CLRDP, conditional upon UC Santa Cruz' acceptance of the suggested modifications. Following approval of the suggested modifications by the University in December 2008, the Coastal Commission certified the CLRDP in January 2009.

In order to avoid or reduce potential significant environmental impacts, the proposed MSC Projects include and incorporate applicable CLRDP EIR mitigation measures as elements of the Projects. The CLRDP EIR includes both "General Campus" mitigation measures applicable to Campus operations, which are implemented on an ongoing basis, and "Project Specific" mitigation measures, which are implemented as part of individual development projects, as applicable. The CLRDP also contains policies

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that are intended to reduce the environmental impacts of development at the MSC, and implementation measures where necessary to help further define the policy requirements. For projects proposed for development under the CLRDP, incorporation of relevant implementation measures and consistency with CLRDP policy must be demonstrated in a Notice of Impending Development (NOID), which must be submitted to the Coastal Commission. Development of a project may not proceed unless the Coastal Commission has determined that it is consistent with the approved CLRDP.

All applicable CLRDP EIR mitigation measures and CLRDP policies and implementation measures are incorporated into each of the proposed MSC projects. CLRDP implementation measures and mitigation measures applicable to the MSC Projects, which are identified in Appendices C and D, respectively, of this EIR, will be monitored and are included in the project's through the Mitigation Monitoring and Reporting Program that is set forth in the CLRDP Final EIR, Chapter 9. The analysis of all environmental issues except climate change is tiered, in this project-level EIR, from the relevant discussion and analysis of these issues in the CLRDP EIR. Environmental setting information presented in the CLRDP also is tiered in this MSC Projects EIR to avoid redundant description and discussion, to the extent possible.

## EIR REVIEW PROCESS

### Public and Agency Review

On June 30, 2010, a Notice of Preparation (“NOP”) was published for the MSC Projects (Appendix B). The 30-day scoping comment period mandated by CEQA guidelines ended on July 30, 2010. All comments received on the NOP are available on file with UC Santa Cruz Physical Planning and Construction. An EIR scoping meeting was held on July 14, 2010, at the Ocean Health Building at the MSC, to solicit input from interested agencies, individuals, and organizations. Summaries of pertinent comments received on the NOP are included in each resource section in Chapter 3, *Environmental Setting, Impacts, and Mitigation*, and in Chapter 4, *Alternatives*.

This ~~Draft~~ Final EIR, reference material used in the preparation of this EIR, and other documents that provide information regarding the proposed Projects are available for review during normal business hours at UC Santa Cruz Physical Planning and Construction, Barn G, UC Santa Cruz. Copies of the ~~Draft~~ Final EIR are also available for review at the McHenry Library and the Science and Engineering Library on the main UC Santa Cruz campus and at the Central Branch of the Santa Cruz City/County Library in downtown Santa Cruz. The ~~Draft~~ Final EIR is also available on the UC Santa Cruz web site, at <http://ppc.ucsc.edu>.

On May 13, 2011, the University submitted the Draft EIR to the State Office of Planning and Research (OPR) for notice on the State Clearinghouse website and distribution to State agencies at the discretion of OPR. The University also distributed Notices of Availability to all members of the public on the Campus Marine Science Campus CEQA mailing list; mailed printed or electronic copies of the document to agencies deemed likely to have an interested in the Projects; posted the complete Draft EIR on the UC Santa Cruz web site; and supplied the City and University libraries with printed copies of the Draft EIR. The OPR web site and the Notice of Availability both indicated that comments on the document could be

~~submitted to the University during a 45-day comment period, which would close on June 27, 2011. An open house and public hearing on the MSC Projects and the Draft EIR will be also was advertised via the Notice of Availability, and by public service announcements in the local newspaper and on the radio, from 5:30 to 8:00 PM at the Ocean Health Building at the MSC. The purpose of the open house and hearing, held on May 25, 2011, is was to provide information and respond to questions about the project and respond to questions about the Projects. At the public hearing. The public hearing will provided an opportunity for the agencies and members of the public were invited to provide oral or written comments on the Draft EIR; however, no written or oral comments were submitted at the hearing). The University also solicited and accepted Wwritten comments on the Draft EIR, by mail or email, through June 27, 2011. may be provided via email to:~~

~~[eircomments@ucsc.edu](mailto:eircomments@ucsc.edu)~~

~~or via regular mail, to:~~

~~\_\_\_\_\_ EIR Comments  
\_\_\_\_\_ University of California, Santa Cruz, Physical Planning and Construction  
\_\_\_\_\_ 1156 High Street, Mail Stop: PP&C  
\_\_\_\_\_ Santa Cruz, CA 95064~~

~~Comments should be provided no later than close of business, June 27, 2011.~~

## Project Approvals

~~Following the close of the public and agency comment period on this Draft EIR on June 27, 2011, the University will prepared responses to all written comments (and to oral comments received at the public hearing) that raised CEQA-related environmental issues regarding the Projects. The responses will be published in the Final EIR. The Final EIR, which includes all public and agency comments on environmental issues raised by the projects, and responses to those comments, will be considered by the University, and the EIR will be certified if it is determined by the University to be in compliance with CEQA. Upon certification of the EIR, the University will consider approval of CLRDP Amendment #1 and design approval of all four of the MSC Projects. The Campus anticipates that all of the projects and CLRDP Amendment #1 will be considered for approval in November 2011.~~

## USES OF THE EIR

The University will use this EIR to evaluate the significant environmental effects of approving the proposed MSC Projects. This EIR also may be used by responsible agencies with permitting or approval authority over the proposed MSC Projects (and/or subsequent projects tiered from the CLRDP EIR) to assess the environmental effects of the projects with respect to resource issues within each agency's permitting or approval authority.

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## OTHER AGENCY APPROVALS

Subsequent to approval of each of the Projects, the Campus will submit a Notice of Impending Development (NOID) to the Coastal Commission for approval of the proposed development. The Campus would submit a Notice of Intent to the State Water Resources Control Board and obtain coverage under the General Permit for Discharge of Storm Water Associated with Construction Activity for the proposed pProjects. The Campus may also need to obtain a Clean Water Act Section 404 permit from the US Army Corps of Engineers and/or a Streambed Alteration Permit from the California Department of Fish and Game (CDFG) for the wetland restoration work included in the projects.

## LEVELS OF SIGNIFICANCE

This ~~Draft~~ EIR uses a variety of terms to describe the levels of significance of adverse impacts identified during the course of the environmental analysis. According to CEQA Guidelines, Section 15382,

*“...significant effect on the environment means a substantial or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical changes is significant.”*

The following are definitions of the terms used to describe the significance of an impact:

**Significant and Unavoidable Impact.** Impacts that exceed the defined thresholds of significance and that cannot be eliminated or reduced to a less-than-significant level through the implementation of feasible mitigation measures.

**Significant Impact.** Impacts that exceed the defined thresholds of significance and that can be eliminated or reduced to a less-than-significant level through the implementation of feasible mitigation measures.

**Potentially Significant Impact.** Significant impacts that ultimately may be determined to be less than significant; the level of significance may be reduced by feasible mitigation measures, or through further resolution of the details of the project. Potentially Significant impacts may also be impacts about which there is not enough information to draw a final conclusion; however, for the purpose of this EIR, they are considered significant. Such impacts are equivalent to Significant Impacts and require the identification of feasible mitigation measures.

**Less-Than-Significant Impact.** Impacts that are adverse but not substantial because they do not exceed the specified thresholds of significance.

**No Impact.** Applies where a project does not create an impact in that category.

**Mitigation Measures.** According to CEQA Guidelines, Section 15126.4, “an EIR shall describe feasible mitigation measures which could minimize significant adverse impacts.”

**Residual Significance.** The significance of an impact after mitigation measures have been taken into account.

## ORGANIZATION OF THE ~~DRAFT~~ FINAL EIR

**Chapter 1: Executive Summary of Environmental Impacts and Mitigation Measures.** Summarizes environmental impacts that would result from development of the MSC Projects, describes proposed mitigation measures, and indicates the level of significance of impacts after mitigation.

**Chapter 2: Project Description.** Provides a detailed description of the proposed MSC Projects.

**Chapter 3: Environmental Setting, Impacts, and Mitigation.** Contains individual and cumulative analyses of environmental effects of the proposed MSC Projects by resource area. The following resource areas are addressed in this chapter:

Aesthetics	Hydrology and Water Quality
Agricultural and Forestry Resources	Land Use and Planning
Air Quality	Noise
Biological Resources	Population and Housing
Climate Change	Public Services
Cultural Resources	Recreation
Geology, Soils, and Seismicity	Transportation and Traffic
Hazards and Hazardous Materials	Utilities and Service Systems

The CLRDP EIR determined that there is no potential for MSC development to result in adverse effects with respect to mineral resources because there are no known or expected mineral resources on the MSC (CLRDP EIR, p. 4.10-5). Therefore this CEQA resource issue is not addressed in this EIR.

The resource area subsections listed above contain the following:

- An introduction that includes a summary of scoping comments received in response to the NOP that are relevant to the environmental resource area.
- An environmental setting section that describes baseline environmental information as of project baseline date, June 2010.
- A section describing relevant features of the Projects.
- CLRDP EIR mitigation measures that apply to and are included in the project description.
- Project impacts and mitigation measures, including cumulative impacts of the Projects in conjunction with other regional growth at the time of the full development and occupation of the Projects in academic year 2015-16.

**Chapter 4: Alternatives.** Describes and compares the environmental impacts of alternatives to the proposed MSC Projects and assesses the ability of each alternative to meet project objectives.

**Chapter 5: Other CEQA Considerations.** Provides discussions of other topics required by CEQA regarding impacts that would result from the proposed MSC Projects, including a summary of significant unavoidable impacts, significant irreversible changes, energy, and growth-inducing impacts.

**Chapter 6: Consultation and Coordination.** Provides a list of persons and agencies contacted.

**Chapter 7: List of Preparers and Contributors.** Identifies the persons who prepared the Draft EIR and those who were consulted during its preparation.

**Chapter 8: Comments, Responses to Comments and Changes to the Draft EIR.** Provides a copy of each of the comment letters received, annotated with comment numbers, and the university's responses to each annotated comment. This chapter also includes a table that indicates the location in the document and nature of each change made to the Draft EIR in preparing the document as the Final EIR.

**Chapter 9: Mitigation Monitoring and Reporting Program.** As required by CEQA guidance, the Mitigation Monitoring Program lists the mitigation measures identified in the EIR and, for each measure, sets forth the steps through which each measure would be implemented, the implementation schedule, and the parties responsible for implementing, and monitoring and reporting on the implementation of each of the identified measures.

**Appendix A:** Proposed CLRDP Amendment #1. An additional figure was added to this appendix to clarify the current boundaries of the Younger Lagoon Reserve relative to its extent prior to the adoption of the CLRDP.

**Appendix B:** EIR Notice of Preparation

**Appendix C:** CLRDP Policies and Implementation Measures Applicable to the Proposed Projects

**Appendix D:** CLRDP EIR Mitigation Measures Applicable to the Proposed Projects

**Appendix E:** Climate Change Technical Report

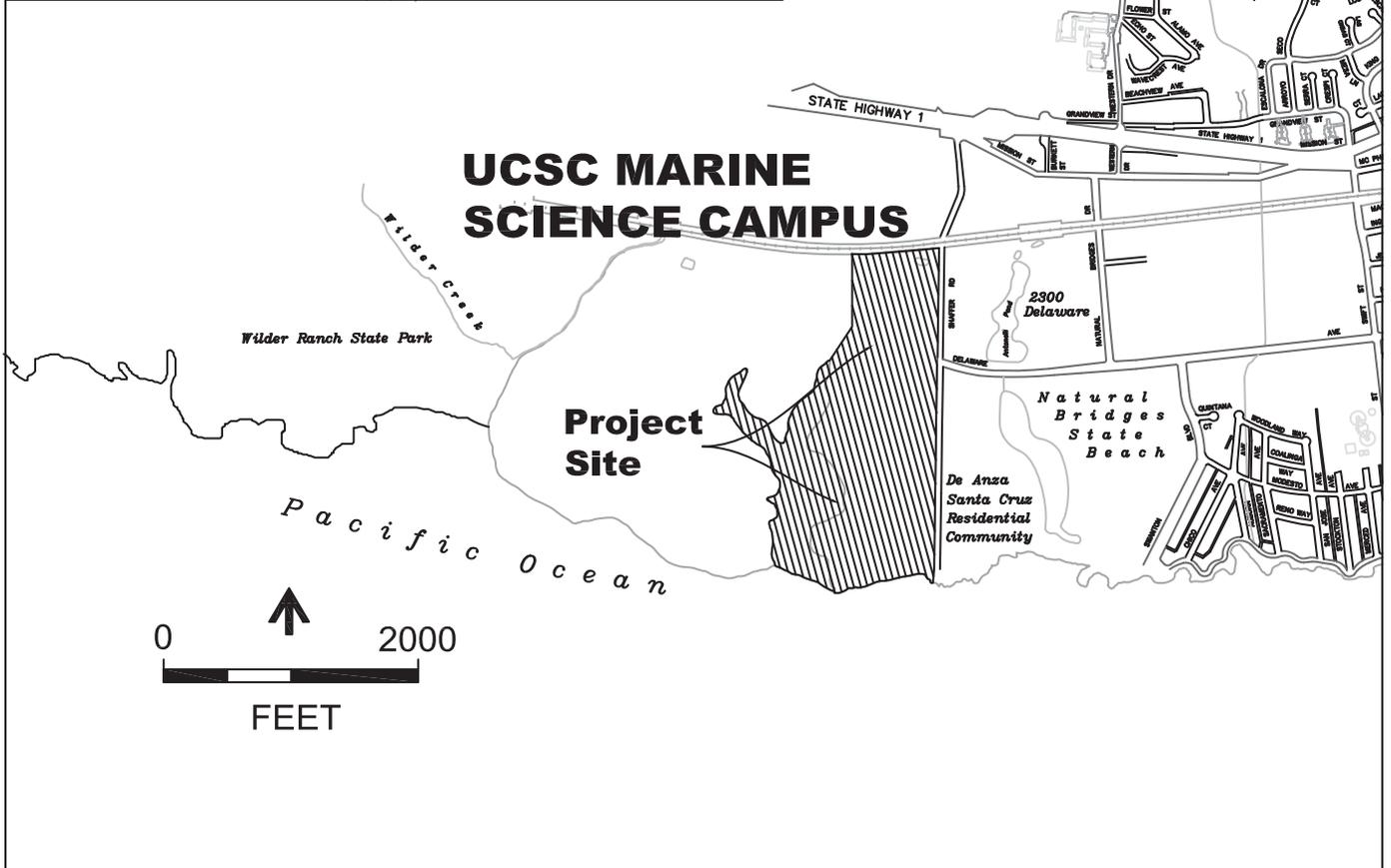
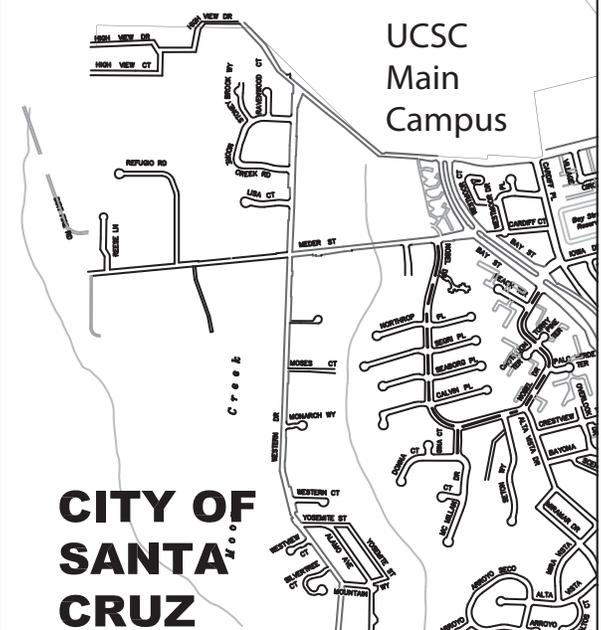
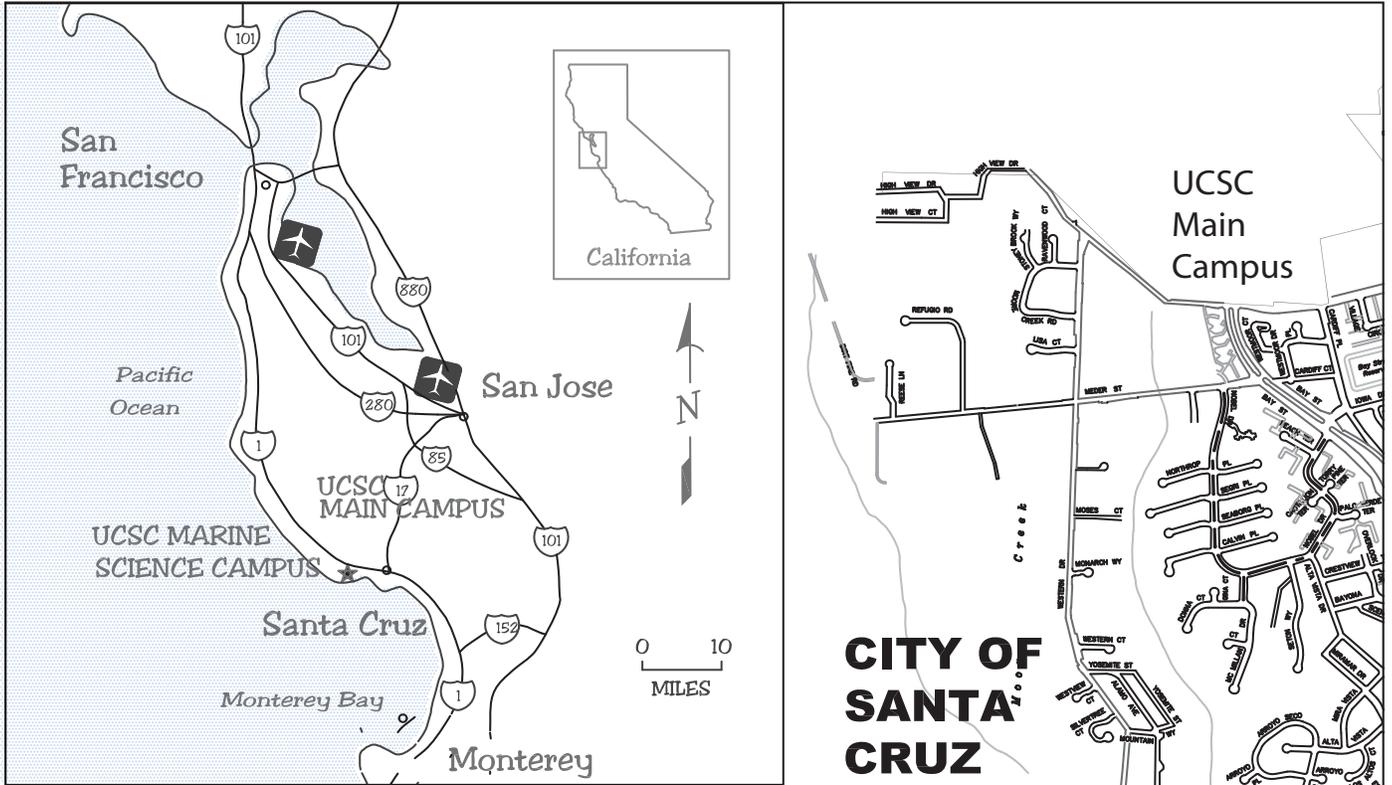
**Appendix F:** Project Hydrologic Analysis

**Appendix G:** Noise Impact Technical Report

**Appendix H:** Intersection Level of Service Calculation

**Appendix I:** URBEMIS Air Emissions Modeling Results

**Appendix J:** AMBAG Consistency Determination for CLRDP



UC Santa Cruz Marine Science Campus  
 Coastal Biology Building and  
 Infrastructure Improvements  
 Final Environmental Impact Report Nov. 2011

Marine Science Campus  
 Location

Figure  
 1



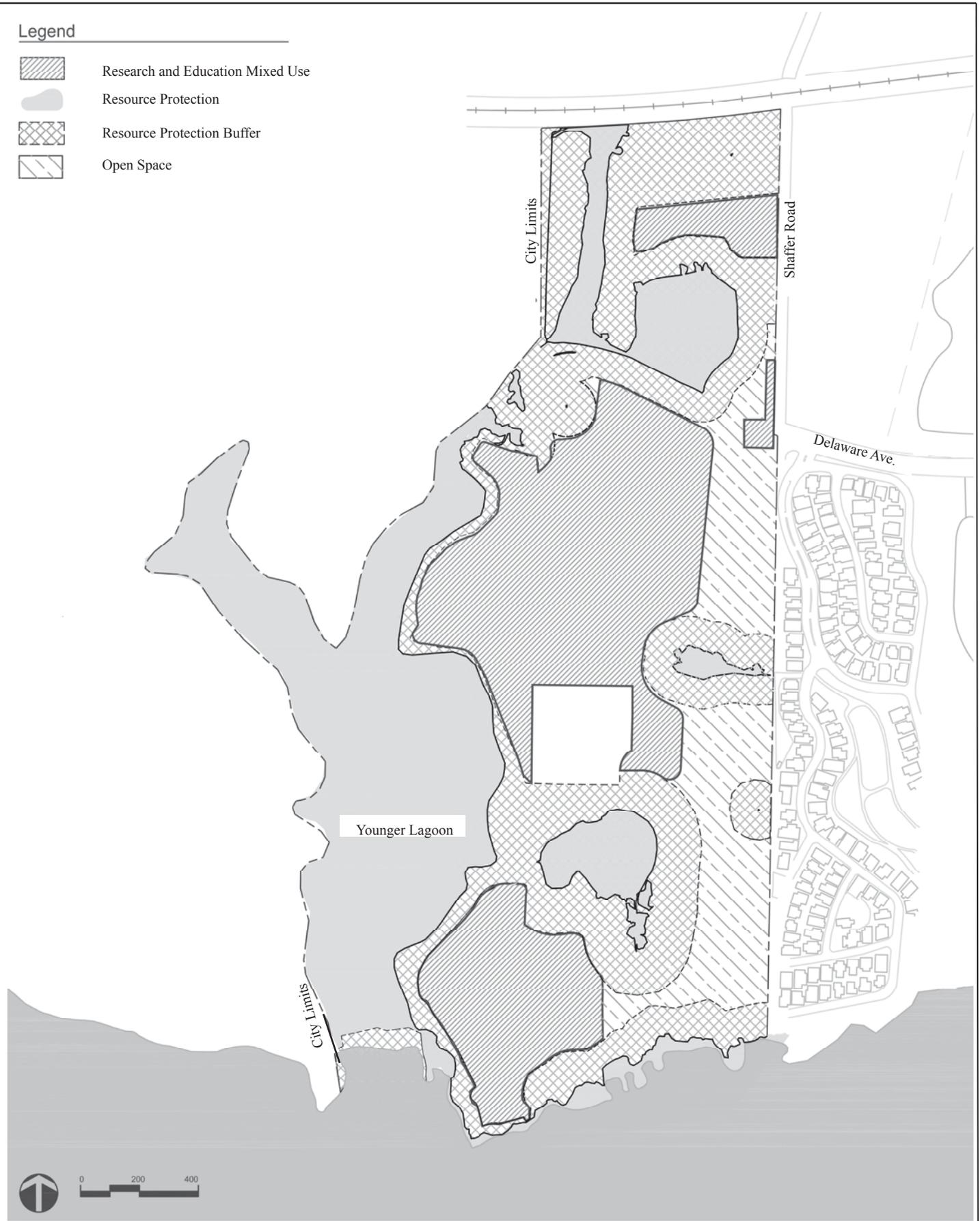
UC Santa Cruz Marine Science Campus  
 Coastal Biology Building and  
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Marine Science Campus  
 Existing Conditions

Figure  
 2

Legend

-  Research and Education Mixed Use
-  Resource Protection
-  Resource Protection Buffer
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Chapter 1 Executive Summary

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TABLES

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Table 1-1 Summary of MSC Project Impacts and Mitigation Measures

## 1.1 INTRODUCTION

This Environmental Impact Report (EIR) evaluates the potential for significant environmental effects (impacts) due to development of several four-related projects at the University of California, Santa Cruz (UC Santa Cruz) Marine Science Campus (MSC), collectively, “the MSC Projects” or “the proposed Projects.” The proposed Projects were described in Chapter 2, below, as are:

- Coastal Biology Building Project (CBB Project): The construction of a new marine sciences research and teaching laboratory building and new greenhouses and associated plant research work space on the MSC.
- Marine Science Campus Infrastructure Project (MSCI Project Phases A and B): Infrastructure upgrades necessary to serve the proposed buildings and other future development under the previously-approved CLRDP.
- Nature Education Facilities Project (NEF Project): Public access improvements required by the UC Santa Cruz Marine Science Campus Coastal Long Range Development Plan (CLRDP).
- Specific Resource Plan Phase 1B (SRP Phase 1B)

Subsequent to publication of the DEIR, the University determined that it would be appropriate to consider the CBB Project and the MSCI Project as a single project for design and budget approvals. To this end, “the MSCI Project” as described in this EIR has been subsumed into the CBB Project, which thus now includes the elements described in this EIR as the MSCI Project. Similarly, the Campus-funded parking elements described in this EIR as part of the CBB Project have been identified as a separate project for design and budget approval purposes, “the MSC Parking Phase 1 Project”; while the Campus-funded Environmental Health and Safety (EH&S) storage facility that is described in this EIR as part of the MSCI Project has been identified as a separate project for design and approval purposes, “the EH&S Facility Project”. These organizational changes do not alter the scope of the MSC Projects, nor of any aspect of the environmental analysis of the MSC Projects as presented in the Draft EIR, nor do they result in any changes in conclusions regarding environmental effects. The Mitigation Monitoring and Reporting Program presented in Chapter 9 of this FEIR applies to all of the projects, and each of the mitigation measures identified throughout Chapter 3 of this document would be implemented for each elements of the MSC Projects that contributes to the identified impact. Thus, as described in the CEQA Findings, “the MSC Projects” now consist of the following:

- The CBB Project, including the CBB research and laboratory building, the greenhouse complex, and the infrastructure elements previously described as the MSCI Project, but not including parking lots C and D (previously included in the CBB Project) and not including the EH&S Facility (previously included in the MSCI Project).

- 
- The MSC Parking Phase 1 Project: Parking Lots C and D, previously included in the CBB project as described in Chapter 2 of this EIR.
  - The MSC EH&S Facility, previously included in the former MSC Project as described in this EIR
  - The NEF Project, as described in Chapter 2 (unchanged)
  - SRP Phase 1B, as described in Chapter 2 (unchanged).

The remaining chapters of the text of the FEIR have not been altered to reflect these organizational changes in the project description. However, the reader should be cognizant of this reorganization; in particular, that subsequent references to the MSC Project should be understood to refer to the CBB Project, within which the former MSC Project has now been subsumed.

In addition, this EIR analyzes the potential environmental effects of 11 proposed minor amendments to UCSC's previously approved CLRDP, collectively, "CLRDP Amendment #1."

Finally, this Final EIR proposes a revision of previously-adopted CLRDP EIR Mitigation Measure 4.3-1, which is included in the proposed MSC Projects and would be applicable to future construction projects under the CLRDP. The proposed revision would add a measure to further control dust under windy conditions to the list of construction dust control measures previously adopted in the CLRDP mitigation measure, to further reduce the less-than-significant impact of the MSC Projects with respect to fugitive construction dust. The revision also would add a mechanism under which any dust complaints can be registered with the campus so that any issues will be addressed promptly. This revision would not alter the analysis or conclusions presented in the Draft EIR.

This section summarizes the major areas of importance in the environmental analysis for the proposed Projects, as required by Section 15123 of the California Environmental Quality Act (CEQA) Guidelines. It also provides a brief description of the MSC Projects and alternatives to these Projects, lists project objectives, and summarizes comments on the Notice of Preparation and areas of controversy known to the University. Table 1-1 summarizes environmental impacts and mitigation measures identified in the analysis.

## 1.2 DESCRIPTION OF PROPOSED PROJECTS

The proposed CBB Project includes development of a new lab building, two new parking lots, a Greenhouse Complex, and associated site work including proposed storm water treatment and infiltration features. The proposed MSC Project consists of campus utility and circulation improvements to serve both the CBB project and future campus development under the CLRDP. The proposed NEF Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage, and outdoor exhibits. Under the proposed SRP 1B, CLRDP-mandated wetland restoration and habitat improvements would be implemented. Proposed Amendment #1 to the CLRDP consists of 11 actions proposed either to comply with CLRDP requirements (e.g. a CLRDP requirement that the CLRDP be amended to reflect Younger Lagoon boundary changes); to conform the CLRDP with planning refinements since CLRDP approval (e.g. refinement in the proposed trail routes); to provide internal consistency after minor

language changes in the CLRDP made late in the approval process; and to amend existing CLRDP implementation measures to facilitate implementation of certain CLRDP goals while also supporting proposed project objectives.

### 1.3 PROJECT OBJECTIVES

The objectives of the proposed CBB Project (including former MSCI Project, MSC Parking Phase 1 and MSC EH&S Facility) are to:

- Provide additional seawater-equipped teaching and research laboratory space, plant research space, and support space to accommodate enrollment demand for Ecology and Evolutionary Biology (EEB) laboratory classes from declared majors.
- Provide sufficient faculty office and research laboratory space to accommodate increased EEB faculty to support enrollment and research demands.
- Consolidate EEB Department faculty, post-doctoral students, and graduate students and the research facilities they need at a single location.
- Co-locate Coastal Science and Marine Science researchers for research efficiencies and to facilitate interdisciplinary research collaboration.
- Reduce overuse and overcrowding of existing facilities, research spaces, seminar rooms, and labs on the main campus and the Marine Science Campus.

The objectives of the proposed MSCI Project (now included in CBB Project) are to:

- Construct utility improvements, facilities, public parking, and storage areas necessary to support the CBB project and future development as set forth in the CLRDP.
- Increase capacity, reliability, and flexibility of existing infrastructure.
- Improve campus circulation network for vehicles, bicycles, and pedestrians.
- Improve and enhance public coastal access.
- Provide improved coastal resource protection through development of storm water infiltration features, enhanced buffering and vegetation screening for the YLR, and enhancement of wildlife movement corridors.
- Incorporate storm water features that will minimize storm water runoff to protect and enhance water quality.
- Comply with circulation and storm water-related implementation measures required as part of the Coastal Commission certification of the CLRDP.

The objectives of the proposed NEF Project are to:

- Provide new, improved, and expanded interactive educational facilities for children and adults who visit the MSC.
- Provide the public with increased and enhanced opportunities to view wildlife and coastal, wetland, and marine habitats in a natural setting.

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- Increase public awareness of the scientific and ecological value of coastal and marine resources.
  - Comply with public coastal access improvements implementation measures required as part of the Coastal Commission certification of the CLRDP.

The objectives of the proposed SRP Phase 1B Project are to:

- Improve native habitat on the MSC to create an ecological mosaic that will support native plants and wildlife.
- Enhance the natural function and ecological makeup of terrace wetlands.
- Enhance native wildlife habitat and movement corridors between the northern part of the campus and Younger Lagoon, and east-west across the campus to support movement between Younger Lagoon and Antonelli Pond in the Moore Creek drainage.
- Create connectivity between wetlands W1 and W2, diminish fragmentation of wetland habitats, and generally enhance wetland habitat in the upland area between wetlands W1 and W2.
- Improve water quality by reducing peak flow rates of storm water runoff and thus reduce erosion in channels between wetlands W1, W2, and W6 and Younger Lagoon.
- Comply with implementation measures required as part of the Coastal Commission certification of the CLRDP.

The objectives of CLRDP Amendment #1 are to:

- Accommodate student and program needs for marine dependent facilities.
- Adjust CLRDP text, figures, and implementation measures as needed to reflect input from the Scientific Advisory Committee, changed wetland conditions, and campus planning refinements since certification of the CLRDP, and changes in YLR nomenclature to reflect the intent of the final CLRDP.

## 1.4 IMPACT SUMMARY

Table 1-1, at the end of this chapter, provides a complete list of all impacts and mitigation measures identified for each of the proposed projects. For each impact, Table 1-1 reports the significance of the impact before mitigation, applicable mitigation measures, and the level of significance of the impact after the implementation of the mitigation measures.

## 1.5 ALTERNATIVES TO THE PROPOSED PROJECTS

The following alternatives are analyzed in detail in the EIR and compared to the proposed MSC Projects. Chapter 4 presents a detailed description of each alternative and analyzes the potentially significant impacts of each. The alternatives analysis considers whether an alternative would feasibly attain some or most of the project objectives, while avoiding or substantially lessening any of the significant effects of the proposed project, and assesses the ability of each alternative to meet project objectives.

For the CBB and MSC Projects, four alternatives are analyzed in Chapter 4 of this EIR:

- **Alternative 1. Main Campus CBB/Minimal MSCI:** The CBB laboratory and office building would be sited at Science and Engineering Area on the Main Campus and no new greenhouses would be built. The MSCI Project at the MSC would implement only those project elements required by the CLRDP based on time elapsed since CLRDP approval; that is, improvements to storm water infiltration features in Development Subarea 7, and removal and restoration of informal parking along McAllister Way. This alternative would eliminate potentially significant effects of the proposed CBB and MSCI Projects with respect to biological resources and potential ground water diversion, and would reduce the Projects' contribution to one significant traffic impact and two potentially significant transportation impacts. A potentially significant construction noise impact that could affect residents living near the MSC instead would occur for academic facilities at the Main Campus. Similarly, some of the potentially significant biological resources impacts that would occur at the MSC under the proposed CBB and MSCI Projects instead would occur at the Main Campus under the alternative. All of these impacts would be reduced to less-than-significant levels by mitigation proposed for the CBB and MSCI Projects in this EIR. This alternative would eliminate the project's potentially significant impact with respect to inconsistency with a parking provision of the CLRDP.
- **Alternative 2. CBB at 2300 Delaware/MSC Seawater Extension:** 40,000 sf would be remodeled in the interior of existing Building C at the campus' facility at 2300 Delaware Avenue in the west side of the City of Santa Cruz, and new greenhouses would be built in an existing fenced utility yard at the site. The MSCI Project would consist of extending the MSC seawater distribution and return lines along Delaware Avenue to the project site, and implementation of the same two CLRDP-required storm water improvements included in Alternative 1. This alternative would eliminate several potentially significant biological resources impacts identified for the CBB and MSCI Projects at the MSC and probably would eliminate the proposed MSCI Project's one potentially significant impact with respect to changes in groundwater flow that might result from deep trenching for sewer pipeline construction. The alternative also would reduce potentially significant cumulative construction noise impacts, the CBB and MSCI Projects' potentially significant land use plan inconsistency impact with respect to a CLRDP parking implementation measure, and two potentially significant transportation impacts.
- **Alternative 3. Reduced CBB/Reduced MSCI:** The proposed large and small seminar rooms (and associated student population) would be eliminated from the CBB, and the laboratory facility would be reduced to about 37,000 sf. The Greenhouse Complex and associated Parking Lot C would not be built and the EEB department faculty would commute to the Main Campus for undergraduate classes and use of the greenhouses. The proposed MSCI utility and road improvements would be developed, but the Upper Terrace Storage Yard would not be developed or used for staging. This alternative could reduce potentially significant biological resources impacts of the proposed CBB and MSCI Projects, would reduce the CBB contribution to a significant traffic impact at one intersection and to two other potentially significant transportation impacts, and would reduce or eliminate the CBB and MSCI Projects' potentially significant land-use inconsistency impact with respect to a CLRDP parking implementation measure.
- **Alternative 4: No Project Alternative.** No CBB facilities and no new infrastructure would be developed at the MSC. The existing informal parking along McAllister Way would be retained and

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storm water infrastructure improvements would not be made in Development Subarea 7 at this time. This alternative would eliminate all of the potentially significant impacts and the one significant impact of the proposed Projects, and would eliminate the Projects' potentially significant impact related to inconsistency with a CLRDP parking implementation measure. However, this alternative would introduce a new potentially significant impact with respect to inconsistency with the CLRDP because, under the No Project Alternative, other CLRDP-required provisions (storm water improvements and removal of informal parking) would not be implemented as scheduled by the CLRDP.

For the NEF Project, two alternatives are analyzed:

- Alternative 1. No De Anza Trail: The NEF Project would be developed as proposed, except that the De Anza trail improvements would not be carried out. This trail would continue to be available for public use, without paving or other ADA improvements. This alternative would reduce the proposed Projects' contribution to a potentially significant cumulative construction noise impact.
- Alternative 2. No Project Alternative: No new trails, trail improvements, or public access improvements would be carried out at this time. This alternative would eliminate the potentially significant biological resources and construction noise impacts of the proposed Projects, but would introduce a new potentially significant impact with respect to consistency with the applicable land-use plan, as required elements of the CLRDP would not be implemented.

For the SRP Phase 1B Project, a No Project Alternative is analyzed. The No Project Alternative would eliminate potentially significant impacts of the proposed Projects with respect to biological resources, but would introduce a new potentially significant land-use impact because the wetland reconnection and habitat restoration requirements of the CLRDP and its Resource Management Plan would not be carried out.

No alternatives to the proposed CLRDP Amendment #1 were analyzed, as only one of the proposed actions, Action 11, a proposed revision of MSC parking provisions, has any potential to result in physical effects upon the environment. The potential environmental effects of Action 11 are addressed in Section 3.10, *Land Use*, and Section 3.15, *Transportation and Traffic*, of this EIR, which identify mitigation measures that would reduce the potentially significant land use inconsistency and related physical effects to the environment that could result from this amendment to less-than-significant levels. All of the alternatives analyzed for the CBB/MSCI Projects also would reduce or eliminate the potentially significant impacts related to this amendment.

## 1.6 KNOWN AREAS OF CONTROVERSY

This EIR addresses environmental issues associated with the proposed project that are known to the lead agency or were raised by agencies or interested parties during the public and agency NOP review period. These issues include:

- Potential construction noise and air quality impacts on the residential community that borders the MSC.

- Effects of project operations, particularly the new backup and emergency generators, on ambient noise.
- Potential impacts of development on biological resources at the MSC, including wetlands and California red-legged frog.

More comprehensive and detailed listings of issues raised during scoping are provided in relevant sections, below. Comment letters received and a transcript of comments provided orally during scoping are available for review at the offices of UC Santa Cruz Physical Planning and Construction. Comment letters on the Draft EIR that were received during the public comment period are included in Chapter 8 of this Final EIR. No oral or written comments were received at the public hearing for the Draft EIR.

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>	
<b>3.1 Aesthetics</b>						
<b>MSC Projects Impact AES-1</b>	The CBB lab building and greenhouses and the Utility Yard and Storage Yard that would be developed under the MSC Project would be visible in scenic vistas from medium- and short-range vantage points in the vicinity of the MSC.	None	<u>CBB</u> <u>MSCI</u>	LTS	None required	n/a
<b>MSC Projects Impact AES-2</b>	The CBB lab building and greenhouses and the Utility Yard and Storage Yard that would be developed under the MSC Project would alter views of the open grasslands on the site and of Younger Lagoon, which are considered to be scenic resources.	None	<u>CBB</u> <u>MSCI</u>	LTS	None required	n/a
<b>MSC Projects Impact AES-3</b>	The CBB and MSC Projects would increase the amount of urban development on the MSC, which could alter the visual character and quality of the site.	None	<u>CBB</u> <u>MSCI</u>	LTS	None required	n/a
<b>MSC Projects Impact AES-4</b>	The CBB and MSC Projects would increase the amount of exterior lighting on the MSC, which, if not appropriately limited and screened, could result in a deterioration of nighttime views from neighboring uses, reduce the perceived open space boundary that separates these uses, and contribute to the perception of extension of urbanized areas to the city limit.	None	<u>CBB</u> <u>MSCI</u>	LTS	None required	n/a
<b>MSC Projects Impact AES-5</b>	The CBB and MSC Projects, in conjunction with other development in the vicinity of the MSC, could result in adverse impacts on scenic vistas, scenic resources, or the visual character and quality of the area, and could increase the amount of light pollution in the vicinity of the	None	<u>CBB</u> <u>MSCI</u>	LTS	None required	n/a

<sup>1</sup> "CBB Project" as identified in this table subsumes former MSC Project, MSC Parking Phase 1 Project and MSC EH&S Project, with respect to applicability of mitigation measures.

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>	
<b>3.2 Agricultural Resources</b>						
<b>MSC Projects Impact AG-1</b>	Development of the proposed CBB, MSCI, and NEF Projects would result in conversion of Unique Farmland to non-agricultural uses.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Projects Impact AG-2</b>	Development of the proposed MSC Projects could constrain use of certain pesticides and generate complaints of nuisance, vandalism/theft, pilferage, and trespass/liability at the Younger Ranch, which could indirectly result in the eventual removal of adjacent land from agricultural use.	General Mitigation Measure 4.2-1	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	Additional mitigation not required	n/a
<b>MSC Projects Impact AG-3</b>	Development of the proposed MSC Projects, in conjunction with other growth in the project vicinity, could indirectly result in the eventual removal of adjacent land from agricultural use.	General Mitigation Measure 4.2-1	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	Additional mitigation not required	n/a
<b>3.3 Air Quality</b>						
<b>MSC Projects Impact AIR-1</b>	Construction activities under the proposed MSC Projects would result in emissions of PM <sub>10</sub> on a short-term basis.	General Mitigation Measure 4.3-1	<u>All</u>	LTS	<p><del>Additional mitigation not required</del></p> <p><b>MSC Projects Mitigation Measure AIR-1:</b> The University shall revise CLRDP General Mitigation 4.3-1 as shown below:</p> <p><b>CLRDP EIR Mitigation Measure 4.3-1:</b> The University shall require construction contractors to implement a dust abatement program to reduce the contribution of project construction to local respirable particulate matter concentrations. Elements of this program shall include the following as appropriate for each project:</p> <ul style="list-style-type: none"> <li>• <u>Water all active construction areas at least twice times</u></li> </ul>	n/a

**Table 1-1**  
**Summary of MSC Projects Impacts and Mitigation Measures**

Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
				<p><u>daily and at least three times daily during the months of February through November. Frequency shall be based on the type of operation, soil, and wind exposure.</u></p> <ul style="list-style-type: none"> <li>• <u>Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).</u></li> <li>• <u>Pave, apply water two times daily, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and construction staging areas.</u></li> <li>• <u>Sweep daily with water sweepers any paved access roads, parking areas, and staging areas at construction sites.</u></li> <li>• <u>Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.</u></li> <li>• <u>Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas or previously graded areas left inactive for ten days or more.</u></li> <li>• <u>Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).</u></li> <li>• <u>Limit traffic speeds on unpaved roads to 15 miles per hour.</u></li> <li>• <u>Install sandbags or other erosion control measures to prevent silt runoff to public roadways.</u></li> <li>• <u>Replant vegetation in disturbed areas as quickly as possible.</u></li> </ul>	

**Table 1-1**  
**Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
					<ul style="list-style-type: none"> <li>• <u>In the event that grading and excavation at two or more large project sites is proposed to occur concurrently (large sites defined as involving more than 2 acres), install wheel washers at the entrance of the construction sites.</u></li> <li>• <u>Phase construction projects in such a manner that minimizes the area of surface disturbance (e.g., grading, excavation) and the number of vehicle trips on unpaved surfaces.</u></li> <li>• <u>Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402.</u></li> </ul>	
<b>MSC Projects Impact AIR-2</b>	Construction activities under the proposed MSC Projects would result in emissions of toxic air contaminants on a short-term basis.	None	<u>All</u>	LTS	None required	n/a
<b>MSC Projects Impact AIR-3</b>	Operation of the CBB lab building and greenhouses and vehicle trips associated with these facilities would generate emissions of criteria air pollutants.	None	<u>CBB</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Projects Impact AIR-4</b>	Vehicle trips associated with operation of the CBB and NEF Projects would result in an increase in carbon monoxide levels at area intersections.	None	<u>CBB</u> <u>NEF</u>	LTS	None required	n/a

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
<b>MSC Projects Impact AIR-5</b>	Operation of the CBB lab building and greenhouses would generate emissions of toxic air contaminants, which could increase health risks for the campus population and nearby residents.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Projects Impact AIR-6</b>	Construction of the MSC Projects and operation of the CBB lab building and greenhouses, in conjunction with other development in the region would result in an increase in emissions of criteria air pollutants.	General Mitigation Measure 4.3-1	<u>All</u>	LTS	<u>None required-Implement MSC Projects Mitigation Measure AIR-1, as detailed above</u>	n/a
<b>MSC Projects Impact AIR-7</b>	Operation of the CBB lab building and greenhouses, in conjunction with other regional development, would generate emissions of toxic air contaminants, which could increase health risks for the campus population and nearby residents.	None	<u>CBB</u>	LTS	None required	n/a
<b>3.4 Biological Resources</b>						
<b>MSC Projects Impact BIO-1</b>	If special-status plants are present in the study area, project construction could result in adverse impacts, including mortality of individuals or population groups by crushing or habitat destruction.	None	<u>All</u>	PS	<u>MSC Project Mitigation Measure BIO-1: A qualified botanist will conduct up to three focused surveys for special-status plant species on and within the full extent of all vegetated areas that will be subject to project activity (ground disturbance, placement of spoils, construction vehicle parking, or traffic, etc.) for each project element during the spring-summer (April-August) blooming period, within two years prior to the beginning of construction. If no special-status species are observed during the focused surveys, no additional mitigation is necessary. If special-status plants are observed, the population will be mapped and quantified and a suitable buffer zone established (based on species requirements, proximity to the work area, and other site specific factors), and other protection measures, such as fencing around the population to protect it from disturbance, will be implemented as determined necessary</u>	LTS

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
					by the biologist. If the population cannot be avoided by the project, impacts to the population shall be quantified and regulatory agencies (California Department of Fish and Game, and/or U.S. Fish and Wildlife Service, as appropriate) contacted for guidance or permitting, depending on the species affected, and additional measures that may be identified by regulatory agencies to mitigate adverse effects, such as soil stockpiling, transplantation, and/or seed collection and propagation, would be implemented.	
<b>MSC Projects Impact BIO-2</b>	Clearing of a staging area in campus grasslands and subsequent reseeding could introduce or indirectly result in the spread of non-native species into the YLR	None	<u>CBB</u> <u>MSCI</u>	PS	<b>MSC Project Mitigation Measure BIO-2A:</b> In the first fall after use of the staging area is discontinued, gravel and groundcover cloth will be removed, and the ground surface will be scarified to alleviate any compaction from construction. Then, the entire area will be seeded or replanted with a non-invasive erosion control seed mix or a mix composed of appropriate, locally-collected native grasses and forbs, selected in collaboration with YLR staff from the species listed in the approved SRP Phase 1A. Temporary irrigation will be supplied as needed to ensure that plantings are adequately established. Alternatively, the Campus may elect to retain the groundcover cloth and gravel and maintain the area as a temporary parking lot until such time as it is developed.	LTS
					<b>MSC Project Mitigation Measure BIO-2B:</b> If the area is replanted, the Campus will ensure that the restored area will be managed to prevent seed set of annual species and will monitor this area and will remove high priority weeds and control other weedy invasive annual grasses and herbs, consistent with IM 2.3.5 (Interim Weed Abatement Measures for Undeveloped Lands within Development Zones) until such time as the area is developed.	
					<b>MSC Project Mitigation Measure BIO-2C:</b> Grounds Services in collaboration with YLR staff will assess the	

**Table 1-1**

**Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
					effectiveness of the measures above in controlling the spread of invasive plants from this site into the YLR annually. If it is determined that the staging site has become a significant source of invasive plants that could migrate into YLR habitat, the Campus will till the area and reseed it annually with sterile grasses, and these planting will be maintained until such time as the site is developed.	
<b>MSC Projects Impact BIO-3</b>	Construction activity along roadways and site clearing and grading could result in direct mortality to CRLF in portions of the work area that support appropriate cover, should the individuals be present during construction.	MSC Projects MM BIO-3 is substituted for CLRDP Project-Specific Mitigation Measure 4.4-1 for the MSC Projects.	<u>All</u>	PS	<b>MSC Projects Mitigation Measure BIO-3A:</b> Within two weeks prior to the start of construction, and each time a new crew starts work, a qualified biologist will present a worker education program and associated documentation to all new construction personnel at the project site. The on-site foremen will ensure that all construction personnel and subcontractors receive a copy of the written biological education materials. The education program shall include a description of the CRLF and its habitat, the general provisions of the Endangered Species Act, the necessity of adhering to the Act to avoid penalty, and measures that will be implemented, specific to the project and the work boundaries of the project, to avoid affecting CRLF.	LTS
					<b>MSC Projects Mitigation Measure BIO-3B:</b> In consultation with a qualified biologist (see MSC Projects Mitigation Measure BIO-15 [Biological Mitigation Coordination]), the Campus will ensure that an exclusion fence for CRLF and western pond turtle is installed around each work area that contains vegetation that could provide appropriate cover for CRLF and/or appropriate nesting habitat for western pond turtle (see MSC Projects Impact BIO-6 below), prior to construction, to prevent CRLF and western pond turtle from moving onto the site. Areas that will be disturbed by SRP Phase 1B activities, road and trail construction and utility construction will be subject to separate mitigation measures, as exclusion fencing would not be effective or practicable for these areas. Fencing	

**Table 1-1**  
**Summary of MSC Projects Impacts and Mitigation Measures**

Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
				<p>alignments will be determined as follows: During development of project specifications and construction drawings, the project biologist will review site-work, grading and other pertinent plans with the UCSC Project Manager to determine locations where exclusion fencing for frogs and turtles (as described below) 1) would be effective in excluding wildlife from construction activity areas, 2) could be employed without unduly hindering construction activity, and 3) appears more likely than allowing free night movement through the construction zone to benefit the target species. To minimize unnecessary exclusion of wildlife that may safely pass through, and subject to consultation between the qualified biologist and the project construction manager, areas where disturbance will be short term and/or temporary may be subject to biological monitoring during vegetation clearing and/or during construction, rather than to fencing. The agreed upon fencing alignments will be marked on the plans during biological coordination, as specified in Mitigation Measure BIO-15, and included in the project specifications. Prior to any surface disturbance at each location, a qualified biologist will meet in the field with the UCSC project manager and construction foreman to adjust the fencing alignment and timing of erection and removal based on the habitat that will be affected, as well as on the configuration and location of specific construction tasks. The alignments as shown on plans will be subject to adjustment by mutual agreement between the biologist, the project manager and the construction contractors, as necessary to ensure wildlife protection, without unnecessarily impeding construction.</p> <p>Installation of fencing will be monitored by a qualified biologist. Exclusion fence materials may be high-grade nylon silt-fencing, plywood, or other appropriate materials. The base of the fence shall be buried at least 6 inches and it</p>	

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**Summary of MSC Projects Impacts and Mitigation Measures**

Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
				<p>shall extend at least 2.5 feet above grade and shall surround the entire exclusion area. If necessary, an appropriate gate shall be engineered, in consultation with a biologist experienced in implementation of these provisions, to access construction areas that excludes the target species at night, but allows egress by workers and equipment during the day. Roads and pathways necessary to access existing facilities will not be fenced or gated. A cover-board (4 by 4-foot 1/2-inch square of plywood) shall be placed at approximately 100-foot intervals outside the exclusion fence to provide predator protection for small animals that encounter the fence. Each cover-board shall be elevated approximately two inches using two attached 6-inch wooden blocks. The elevated edge of each cover-board shall be placed flush against the outside of the exclusion fence. The cover-boards will be labeled with signage to ensure they are not disturbed, and each shall be regularly inspected by the biological monitor to ensure that they remain in place.</p> <p>Fencing may be removed, upon approval of the qualified biologist, when all construction-related activities that could harm or kill CRLF or damage turtle nests (see MSC Projects Impact BIO-6, below) are complete; generally, when the majority of exterior work is complete.</p>	
				<p><b>MSC Projects Mitigation Measure BIO-3C:</b> Immediately prior to vegetation removal at each project element/work site, including both fenced and unfenced sites, a qualified biologist will survey each work site for CRLF. The biologist will then monitor the initial removal of vegetation in each work area, including the work areas within exclusion fencing and unfenced areas, including trail alignments, utility alignments outside of existing roadways, and the areas of grading proposed for SRP Phase 1B wetland work. Next, vegetation will be cleared, with hand-held equipment, to a height of 3–6 inches above grade. The qualified</p>	

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Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
					biologist will then repeat the inspection before any ground disturbance or heavy equipment movement into the area. If CRLF are observed in the work area at any time during this process, ground disturbing work will be postponed and the USFWS contacted for guidance.	
					<b>MSC Projects Mitigation Measure BIO-3D:</b> Subsequent to vegetation removal, a qualified biologist will inspect every work area each morning prior to the start of construction activity, until all surface-disturbing activities are complete. If no CRLF are observed during the morning inspection, the biologist will depart. After all potential habitat is cleared within the work area, daily monitoring will cease, but the biologist will inspect exclusion fencing weekly and the contractor will repair fencing as identified by the biologist, by nightfall on the same day. If CRLF are observed on or near the work area at any time, work shall cease in proximity to the observation and a qualified biologist and the USFWS will be contacted immediately. Full-time biological monitoring and/or other mitigation measures may then be required.	
					<b>MSC Projects Mitigation Measure BIO-3E:</b> Construction work and all construction vehicle movement on the site will be restricted to the hours between dawn and dusk. In addition, construction vehicles and heavy equipment will be restricted from parking at night along road margins except where roads immediately abut existing development. The biological monitor will inspect the area around and under each piece of equipment not parked within the exclusion areas, prior to equipment movement each morning.	
<b>MSC Projects Impact BIO-4</b>	Adult western burrowing owls could be killed if they occupy a burrow within a work area that will be disturbed during construction.	MSC MM BIO-4 substituted for CLRDP	<u>All</u>	PS	<b>MSC Projects Mitigation Measure BIO-4:</b> A qualified biologist will conduct a survey following CDFG guidelines (1995) for wintering burrowing owls during the winter season immediately preceding the start of construction. If	LTS

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
		MM 4.4-2 for the MSC Projects.			the species is detected within the project area, the Campus will contact CDFG for guidance regarding feasible methods to protect owls during construction, and will implement CDFG recommendations to avoid potential impacts to owls.	
<b>MSC Projects Impact BIO-5</b>	Ground disturbance during construction in grassland and scrub could result in injury or death of American badgers, should they be present.	None	<u>All</u>	PS	<b>MSC Projects Mitigation Measure BIO-5:</b> Within 15 days prior to surface disturbance in each project area, a qualified biologist will conduct a pre-construction survey for badger dens and diggings at each project site and within 200 feet of project margins (exclusive of the portion of the YLR surrounding the lagoon, which is already fenced and protected). If a badger den is detected within the project site or the buffer zone (exclusive of the YLR, where no disturbance will occur), a wildlife-friendly exclusion fence shall be installed (steel T-posts and yellow nylon rope or similar material), 25-feet from the den in all directions, and CDFG shall be contacted for guidance. Additional mitigation measures recommended by CDFG will be implemented to ensure that any badgers present in or near project areas are protected or appropriately relocated.	LTS
<b>MSC Projects Impact BIO-6</b>	Construction work in grasslands and open coyote brush scrub habitat could result in death of adult western pond turtles if they attempt to nest in a work area during construction and eggs or hatchlings could be killed if a nest is deposited within a work area.	None	<u>All</u>	PS	<b>MSC Projects Mitigation Measure BIO-6:</b> <u>The construction crew training described in MSC Projects Mitigation BIO-3A, above, also shall include information on avoidance and protection of western pond turtles and their nests. In addition, Subject to the specifications set forth in MSC Projects Mitigation BIO-3A, above, prior to April 15 during the year of construction (prior to the beginning of nesting season), work areas shall be enclosed with a wildlife exclusion fence as specified in Mitigation Measure BIO-3B (above), before surface disturbance occurs, to reduce the chance that turtles may deposit eggs within the work area. If construction begins before April 15, the exclusion fence requirement specified in Mitigation Measure BIO-3B (above) is still required. In areas that will be temporarily disturbed, such as installation of underground utilities or trail construction, a qualified biologist shall search for any</u>	LTS

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
					evidence of western pond turtle nesting prior to surface disturbance. If a western pond turtle or nest is discovered, CDFG will be contacted for guidance regarding appropriate protection or, if necessary, relocation of the nest.	
<b>MSC Projects Impact BIO-7</b>	Direct removal of vegetation, including grasses and shrubs, could result in destruction of nests of special status and other native and migratory birds. Construction activity, particularly in Subareas 6 and 7 in close proximity to Younger Lagoon, could disturb nesting birds, if present, which could result in nest abandonment and adversely affect breeding success.	MSC Projects MM BIO-7A through -7D are substituted for CLRDP Project Specific MM 4.4-2 for the project.	<u>All</u>	PS	<b>MSC Projects Mitigation Measure BIO-7A:</b> If work in any project site area must commence during the avian breeding season (February 1 to August 31), a qualified biologist shall conduct a pre-construction breeding bird survey throughout areas of suitable habitat within 300 feet of the work area within 15 days prior to the onset of any construction activity. If nesting birds or active nests of any species are observed within a project work area or surrounding buffer, an appropriate buffer zone shall be established around each active nest to protect nesting adults and their young from construction disturbance. The size and configuration of buffer zones for each nest site shall be determined by a qualified biologist in consultation with CDFG based on site conditions and species. Construction work within the buffer zone will be postponed until all the young are fledged, as determined by a qualified biologist.	LTS
					<b>MSC Projects Mitigation Measure BIO-7B:</b> In addition, to avoid interference by construction noise with bird nesting within YLR, construction work in development Subareas 6 and 7 (the Greenhouse Complex and adjacent parking lot, plus berm and fence alternations along YLR margin) will not begin during the peak nesting season (March 1 through August 1) unless the biological monitor determines that starting work during this time period will not impact birds that are present. If work begins after August 1 or before March 1, it may continue during the nesting season.	
					<b>MSC Projects Mitigation Measure BIO-7C:</b> Berm construction along Subarea 7 shall be completed as early as possible in the construction period, such that the berm will	

**Table 1-1**

**Summary of MSC Projects Impacts and Mitigation Measures**

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					provide buffering for YLR from noise and activity associated with subsequent construction.	
					<b>MSC Projects Mitigation Measure BIO-7D:</b> Prior to berm construction, Subarea 6 will be used for the least noisy construction staging activities, such as contractor offices and parking.	
<b>MSC Projects Impact BIO-8</b>	Potential habitat for special-status bat species is present in the greenhouses slated for demolition. If greenhouses and associated structures are occupied by special-status bats, demolition could result in destruction of day roosts or maternity roosts.	None	<u>CBB</u>	PS	<b>MSC Projects Mitigation Measure BIO-8:</b> The Campus will ensure that a qualified biologist conducts a pre-construction survey for special-status bats of the greenhouses and associated sheds before demolition occurs. If special-status bats are detected, the campus will contact CDFG for recommendations on appropriate measures to be taken to exclude bats such that they would not be harmed, and these measures will be implemented prior to demolition. If maternity roosts that would be displaced by demolition or construction are identified, the Campus will consult with CDFG to determine whether artificial replacement roosts should be installed in appropriate habitat nearby, and carry out CDFG recommendations.	LTS
<b>MSC Projects Impact BIO-9</b>	Demolition, vegetation removal and ground disturbance for project construction could result in direct impacts to SFDW houses, injury or mortality of woodrats and their young (should they be present), or interference with woodrat breeding.	None	<u>All</u>	PS	<b>MSC Projects Mitigation Measure BIO-9A:</b> A pre-construction survey for the SFDW will be conducted within 15 days prior to demolition, vegetation removal or ground disturbance at each site. If no active SFDW houses are found, no further mitigation is necessary at that location. If SFDW houses are found and they can be avoided, a buffer zone will be erected around the SFDW house, using a temporary fence that does not inhibit the natural movements of wildlife (such as steel T-posts and a single strand of yellow rope or similar materials) and all construction activity will be prohibited within that zone. If one or more SFDW houses cannot be avoided, and relocation is necessary, CDFG will be contacted for approval for a qualified and permitted biologist to live-trap and relocate individual rats. For each house lost, one stick pile "house"	LTS

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Summary of MSC Projects Impacts and Mitigation Measures**

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					will be relocated or created in the nearest suitable habitat outside the construction zone, in the animal's home range if possible, and the live-trapped individual will be released into the stick pile, to minimize the potential impact.	
					<u>MSC Projects Mitigation BIO-9B: In addition, in the vicinity of each relocated house, preferably within the relocated animal's home range, SFDW habitat will be enhanced, in consultation with a biologist with SFDW experience, by placement of an anchor log and, if sufficient suitable material is not readily available, additional woody debris suitable for creation of additional nests, to ensure that there are sufficient suitable nest sites for SFDW already present as well as any that are relocated.</u>	
<b>MSC Projects Impact BIO-10</b>	New fencing to be installed west of McAllister Road could potentially hinder the movements of CRLF, Western pond turtles and other wildlife into and out of the area immediately surrounding Younger Lagoon such that vulnerability to predation would be increased. In addition, project construction and operation could increase CRLF barriers to movement in upland habitat and susceptibility to death by road-kill.		<u>All</u>	PS	<b>MSC Projects Mitigation Measure BIO-10a:</b> Any new or replaced fencing will be designed and installed in such a way as to provide 4 inches of clearance between the ground and the bottom of the fence to allow small animals to pass beneath.	LTS
					<b>MSC Projects Mitigation Measure BIO-10B:</b> Wherever the paved access road crosses terrace portions of the YLR, no parking will be allowed along the road from sunset to sunrise.	
					<b>MSC Projects Mitigation Measure BIO-10C:</b> No construction activity that involves movement of vehicles or heavy equipment on or off road will be allowed during night hours, that is, from 30 minutes after sunset to 30 minutes before sunrise unless approved by a qualified biologist.	

**Table 1-1**

**Summary of MSC Projects Impacts and Mitigation Measures**

Impact		Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
<b>MSC Projects Impact BIO-11</b>	Greenhouse lighting could adversely affect movements of nocturnal mammals and roosting birds in the YLR if light is spilled into this area.		<u>CBB</u> (greenhouses)	PS	<b>MSC Projects Mitigation Measure BIO-11:</b> The walls and roofs of the greenhouses will be equipped with appropriate shades, which will be used during periods of night lighting, or will be screened with earthen berms and vegetation designed and positioned in such a way as to exclude direct light from the greenhouses from spilling into YLR during night time.	LTS
<b>MSC Projects Impact BIO-12</b>	Project activities could result in minor disturbance to and fill into wetlands.		<u>MSCI</u> <u>NEF</u> <u>SRP</u>	PS	<b>MSC Projects Mitigation Measure BIO-12A:</b> During the first rainy season after brush wattles are installed in the outflow channel downstream of wetland W1, a biologist will inspect the channel after each major storm to assess whether wattles have been effective in slowing flows and decreasing erosion, and have not introduced any unanticipated effects, such as increased erosion under the wattles. If new erosion is observed, the wattles would be removed and an alternative solution for erosion repairs proposed.	LTS
					<b>MSC Projects Mitigation Measure BIO-12B:</b> A silt fence will be erected along the north side of the Delaware Avenue Extension prior to any work on the roadbed removal project and will be maintained throughout construction on this project element. If any silt or other material is inadvertently dropped into wetland W3, it will be removed by hand shovel.	
					<b>MSC Projects Mitigation Measure BIO-12C:</b> Erosion repairs at the NOAA outfall west of McAllister Way will be confined to hand placement of rocks, or in conjunction with “soft” engineering solutions, such as placement of bush wattles in the channel, which will serve as a wetland restoration measure. Fence design will minimize or avoid intrusion into the channel.	
					<b>MSC Projects Mitigation Measure BIO-12D:</b> At the point where the proposed De Anza pedestrian trail crosses the	

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Summary of MSC Projects Impacts and Mitigation Measures**

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					outlet culvert at the east end of wetland W4, the trail crossing will be designed to avoid fill into the wetland and outflow channel. This may be accomplished by use of buttresses placed outside wetland margins to support an elevated walkway, or any other solution that ensures that no fill is spilled into the wetland during construction.	
<b>MSC Projects Impact BIO-13</b>	The proposed MSC Projects and CLRDP Amendment #1 would involve minor project activity within terrace ESHAs and/or could indirectly affect sensitive natural communities in the YLR through the introduction of increased light, noise, and activity in the vicinity.	None	<u>All</u>	LTS	None required	n/a
<b>MSC Projects Impact BIO-14</b>	The proposed Projects include elements that are inconsistent with some biological resources provisions of the CLRDP. These minor inconsistencies would be rectified by proposed minor CLRDP Amendment #1, and none would result in significant physical effects to the environment.	None	<u>All</u>	LTS	None required	n/a
<b>MSC Projects Impact BIO-15</b>	Construction of the MSC Projects could result in unanticipated biological resources impacts as multiple actions are conducted simultaneously or on overlapping schedules, if high quality and consistent communication between project biologist(s) and project managers is not maintained.	None	<u>All</u>	PS	<b>MSC Projects Mitigation Measure BIO-15:</b> A qualified biologist or biologists will be identified as Biological Mitigation Coordinator, prior to the start of the construction documentation phase of the project to be involved in coordination and communication of biological mitigation requirements throughout project planning and construction. The responsibilities of the Biological Mitigation Coordinator will include: review of project specifications to ensure that biological mitigation measures are accurately conveyed to contractors; review of project plans to advise on the need for and specific placement of exclusion fencing for each project elements; assistance with regulatory consultation as needed; attendance at regular meeting with	LTS

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					project managers and contractors to ensure that biological mitigation measures are appropriately included in the construction schedule to ensure that these measures are effective; and coordination of biological monitoring.	
<b><u>MSC Projects Impact BIO-16</u></b>	Cumulative development in the west side of Santa Cruz and at the MSC could affect biological resources, but these effects would be minimized through compliance the City's General Plan and Local Coastal Program and with the CLRDP.	None	<u>All</u>	<u>LTS</u>	<u>None required</u>	
<b>3.5 Climate Change</b>						
<b><u>MSC Projects Impact CLIMATE-1</u></b>	Construction of the MSC Projects and operation of the CBB and NEF Projects would result in an increase in campus GHG emissions, which would contribute to global warming.	None	<u>All</u>	<u>LTS</u>	None required	n/a
<b>3.6 Cultural Resources</b>						
<b><u>MSC Projects Impact CULT-1</u></b>	Unanticipated archaeological resources, human remains, or paleontological resources could be damaged or destroyed during construction	CLRDP Mitigation Measure 4.5-1	<u>All</u>	<u>LTS</u>	None required	n/a

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<b>MSC Projects Impact CULT-2</b>	Project construction would further alter the Delaware Avenue Extension route of the Ocean Shore Railroad segment within the project area ( <u>archaeological site P-44-000700</u> ) and could obliterate undiscovered features that retain the identity of the site as a railroad line.	None	<u>MSCI</u> <u>NEF</u> <u>SRP Phase 1B</u>	LTS	<b>MSC Projects Mitigation Measure CULT-2A:</b> An archaeologist will be present during road ripping along the Delaware Avenue Extension to document the cross section of the roadbed and any associated railroad-related features that might be uncovered. If potentially significant features are uncovered, work in the immediate vicinity will stop until the find can be recorded and assessed. An archaeologist also will be present during any work in the W1 channel that may modify any existing concrete features in the channel to document and assess these features.	n/a
					<b>MSC Project Mitigation Measure CULT-2B1B:</b> The interpretive signage included in the proposed MSCI Phase A and NEF Projects will include at least one sign commemorating the history of the Ocean Shore Railroad. The Campus will develop appropriate content for the sign through archival research into the construction, route, and history of the railroad. The sign will at a minimum delineate the route of the railroad line; provide a brief discussion of its significance in local history; and interpret any physical remnants that are uncovered during construction. The manager of the YLR will be consulted about the appropriate placement of historic signage along the pedestrian path that follows the former railroad route.	
<b>3.7 Geology and Geologic Hazards</b>						
<b>MSC Projects Impact GEO-1</b>	The CBB lab building and Greenhouse Complex would be subject to seismic shaking, which could create hazards to people or property.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Projects Impact GEO-2</b>	Liquefiable soils present beneath the site of the proposed CBB lab building could result in differential settlement of building foundations, cause downward warping in roadways and	None	<u>CBB</u> <u>MSCI</u>	LTS	None required	n/a

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	parking lots, and disrupt underground utilities in the event of a major earthquake.					
<b>MSC Projects Impact GEO-3</b>	Construction activities for the proposed MSC Projects could result in erosion of site soils.	None	<u>All</u>	LTS	None required	n/a
<b>MSC Projects Impact GEO-4</b>	The proposed CBB and MSC I Projects, in conjunction with other planned or foreseeable future projects in the site vicinity would create cumulative geologic and seismic impacts by increasing the numbers of people and/or structures exposed to the risks of earthquakes and their associated geologic hazards	None	<u>CBB</u> <u>MSC I</u>	LTS	None required	n/a
<b>3.8 Hazards and Hazardous Materials</b>						
<b>MSC Projects Impact HAZ-1</b>	The proposed CBB Project would result in an increase in the use, storage, and disposal of petroleum products and hazardous materials on the campus.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Projects Impact HAZ-2</b>	The proposed CBB Project would slightly increase the risk of hazardous materials release at the MSC.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Projects Impact HAZ-3</b>	The proposed CBB Project would construct new facilities adjacent to Younger Lagoon, which is designated as a fire hazard zone in the City's General Plan Safety Element.	None	<u>CBB</u>	LTS	None required	n/a

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<b>MSC Projects Impact HAZ-4</b>	The proposed CBB Project, in conjunction with future industrial development, would increase the use, transportation, and storage of hazardous materials and hazardous waste, which could increase the risk of hazardous materials release.	None	<u>CBB</u>	LTS	None required	n/a
<b>3.8 Hydrology and Water Quality</b>						
<b>MSC Projects Impact HYD-1</b>	The new roadway, driveways, parking lots, and buildings that would be developed under the proposed CBB, MSC, and NEF Projects would create new sources of urban pollutants such as oil and grease, heavy metals, and sediment, which could potentially enter storm water runoff and degrade the water quality in the wetlands on the MSC, in Younger Lagoon, or in the Pacific Ocean.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Projects Impact HYD-2</b>	The proposed CBB, MSC, and NEF projects would increase the area of impervious surface on the MSC, which could reduce the infiltration of surface water into the local perched aquifer. This could in turn reduce water supply to wetlands or seeps along the bluffs.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	<b>MSC Projects Mitigation HYD-2:</b> The Campus shall monitor water levels in the root zones in wetlands W4 and W5 on a weekly basis for at least one full wet season (Oct. 1-May 15) before development of the CBB and MSC Projects begins, and use the data to relate water levels at the monitoring points to an Antecedent Precipitation Index (API). After construction of the proposed CBB and MSC Projects has been completed, the Campus shall continue the monitoring weekly for two winters. If the measured water levels at the monitoring points fall below the lower 95-percent confidence limit of the water level-API curve for 2 consecutive weeks during any monitored wet season, the Campus shall take actions as necessary to return the wetland water levels to pre-project conditions. Examples of the types of actions the Campus could undertake are modifying the outlet of Detention Basin 1 or the outlet to the wetland W4 buffer from Parking Lot D to increase the flow to	n/a

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					wetland W4.	
<b>MSC Projects Impact HYD-3</b>	The new sewer trench could intercept groundwater flowing from Basin 2 toward Basin 4, which could alter the groundwater flow regime within Basin 4 and potentially reduce the subsurface flow toward wetland W4.	None	<u>MSCI</u> (sewer line)	PS	<b>MSC Projects Mitigation Measure HYD-3:</b> Where the new sewer line extends below the bedrock surface, concrete trench plugs that will act hydraulic barriers to groundwater flow shall be installed in the trench. Between the bedrock of bedrock and the pavement section, the trench backfill shall consist of permeable materials.	LTS
<b>MSC Projects Impact HYD-4</b>	The proposed CBB and MSCI Projects would increase the amount of impervious surface on the MSC, which could increase surface runoff to Younger Lagoon, the ocean, and terrace wetlands. If not properly managed, the increase in the volume and rate of runoff flows could increase erosion in drainage channels and siltation in receiving waters.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Projects Impact HYD-5</b>	The proposed CBB and MSCI Projects would increase the amount of impervious surface on the MSC, which could contribute to local flooding.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Projects Impact HYD-6</b>	The proposed CBB, MSCI and NEF Projects would increase impervious surface on the MSC, which could result in increased runoff to storm water conveyance systems.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Projects Impact HYD-7</b>	The 100-year storm event could result in localized minor flooding of campus roads and low areas.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Projects Impact HYD-8</b>	Development in Basin 4, including the CBB lab building, Parking Lot D, and portions of the new road that would be constructed under the MSCI Project, would discharge runoff that could contain urban pollutants to the Pacific Ocean.	None	<u>CBB</u> <u>MSCI</u>	LTS	None required	n/a

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>	
<b>3.9 Land Use</b>						
<b>MSC Projects LU-1</b>	CLRDP Amendment #1 proposes ten actions that would require minor changes to text, implementation measures and/ or figures in UCSC's CLRDP, the applicable land use plan, but these do not entail physical changes in the environment and/ or would not result in any new or more severe environmental impacts than previously identified in the CLRDP EIR.	None	<u>All</u>	LTS	<b>MSC Mitigation Measure LU-1:</b> Implement CLRDP Amendment #1, proposed actions 1 through 10.	n/a
<b>MSC Projects Impact LU-2</b>	The CBB and MSC I Projects would be inconsistent with CLRDP IM 5.3.7, which requires that all parking demand shall be satisfied on Campus, in sup-port of the Coastal Act provisions that seek to protect public coastal access.	None	<u>CBB</u> <u>MSC I</u>	PS	<b>MSC Mitigation Measure LU-2A:</b> Amend CLRDP IM 5.3.7, as follows: " <del>All parking demand for employees, students and visitors shall be satisfied on Campus and a</del> New development shall include adequate and enforceable measures to ensure that <del>all parking demand is satisfied on campus</del> —associated with CLRDP development <u>does not impact public parking or coastal access on streets adjacent to the MSC, including Delaware Avenue.</u>	LTS
					<b>MSC Mitigation Measure LU-2B:</b> The Campus will implement MSC Mitigation Measures TRA-1A through -1C.	
<b>3.10 Noise</b>						
<b>MSC Projects Impact NOIS-1</b>	Construction of the proposed MSC Projects could expose nearby sensitive receptors to excessive airborne noise but not to excessive groundborne vibration or groundborne noise.	General Mitigation Measure 4.11-4	<u>All</u>	LTS	Additional mitigation not required	n/a
<b>MSC Projects Impact NOIS-2</b>	Building mechanical equipment, research equipment, and landscape maintenance associated with operation of the proposed CBB Project would generate noise that would result in an increase in ambient noise levels.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Projects</b>	Vehicle trips associated with operation of the CBB and NEF Projects would increase noise on	None	<u>CBB</u>	LTS	None required	n/a

**Table 1-1**

**Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
<b>Impact NOIS-3</b>	roadways in the vicinity of the MSC.		<u>NEF</u>			
<b>MSC Projects Impact NOIS-4</b>	Construction of the proposed MSC Project and portions of the NEF Project concurrently with construction of a desalination plant on the property at the northeast corner of Delaware Avenue and Shaffer Road could result in daytime or evening construction noise levels exceeding the significance threshold of 80 dBA at the De Anza Santa Cruz residential community.	None	<u>MSCI</u> <u>NEF</u> <u>(DeAnza Trail)</u>	PS	<b>MSC Projects Mitigation NOIS-4:</b> If construction of the proposed MSC and NEF project elements in the vicinity of the MSC entrance overlaps with construction of a desalination plant on the property at the northeast corner of Delaware Avenue and Shaffer Road, the Campus shall evaluate potential cumulative noise impacts at the residences to the east of the MSC. If necessary to reduce noise at these residential receptors to levels below the relevant significance threshold, the Campus shall construct a temporary wood sound wall between the MSC entrance construction and the eastern boundary of the campus. The Campus shall also coordinate with the City of Santa Cruz on the scheduling of construction activities in the MSC entrance area to minimize the generation of cumulative construction noise.	LTS
<b>3.12 Population and Housing</b>						
<b>MSC Projects Impact POP-1</b>	The CBB Project would include 6 new employees and would accommodate UC Santa Cruz student population, but the population increase associated with the MSC would be small and the project would not directly or indirectly induce substantial population growth.	None	<u>CBB</u> <u>MSCI</u>	LTS	None required	n/a
<b>MSC Projects Impact POP-2</b>	Population growth related to the proposed CBB Project, in conjunction with other reasonably foreseeable population growth in the region between 2010 and 2016 would not induce growth or development in excess of regional planning for population, employment and housing, and the MSC Project's contribution to the environmental effects of cumulative growth and development are reduced to less-than-	None	<u>CBB</u>	LTS	None required	n/a

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	<b>Impact</b>	<b>Applicable CLRDP Mitigation</b>	<b>Contributing Projects<sup>1</sup></b>	<b>Level of Significance Prior to Project Mitigation<sup>1</sup></b>	<b>Project Mitigation Measures</b>	<b>Level of Significance Following Project Mitigation<sup>1</sup></b>
	significant levels by mitigation measures provided in this EIR.					
<b>3.13 Public Services</b>						
<b>MSC Impact PUB-1</b>	The proposed CBB Project would construct new facilities and introduce additional employees and students to the MSC, which would increase the need for police protection services.	None	<u>CBB</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Impact PUB-2</b>	The proposed CBB Project would construct new facilities, which would increase the need for fire services.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Impact PUB-3</b>	The proposed CBB Project would contribute to population growth in the City of Santa Cruz, which would increase demand for schools.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Impact PUB-4</b>	The proposed CBB Project would contribute to population growth in the City of Santa Cruz, which would increase demand for library facilities.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Impact PUB-5</b>	The proposed CBB Project would construct new facilities and introduce additional employees and students to the project site, which, in conjunction with other development in the region, would increase the need for police and fire protection services.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Impact PUB-6</b>	The proposed CBB Project would introduce additional employees and students to the project site, which, in conjunction with other development in the region, would increase demand for schools.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Impact PUB-7</b>	The proposed CBB Project would introduce additional employees and students to the project site, which, in conjunction with other	None	<u>CBB</u>	LTS	None required	n/a

**Table 1-1**

**Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
	development in the region, would increase demand for library facilities.					
<b>3.14 Recreation</b>						
<b>MSC Projects Impact REC-1</b>	The proposed CBB Project would increase the numbers of employees and students at the MSC, which could increase demand for and use of existing recreation facilities.	None	<u>CBB</u>	LTS	None required	n/a
<b>MSC Projects Impact REC-2</b>	Construction of new public trails and public coastal access parking could result in impacts to biological resources, undiscovered cultural resources, and (with respect to construction), air emissions and storm water quality	None	<u>NEF</u>	LTS	None required	n/a
<b>MSC Projects Impact REC-3</b>	The new MSC population associated with the proposed CBB Project, in conjunction with other regional population growth, would increase demand for existing recreation facilities, which could result in or accelerate substantial physical deterioration of these facilities.	None	<u>CBB</u>	LTS	None required	n/a
<b>3.15 Transportation and Traffic, Circulation, and Parking</b>						
<b>MSC Projects Impact TRA-1</b>	The CBB Project would increase campus student and employee population. The NEF Project visitor parking lot also will accommodate additional visitor population. If persons accessing the campus elect to use single-occupant vehicles, the project could impede achievement of the CLRDP Policy 5.2 goal for minimization of motor vehicle trips and parking, which would be inconsistent with regional and CLRDP planning, and could increase traffic congestions and conflict with regional TDM programs and achievement of TDM goals.	None	<u>CBB</u> <u>NEF</u>	PS	<b>MSC Projects Mitigation TRA-1A:</b> UCSC shall widely disseminate transportation information to visitors, staff, faculty, and students at the Marine Science Campus through the UCSC Web page. Printed information shall also be made available at central locations on the Marine Science Campus, and new employees at the site will be informed of transportation options and referred to the online materials. In addition, students registering for classes or internships at the MSC shall be informed of parking restriction at the MSC and of transportation options including computer-matched carpooling, transit, and bicycle and pedestrian routes to the site. All such TDM and other transportation materials shall include clear description of the available shuttles, SCMTD bus options, and other alternative	LTS

**Table 1-1**  
**Summary of MSC Projects Impacts and Mitigation Measures**

Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
				transportation programs (including schedules, costs, etc.); availability of secured bicycle storage facilities within buildings for employees; availability of lockers and showers; Campus maps with appropriate facilities identified; etc.	
				<b>MSC Projects Mitigation Measure TRA-1B:</b> UC Santa Cruz will conduct a baseline survey of parking utilization on both sides of the segment of Delaware Avenue between Natural Bridges Dr. and the campus entrance in fall 2011 and then will monitor Delaware Ave. parking utilization in this area twice annually (fall and spring) during times and days when MSC classes are scheduled. If parking utilization exceeds 80 percent and there is evidence of increasing utilization from year to year, or if there is qualitative evidence of unmet public coastal access parking demand, such as public complaints, increased circulation by drivers seeking parking, or parking shortages in the 2300 Delaware Ave. lots independent of increased population at that facility, implement TRA-1C.	
				<b>MSC Projects Mitigation Measure TRA-1C:</b> UCSC will implement the following or other equally effective measures in a coordinated program to reduce UCSC contributions to parking on Delaware Ave. such that total parking utilization during weekday class times is 70 percent or less: <ul style="list-style-type: none"> <li>• Work with the City of Santa Cruz to evaluate whether parking regulation is needed and, if so, assist the City in developing and implementing a City-UCSC permit program for Delaware Ave. parking to regulate the number of vehicles that may park or parking duration.</li> <li>• Provide off-street parking by permit at UCSC's 2300 Delaware Ave. facility or other nearby locations. This option would be implemented most effectively in conjunction with parking management on Delaware Ave.</li> <li>• Implement CLRDP IM 5.7.3: UCSC shall provide a</li> </ul>	

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
					shuttle service or bike shuttle service between the main campus and MSC as demand warrants and as needed to meet the 40 percent travel mode split goal. Shuttles shall be scheduled to correspond with classes, and class schedules will be developed in coordination with TAPS to minimize operational demands.	
<b>MSC Projects Impact TRA-2</b>	Under Existing Plus Project Conditions, the unsignalized intersection of Western Drive/ High Street would operate at a substandard LOS during the PM peak hour, and would meet signal warrants, and the proposed CBB Project would increase existing traffic volumes by more than 3 percent.	General Mitigation 4.15-6.	<u>CBB</u> <u>NEF</u>	S	<b>MSC Mitigation Measure TRA-2:</b> The University made a fair share payment in 2008 for impacts to this intersection under the 2008 Comprehensive Settlement Agreement. The CBB Project will contribute equivalent payments to the City's Traffic Impact Fee program for the project's proportionate share contribution to the cost of the improvement consistent with CLRDP General MM 4.15-6, which is included in the project, and based on trips generated by building gsf (or other methodology agreed to by the City to determine trip contribution), as agreed under the 2008 Comprehensive Settlement Agreement. The City has included the required improvement and its cost on its Traffic Improvement Fee study list.	LTS
<b>MSC Projects Impact TRA-3</b>	The CBB Project would increase campus motor vehicle trip generation; potential parking demand and associated vehicle circulation outside the campus entrance, and pedestrian traffic associated with off-campus transit and off-campus parking, which could increase potential for conflicts between pedestrian, bicycles and motor vehicles, impede public coastal access, and impair the performance and safety of bicycle and pedestrian facilities.	General Mitigation Measure 4.15-2	<u>CBB</u>	PS	<b>MSC Projects Mitigation Measure TRA-3A:</b> UC Santa Cruz will implement MSC Projects Mitigation Measure TRA-1A to reduce campus-related motor vehicle trip generation and related parking demand.	LTS
					<b>MSC Projects Mitigation Measure TRA-3B:</b> UCSC will implement CLRDP General Mitigation Measure 4.15-2, to contribute toward sidewalk improvements for increased pedestrian safety and ease of access.	

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	<b>Impact</b>	<b>Applicable CLRD Mitigation</b>	<b>Contributing Projects<sup>1</sup></b>	<b>Level of Significance Prior to Project Mitigation<sup>1</sup></b>	<b>Project Mitigation Measures</b>	<b>Level of Significance Following Project Mitigation<sup>1</sup></b>
<b>MSC Projects Impact TRA-4</b>	The MSC Projects <u>would result in increased motor vehicle, pedestrian and bicycle traffic in the project vicinity and on the MSC, would alter the roadway at the MSC entrance, and would introduce new parking lot intersections with campus roadways and new pedestrian crossings of campus roadways, but the Project-related traffic would not be incompatible with existing campus or local roadway uses. New campus roadways these</u> would be designed consistent with roadway safety standards and CLRD guidelines to ensure that the project does not result in any increase in hazards related to design features.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	<b>MSC Projects Mitigation TRA-4A:</b> Parking lot entrances to campus roads will be stop sign-controlled to minimize potential motor vehicle, pedestrian and bicycle traffic conflicts.	LTS
					<b>MSC Projects Mitigation TRA-4B:</b> A stop sign will be installed on the new Delaware Avenue Extension at the campus exit (eastbound), <u>and other traffic-calming measures will be included in the entrance design if warranted based on design assessment.</u> <del>and</del> The University also will coordinate with the City of Santa Cruz regarding recommended installation of stop signs at the MSC entrance intersection on Shaffer Road (southbound), Delaware Avenue (westbound), and the exit from the De Anza residential community.	
					<b>MSC Projects Mitigation Measures TRA-4C:</b> <u>When new fencing is installed along the northern and eastern boundaries of the campus, signage will be posted on the fence at a location adjacent to each pedestrian route advising caution in crossing the adjacent railroad tracks.</u>	
<b>MSC Projects Impact TRA-5</b>	Simultaneous construction activity for MSC Projects or project elements could conflict with traffic flow into and out of the MSC; impede daily access to the site by employee, student and visitor vehicle, bike and pedestrian traffic; conflict with	None	<u>All</u>	PS	<b>MSC Projects Mitigation Measure TRA-5A:</b> Delaware Avenue Extension will not be closed to vehicle traffic until the new entry road proposed by the MSCI Phase A Project is operational for normal vehicle use.	LTS

**Table 1-1**

**Summary of MSC Projects Impacts and Mitigation Measures**

	<b>Impact</b>	<b>Applicable CLRDP Mitigation</b>	<b>Contributing Projects<sup>1</sup></b>	<b>Level of Significance Prior to Project Mitigation<sup>1</sup></b>	<b>Project Mitigation Measures</b>	<b>Level of Significance Following Project Mitigation<sup>1</sup></b>
	traffic associated with school programs and other special events; and impede emergency access and egress.					
					<p><b>MSC Projects Mitigation Measure TRA-5B:</b> The University will include the following requirements in construction contract specifications to minimize traffic blockage and delays:</p> <ul style="list-style-type: none"> <li>• Construction work shall be conducted so as to ensure the least possible obstruction to traffic.</li> <li>• At no time will more than one lane of Delaware Avenue Extension or McAllister Way be blocked.</li> <li>• Contractors shall provide traffic control when any vehicle lane is blocked.</li> <li>• Contractors shall notify the University’s representative at least two weeks before any partial road closure.</li> <li>• When a pedestrian/bicycle path will be blocked, detour signs will be installed to clearly designate an alternate route. Temporary fencing or other indicators of pedestrian and bicycle hazards will be provided.</li> <li>• Fire hydrants shall be kept accessible to fire- fighting equipment at all times.</li> </ul>	
					<p><b>MSC Projects Mitigation Measure TRA-5C:</b> Construction project managers will notify City police and fire departments, the Director of the Seymour Center, NOAA, CDFG, and campus dispatchers in advance of lane closures, to ensure adequate access for routine operation and emergency vehicles during temporary lane closures.</p>	
					<p><b>MSC Projects Mitigation Measure TRA-5D:</b> The Campus will coordinate among contractors and subcontractors to minimize the number and extent of simultaneous construction activities that affect driveways, paths, and roadways, and will require contractors to plan for daily construction activities a week in advance, provide a schedule, and observe the schedule to the greatest extent</p>	

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRDP Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
					feasible. The University's representative will develop a weekly schedule of contractor activities and provide to NOAA, CDFG, the Director of the Seymour Center and other affected parties. Construction project managers will coordinate regularly with the University's representative who will notify NOAA, CDFG, the manager of LML, and the director of the Seymour Marine Discovery Center to keep them informed of upcoming construction activities; path, lane or parking lot closures; and major equipment activity or material hauling as far in advance as feasible, to minimize potential construction conflicts with routine and special event traffic.	
					<b>MSC Projects Mitigation Measure TRA-5E:</b> The Campus will coordinate regularly with the City of Santa Cruz on the timing and nature of work at the campus entrance and along Shaffer Road to minimize construction traffic conflicts with residents of the De Anza facility and with users of the Homeless Garden Project, and will inform De Anza residents and Homeless Garden Project users of construction activity with signs or flyers.	
					<b>MSC Projects Mitigation Measure TRA-5F:</b> The University will post flyers and/or signs at the MSC entrance and major campus facilities and provide the same for the Homeless Garden Project and the De Anza facility, with a University phone number or other means for the public to submit questions or complaints regarding construction traffic or traffic incidents, and will respond promptly to inquiries and complaints and, if warranted after investigation, take specific actions to resolve the complaint.	
	<b>MSC Projects Impact</b> Under 2016 Cumulative conditions, five intersections would operate at sub-standard LOS E or F during AM or PM peak hours, with or without the CBB and NEF projects. These projects would	CLRDP General Mitigation	<u>CBB</u> <u>NEF</u>	S	<b>MSC Projects Mitigation Measure TRA-6:</b> Implement MSC Projects Mitigation TRA-2, above.	<b>LTS</b>

**Table 1-1**

**Summary of MSC Projects Impacts and Mitigation Measures**

	Impact	Applicable CLRD Mitigation	Contributing Projects <sup>1</sup>	Level of Significance Prior to Project Mitigation <sup>1</sup>	Project Mitigation Measures	Level of Significance Following Project Mitigation <sup>1</sup>
<b>TRA-6</b>	add more than 3 percent to cumulative traffic volumes without the CBB and NEF projects under 2016 Cumulative Plus Project conditions at the unsignalized intersection of Western Drive / High Street, which also would meet signal warrants. The CBB/NEF Project impact at this intersection therefore would be cumulatively considerable.	4.15-6				
<b>3.16 Utilities and Service Systems</b>						
<b>MSC Projects Impact UTIL-1</b>	Construction of new water distribution lines on the MSC as part of the MSC Project could result in impacts to biological and cultural resources, and water and air quality.	CLRD General MM 4.16-1a,-1b, -1d	<u>MSCI (water distribution line)</u>	LTS	Additional mitigation not required	n/a
<b>MSC Projects Impact UTIL-2</b>	Development of the proposed CBB Project would result in new water demand of approximately 1.9 million gallons per year (mg) in normal water years.	CLRD General MM 4.16-1a,-1b, -1d	<u>CBB</u>	LTS	Additional mitigation not required	n/a
<b>MSC Projects Impact UTIL-3</b>	Development of the proposed CBB Project would result in new water demand of approximately 1.9 million gallons per year (mg), which could exacerbate water shortages that may occur in drought years under existing demand conditions.	CLRD General MM 4.16-1a,-1b, -1d	<u>CBB</u>	LTS	Additional mitigation not required	n/a
<b>MSC Projects Impact UTIL-4</b>	Construction of the new sewer line on the MSC as part of the MSC Project could result in impacts to biological and cultural resources, site hydrology, and water and air quality.	CLRD General MM 4.16-1a,-1b, -1d	<u>MSCI (sewer line)</u>	LTS	Additional mitigation not required	n/a
<b>MSC Projects Impact UTIL-5</b>	Construction activities associated with the MSC Projects and operation of the CBB Project would generate solid waste but would not result in the need for construction of a new landfill.	None	<u>CBB</u> <u>MSCI</u> <u>NEF</u>	LTS	None required	n/a
<b>MSC Projects</b>	Construction of the new electrical lines and emergency and standby generators on the MSC	None	<u>CBB</u>	LTS	None required	n/a

**Table 1-1  
Summary of MSC Projects Impacts and Mitigation Measures**

	<b>Impact</b>	<b>Applicable CLRDP Mitigation</b>	<b>Contributing Projects<sup>1</sup></b>	<b>Level of Significance Prior to Project Mitigation<sup>1</sup></b>	<b>Project Mitigation Measures</b>	<b>Level of Significance Following Project Mitigation<sup>1</sup></b>
<b>Impact UTIL-6</b>	as part of the CBB and MSCI Projects could result in impacts to biological and cultural resources, and water and air quality.		<u>MSCI</u>			
<b>MSC Projects Impact UTIL-7</b>	Construction of the new natural gas lines on the MSC as part of the CBB and MSCI Projects could result in impacts to biological and cultural resources, and water and air quality.	None	<u>CBB</u> <u>MSCI</u> <u>(natural gas lines)</u>	LTS	None required	n/a
<b>MSC Projects Impact UTIL-8</b>	Construction of new telecommunications facilities on the MSC as part of the CBB and MSCI Projects could result in impacts to biological and cultural resources, and water and air quality.	None	<u>CBB</u> <u>MSCI</u> <u>(telecom lines)</u>	LTS	None required	n/a
<b>MSC Projects Impact UTIL-9</b>	Development of the proposed CBB Project, in conjunction with other development in the SCWD service area, would result in additional water demand in a system that has inadequate supplies during drought periods and that may not have adequate supplies in normal water years after 2020. The contribution of the proposed project to this impact would not be cumulatively considerable	CLRDP General MM 4.16-1a,-1b, -1d	<u>CBB</u> <u>MSCI, NEF, SRP (short term restoration irrigation)</u>	LTS	<b>MSC Projects Mitigation Measure UTIL-9:</b> Before CBB Project construction is completed, the Campus shall conduct a water efficiency study of existing University facilities at the MSC. The study will assess existing campus water uses, identify options for reducing water consumption, prioritize feasible improvements based on the amount of potential water savings and cost effectiveness, and recommend top priority measures for implementation within the succeeding five years. The Campus shall implement the top priority measures within five years of completing the study.	n/a

<sup>1</sup> “CBB Project” as identified in this table subsumes former MSCI Project, MSC Parking Phase 1 Project and MSC EH&S Project, with respect to applicability of mitigation measures.

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## 2.1 PROJECT SUMMARY

### 2.1.1 Project Overview

This EIR analyzes four interrelated projects at the UC Santa Cruz Marine Science Campus (MSC). Figure 1 shows the location of the MSC. Figure 2 shows the locations of existing facilities and streets on and near the MSC that are cited in this Project Description. The proposed Projects include the Coastal Biology Building (CBB) Project; the MSC Infrastructure (MSCI) Project; the Nature Education Facilities (NEF) Project; and Specific Resource Plan Phase 1B (SRP 1B). In this document, these are referenced collectively as “the MSC Projects” or “the proposed Projects.” The elements of each of the MSC Projects are described in detail below, and their locations are shown on Figures 2-2a, 2-3a, 2-3b, and 2-6. All of the proposed development is located within areas designated for development under UC Santa Cruz’ previously-approved Coastal Long Range Development Plan (CLRDP), as shown on Figure 3 in the Introduction to this Draft EIR. Development subareas for the campus, as delineated in the CLRDP, are designated by number, as shown on Figure 2-1 at the end of this chapter.

This Draft EIR also proposes 11 minor amendments to the previously approved Coastal Long Range Development Plan (CLRDP) (UC Santa Cruz 2008). Collectively, these amendments constitute proposed CLRDP Amendment #1. The proposed actions that make up CLRDP Amendment #1 are described in detail in this project description. Potential environmental effects of the amendments are addressed in relevant sections of Chapter 3 of this EIR.

The proposed CBB Project includes development of a new lab building, two new parking lots, a Greenhouse Complex, and associated site work. The proposed MSCI Project consists of the elements of UC Santa Cruz’ Infrastructure Improvements Phase 3 Project that would be carried out at the MSC. The Main Campus elements of this project have not yet been brought forward as a project for CEQA analysis. The MSCI Project consists of MSC utility and circulation improvements, which may be undertaken in two phases, depending on funding. MSCI Phase A (or MSCI for the CBB Project), would consist of improvements to serve the CBB Project, and additional improvements to fulfill CLRDP requirements that are linked to Middle Terrace and Upper Terrace development and/or to elapsed time since CLRDP approval. Phase A also would include a new Utility Yard on the Middle Terrace to serve as a centralized location for stand-by generators and temporary regulated waste storage, and a Storage Yard on the Upper Terrace. MSCI Phase B would include improvements to and extension of the seawater distribution and return system; storm water infrastructure; and utility lines and service roads to serve anticipated future development at the campus under the CLRDP.

The proposed NEF Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter at an existing

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overlook (Overlook A), educational signage, and outdoor exhibits. Under the proposed SRP 1B, CLRDP-mandated wetland restoration and habitat improvements would be implemented.

Summary data for CBB Project facilities and population are presented in Table 2-1. Table 2-2 summarizes the above-ground facilities that would be constructed as part of the MSCI and NEF Projects. The detailed description of the MSCI Project provides more information on the proposed underground utilities.

## 2.1.2 Purpose, Need, and Objectives of the Proposed Projects

CEQA Guidelines Section 15124 requires that a project description include a statement of objectives sought by the proposed project, to guide the development of a reasonable range of alternatives to evaluate in the EIR, and to aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project.

### 2.1.2.1 Coastal Biology Building (CBB) Project

#### *Purpose and Need*

The proposed Coastal Biology Building facility (CBB) would consist of a new research and teaching lab building and associated greenhouses. These facilities would provide space for research, instruction, offices and related support operations for the Ecology and Evolutionary Biology (EEB) Department of UC Santa Cruz' Physical and Biological Sciences Division.

CLRDP Policy 2.5 requires that, "All development and uses on the MSC shall be limited to marine/coastal research and education, resource protection, and public access development and uses, including primarily coastal dependent and coastal related development and uses." Consistent with this policy, the CBB Project would allow the EEB department to move as a unit to a single facility at the MSC, a move that would bring the Coastal Science faculty together with their Marine Science colleagues. This department consolidation has been identified in both external reviews and internal planning as essential for the department to further its objectives in coastal and marine science. The move would release space in the Earth and Marine Sciences Building at the Main Campus, providing much-needed additional space for two other Physical and Biological Sciences departments, Ocean Sciences and Earth and Planetary Sciences. The CBB Project would provide essential facilities for undergraduate and graduate education in the biological sciences.

**Table 2-1**  
**CBB Project Statistical Summary**

Facility	Develop- ment Subarea <sup>1</sup>	Building Space (gsf) <sup>2</sup>	Building Space (asf)	Total Impervious Area (sf)	Population		Parking Spaces	Bike Parking
					Employees	Students		
<b>CBB Lab Building</b>	4	<del>40,650</del> 40,000	<del>26,800</del> 26,900		95	306	--	--
<b>Greenhouse Complex</b>	6	<del>8,900</del> 7,500	6,400		1	5	--	--
<b>Parking Lot C</b>	6	--	--				38 (incl. 3 ADA)	
<b>Parking Lot D</b>	4	--	--		--	--	77 (incl. 5 visitor, 4 ADA)	27 covered, 40 open
<b>TOTAL</b>	--	<del>48,900</del> 47,500	<del>33,200</del> 33,300	57,770	96	311	115	67

<sup>1</sup> See Figure 2-1.

<sup>2</sup> Numbers are approximate based on final schematic design. The CBB lab facility will not exceed 40,000 gsf. A small detached ancillary shower and storage facility (about 600 gsf) is proposed adjacent to CBB lab. This detached facility is not included in the 40,000

**Table 2-2**  
**MSCI and NEF Projects Statistical Summaries**

Facility	Development Subarea <sup>3</sup>	Building Space (gsf)	Building Space (asf)	Impervious Footprint (sf)	Parking Spaces
<b>MSCI Project</b>					
Utility Yard	2	150	150	8,077	--
Storage Yard	1	--	--	10,321	--
New Entry Road and Sidewalk	various	--	--	24,300	--
Convert Delaware Avenue Extension to Trail	various	--	--	reduced by project	--
New Central Campus Trail (bike/pedestrian)	various	--	--	pervious paving	--
<b>NEF Project</b>					
Parking Lot A	16	--	--	20,000	15 (visitor only)
Overlook A shelter	W5 buffer	400	400	400	--
Public Access Trails	various	--	--	pervious paving	--
<b>TOTAL</b>	--	550	550	63,098	--

<sup>3</sup> See Figure 2-1

The Physical and Biological Sciences Division at UC Santa Cruz requires additional research and laboratory facilities for declared majors in the department and to accommodate new faculty. Currently, EEB department faculty members, graduate students, and postdoctoral students are divided between Main Campus and MSC locations, and many share inadequate and discontinuous spaces. Physical and Biological Sciences Division office and research lab spaces are filled to capacity. Without this project, the campus would be unable to meet existing enrollment demands in the Physical and Biological Sciences Division.

The proposed CBB facility at the MSC would serve as a center for marine-dependent, coastal-dependent, and coastal-related biological sciences research and study for the EEB Department, and would provide greatly enhanced opportunities for both graduate and undergraduate students to participate in coastal and marine research and study.

The MSC is more than a stand-alone marine research lab. The research facilities, coastal adjacency, and depth of academic expertise available at this site provide unparalleled opportunities for both pure and applied research in all of the marine and coastal sciences, and for undergraduate and graduate students to be involved in and trained in coastal and marine science research disciplines. The co-location of academic departments at a campus that also houses state and federal coastal and marine science agencies also benefits both the University and the public by providing opportunities for world-class scientists to participate in problem solving and policy making that is critical to ocean health and the sustainable use of the oceans and coast.

The EEB Department is devoted to the study of ecological and evolutionary processes in both marine and terrestrial environments, with a focus on field studies for both graduate students and undergraduates. UC Santa Cruz is fortunate in its proximity, at this site, to a wide range of high-quality and easily accessible marine and terrestrial resources for research. These include the UC Natural Reserve System (including the Younger Lagoon Reserve, on site), Long Marine Laboratory, a fleet of boats, one of the most active scientific diving programs in the country, and close proximity to pinniped rookeries at the UC Reserve at Año Nuevo. The EEB Department also offers state-of-the-art departmental laboratories and full access to the analytical laboratories and other facilities at several UC Santa Cruz-affiliated research units in coastal biological sciences.

The Monterey Bay Area has the largest concentration of marine research programs in the country, with the MSC serving as an increasingly important research and teaching hub. The new CBB will bring EEB faculty, students, and research together in proximity to the cluster of non-UC Santa Cruz marine research facilities at the site, which include the programs of California Department of Fish and Game Marine Wildlife Center (CDFG facility), the U.S. National Oceanographic and Atmospheric Administration Fisheries Lab (NOAA facility), and other facilities. The CBB will strengthen the MSC's role as a coastal biology research hub that promotes interdisciplinary marine research and teaching.

#### *Project Objectives*

- Provide additional seawater-equipped teaching and research laboratory space, plant research space, and support space to accommodate enrollment demand for Ecology and Evolutionary Biology laboratory classes from declared majors.

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- Provide sufficient faculty office and research laboratory space to accommodate increased EEB faculty to support enrollment and research demands.
  - Consolidate EEB Department faculty, post-doctoral students, and graduate students and the research facilities they need at a single location.
  - Co-locate Coastal Science and Marine Science researchers for research efficiencies and to facilitate interdisciplinary research collaboration.
  - Reduce overuse and overcrowding of existing facilities, research spaces, seminar rooms, and labs on the Main Campus and the MSC.

### 2.1.2.2 Marine Science Campus Infrastructure (MSCI) Project

#### Purpose and Need

Existing utility systems at the MSC were analyzed in a 2008 study (Winzler and Kelly 2008), which identified existing deficiencies and future improvements needed to meet CLRDP requirements and to serve development anticipated under the previously approved CLRDP. The proposed MSCI Project would provide the backbone of an improved utility system for future development of the MSC. Wastewater system improvements would reduce the MSC's reliance on an existing sewer lift station. Water distribution system improvements would ensure adequate fire water capacity to meet fire flow demand for existing and envisioned facilities. Storm water management systems, including detention basins and a complex of infiltration features, would enhance campus storm water management in a manner consistent with CLRDP storm water management objectives. The proposed project also includes circulation infrastructure improvements that are required by the CLRDP, including abandonment of the existing entry road in support of the restoration of the wetlands on the Upper Terrace; parking, sidewalk, and bicycle access improvements to improve public access to and around the MSC; and development of a new entry road. Phase A would include construction of a centralized Utility Yard and a Storage Yard facility that would serve both the CBB Project and also future project development envisioned under the CLRDP. Phase B of the project would include development of a centralized electrical distribution system for the MSC, to improve electrical power management and distribution within the campus.

#### Project Objectives

- Increase capacity, reliability, and flexibility of existing infrastructure.
  - Improve campus circulation network for vehicles, bicycles, and pedestrians.
  - Improve and enhance public coastal access.
  - Provide improved coastal resource protection through development of storm water infiltration features, enhanced buffering and vegetation screening for the Younger Lagoon Reserve (YLR), and enhancement of wildlife movement corridors.
  - Incorporate storm water features that will minimize storm water runoff to protect and enhance water quality.
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- Comply with circulation and storm water-related implementation measures required as part of the Coastal Commission certification of the CLRDP.

### 2.1.2.3 Nature Education Facilities (NEF) Project

#### *Purpose and Need*

The proposed NEF Project would build upon and enhance the public outreach and educational activities already being carried out at the Seymour Marine Discovery Center and throughout the MSC. The proposed improvements to public access to and interpretation of the site are intended to inspire and engender stewardship of the natural resources of the MSC, the Monterey Bay National Marine Sanctuary, and all California coastal marine resources. The interpretive features are designed to engage visitors directly in hands-on explorations, strengthen their connection to the natural environment, and provide a deeper understanding of scientific investigation. They will benefit a broad range of age, socio-economic, and cultural groups.

#### *Project Objectives*

Enhance public coastal access to the MSC as follows:

- Provide new, improved, and expanded interactive educational facilities for children and adults who visit the MSC.
- Provide the public with increased and enhanced opportunities to view wildlife and coastal, wetland, and marine habitats in a natural setting.
- Increase public awareness of the scientific and ecological value of coastal and marine resources.
- Comply with public coastal access improvements implementation measures required as part of the Coastal Commission certification of the CLRDP.

### 2.1.2.4 SRP Phase 1B

#### *Purpose and Need*

The historical functional values of the wetlands on the Upper Terrace of the MSC were diminished by decades of agricultural use prior to UC Santa Cruz ownership. The proposed project would consolidate, expand, and enhance these wetlands as mandated by the CLRDP. Under the proposed SRP Phase 1B, the hydrology of wetlands W1 and W2 would be integrated. Reconnecting W1 and W2 would increase water flow to W2 and remove the drainage function of W1 (currently a man-made ditch that accelerates water flow from the Upper Terrace into Younger Lagoon). The goal of hydrological restoration also would be to provide a functioning wetland upland/transitional habitat and maintain existing potential California red-legged frog habitat at the northern end of W2. SRP Phase 1B also would contribute to the establishment of appropriate native grass and herbaceous wetland species that would enhance habitat connectivity between these wetlands and Younger Lagoon; reduce the potential for erosion; and improve storm water quality in this area.

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### Project Objectives

- Improve native habitat on the MSC to create an ecological mosaic that will support native plants and wildlife.
- Enhance the natural function and ecological makeup of terrace wetlands.
- Enhance native wildlife habitat and movement corridors between the northern part of the campus and Younger Lagoon, and east-west across the campus to support movement between Younger Lagoon and Antonelli Pond in the Moore Creek drainage.
- Create connectivity between wetlands W1 and W2, diminish fragmentation of wetland habitats, and generally enhance wetland habitat in the upland area between W1 and W2.
- Improve water quality by reducing peak flow rates of storm water runoff and thus reduce erosion in channels between wetlands W1, W2, W6 and Younger Lagoon.
- Comply with implementation measures required as part of the Coastal Commission certification of the CLRDP.

### 2.1.2.5 CLRDP Amendment #1

#### Purpose and Need

As the Campus has begun to implement initial development under the CLRDP, minor inconsistencies among certain provisions of the CLRDP have been identified. These inconsistencies are due in part to changes in the CLRDP late in the approval process that were not fully reflected throughout the document, and also reflect evolving planning in the years since approval. The CLRDP was amended shortly before approval to address Coastal Commission concerns about long-term preservation and public coastal access, most significantly by the inclusion in the University of California Natural Reserve System of all MSC lands not designated for development under the CLRDP. In addition, since approval of the CLRDP the campus has continued to refine planning for the layout of the campus circulation system for better transitions among development areas and improved pedestrian and bicycle circulation. During this time, the Campus' marine and coastal science programs have continued to evolve, and new program needs (such as increased student demand for marine and coastal science research training) have emerged. The proposed Amendment #1 to the CLRDP would resolve minor inconsistencies with the CLRDP and its implementation issues that have been identified since the final approval of the CLRDP and proposes minor adjustments to the language of some CLRDP implementation measures, to facilitate implementation of CLRDP goals.

#### Project Objectives

- Accommodate student and program needs for marine-dependent facilities.
- Adjust CLRDP text, figures, and implementation measures as needed to reflect input from the Scientific Advisory Committee; changed wetland conditions; campus planning refinements since

certification of the CLRDP; and changes in YLR nomenclature to reflect the intent of the final CLRDP.

## 2.2 DETAILED PROJECT DESCRIPTIONS

### 2.2.1 Coastal Biology Building Project (CBB)

The proposed Coastal Biology Building (CBB) Project consists of a new marine science research and teaching laboratory building; six new greenhouses and an associated plant research building; two associated parking lots; and utility connections and storm water system elements to serve the new CBB facilities.

#### 2.2.1.1 Site Conditions and Development Footprint

Spatial statistics for the proposed CBB facility site are provided in Table 2-1, above. The proposed development is consistent with the parameters prescribed by the CLRDP for each of the affected development subareas, as detailed in Section 3.10, *Land Use and Planning*, of this Draft EIR. The project location is indicated on Figure 2-2a. Figures 2-2b and 2-2c provide more detail on the footprint of proposed CBB facility development at the lab building site and the Greenhouse Complex, respectively.

The CBB lab building site (see Figure 2-2a and Figure 2-2b) is adjacent to the east side of McAllister Way, north of the existing NOAA facility (a federal in-holding within the MSC), in CLRDP Development Subarea 4, in the Middle Terrace area of the MSC (see Figure 2-2b). CBB Parking Lot D would be located immediately south of the proposed CBB lab building in CLRDP Development Subarea 5, between the lab site and the existing NOAA facility parking lot. A proposed staging area for the MSC Projects is located north of the CBB lab building site, also in Development Subarea 4. Development Subareas 4 and 5 currently are level, undeveloped grassland that formerly was an agricultural field. There is evidence of prior soil disturbance throughout the area, both from past cultivation and also from more recent incidental grading and spoils deposition during adjacent construction. The proposed lab and Parking Lot D sites are vegetated primarily in non-native grasses and forbs, with scattered coyote brush (*Baccharis spp.*).

The proposed CBB Greenhouse Complex site (see Figure 2-2a and Figure 2-2c) is west of McAllister Way in CLRDP Development Subarea 6 (see Figure 2-1), opposite the CBB lab site on a fenced and graveled site south of the existing CDFG facility. Development in this area would include six new greenhouses, a larger plant research building, and a small utility building to house a generator and serve as the telecommunications minimum point of entry (MPOE) for this area. This complex would be located in the southern part of Development Subarea 6. The project would also include development of an earthen berm around the western and southern margins of the complex, within Subarea 7, to provide a visual screen and noise buffer between the new development and Younger Lagoon. The proposed CBB Project also includes Parking Lot C, which would be located north of the Greenhouse Complex, between the new greenhouses and the existing CDFG facility. Subarea 6 and parts of Subarea 7 presently are occupied by a complex of 10 mostly outdated and unused greenhouses and an equipment and materials storage yard. Five of the existing greenhouses protrude into Subarea 7 and would have to be removed, in conformity

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with a CLRDP prohibition on development in this subarea. One existing greenhouse that is partially within the proposed footprint of the new development would also be removed, and three more would be removed to make way for construction staging and for ultimate relocation of the existing storage yard. One existing greenhouse may be retained for continued use by CDFG.

### 2.2.1.2 Site and Facility Design and Function

MSC building siting and design are required to comply with the extensive suite of implementation measures set forth in the CLRDP. These are described in Section 3.10, *Land Use and Planning*, of this Draft EIR. The full text of all the CLRDP policies and implementation measures applicable to the MSC Projects is provided in Appendix C of this EIR. The final design of the CBB facility will comply with all relevant CLRDP implementation measures. In addition, the UC Santa Cruz MSC Area Plan (Walker-Macy, Miller-Hull, Interface Engineering 2008) provides conceptual design and substantial design detail for the envisioned facilities on the campus' Middle Terrace.

#### Lab Design and Functions

In schematic design, the proposed CBB lab building is a mostly two-story building (Figures 2-2b and 2-2d), with three wings that shelter a courtyard. The longest wing extends east-west along the north side of the project site (parallel with and near the northern edge of Subarea 4), and is approximately 300 feet long. This wing would accommodate labs along its northern side and offices along its southern side, with additional lab support spaces on the ground floor. A second 152-foot-long wing parallel with McAllister Way and perpendicular to the northern wing would form the west side of the building. This wing also would be primarily two stories and would accommodate a seawater lab and house the core seawater facility, the seawater tanks (in a section of the wing that would be partially open to the air), mechanical and utility rooms, restrooms, small conference rooms, administrative offices, and the building lobby. A shorter one-story southern wing would house a large seminar room and other common areas. Indoor common areas in this southern element would open to a deck and sheltered courtyard area between the building wings. This courtyard area would include decking or a concrete slab and a sheltered open-air walkway extending across to the northern wing of the facility and abutting a 25,000-sf meadow of native landscaping that would provide storm water detention and infiltration for the facility.

Consistent with CLRDP requirements, maximum height for the building would be 36 feet (calculated from the average natural grade of the building footprint); exhaust systems may extend an additional 5 feet in height. Building forms would be similar to existing buildings on the MSC, such as the Ocean Health Building and the Seymour Marine Discovery Center, with gabled and shed roof styles, wood cladding, and muted colors that blend with the landscape. The CBB lab building exterior would be partially clad in vertical board and batten wood or wood-like siding, extending up over a board-formed concrete foundation, with shingle roofing. An exposed concrete wall, poured in place or split face, may be extended eastward from the east end of the southern wing, to help shelter the interior courtyard from wind. The roofs will include ventilation equipment, light monitors, and equipment screens, in accordance with CLRDP requirements. A portion of the roof of the central wing will be vegetated, to assist in storm water management. Based on geotechnical investigation (Pacific Crest Engineering 2010), the CBB lab

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building would require grade beams and pier footings extending to bedrock, approximately 15 feet below finish grade.

Plantings along the lab building foundation lines would feature unobtrusive native plants. Similar plantings would screen service and road areas. It is currently envisioned that finished grade would rise on the west side of the building to help diminish the apparent height of the buildings along McAllister Way. Foundation plantings would include large shrubs and small trees to help break the wind and to mask the building bulk. Although the CLRDP calls for the use of tall trees, such as Monterey cypress, for screening and in landscaping, this species and the other tall tree species considered in the CLRDP have been designated as Priority 1 weeds under the recently approved SRP for habitat management at the campus. These trees have been planted on the site in the past, but are highly invasive and, at the advice of the Scientific Advisory Committee (SAC) formed to direct implementation of the CLRDP Resource Management Plan (RMP), are not considered appropriate for future landscaping. Proposed CLRDP Amendment #1 (as described in detail in Section 2.2.6) would eliminate the use of trees as campus plantings. More suitable native, drought-tolerant plants and tall shrubs such as California wax myrtle (*Myrica californica*) and coffeeberry (*Rhamnus californica*) would be selected. New plantings would be watered with temporary or permanent irrigation as needed for successful establishment. The area around the building would include approximately 40,000 sf of new plantings. The schematic design also proposes a green roof over a portion of the lab's west wing, which would also be planted with native or site-adapted plantings. The green roof would require a small amount of permanent irrigation, given its thin (about 6-inch) soil section. The southeastern quadrant of the project site is dedicated primarily to storm water infiltration, and would be planted as a naturalized "infiltration meadow." This is described in more detail in Section 2.2.1.4, below.

Exterior lighting for the facility would conform to CLRDP requirements, as described in Section 2.2.5.1, below.

The CBB lab building would provide space for research and research support, offices, and administrative activities (see Table 2-1). Research spaces would include 15 "generic use" biological sciences faculty research laboratories; five research support labs; two analytical labs; four equipment rooms; eight environmental rooms; 26 research offices; and a 24-station core seawater research wet lab facility. A seawater facility, located within the west wing of the building and partially open to the air, would provide banks of shallow tanks supplied with both seawater and fresh water for research use. Offices and administrative spaces would include 15 faculty offices; four offices for post-doctoral researchers; four administrative offices; and one room each for common administrative support, IT support, a server, a break room, and storage space. The CBB lab facility also would include a seminar/conference room with capacity for up to 125 persons, and two conference rooms, each with capacity for about 20 persons.

The marine organisms that would be held in the lab tanks in the new facility would range in size from planktonic, on the small end, to fish up to approximately 10 pounds weight. A number of types of organisms may be accommodated, including small vertebrates, invertebrates both sessile and mobile, and larval stages of invertebrates and fish. The maximum limit for new creatures that could be housed depends on the size of the stock being held at any one time, but for example, as designed, the core seawater facility in the CBB could accommodate at one time up to approximately 60 fish in the 3- to 5-

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pound range, 400 small invertebrates, and a dozen 10-gallon aquaria full of small specimens such as juvenile fish or larvae.

The proposed CBB Project includes wet lab space. Lab activities would include the storage, use, and disposal of small quantities of hazardous materials similar to existing labs such as Long Marine Lab at the MSC and Thimann Labs at the Main Campus. Regulated materials could include small quantities of radioactive materials, lab gases, and a variety of chemicals. A small facility for storage of regulated waste awaiting off-site disposal by contractors would be developed in Middle Terrace Subarea 2 (see Figure 2-3a), under the MSCI Project, as described below. Facilities and procedures for the safe use and disposal of these materials are detailed under Section 3.8, *Hazards and Hazardous Materials*, below.

The CBB offices would be naturally ventilated using operable windows. The facility would be heated with hydronic baseboard radiant heaters supplied by two 1,500-MBTH natural gas-fueled boilers. The large seminar room would be designed for natural ventilation with operable windows, augmented by mechanical exhaust fans as needed for comfort. The floor would be provided with in-slab radiant heating coils.

Both wet and dry laboratories would be conditioned and ventilated by central air handling systems located in dedicated mechanical rooms in the main building. Chilled water would be provided for cooling of high-load spaces including laboratory equipment rooms and rooms with IT or telephony equipment. Constant temperature rooms with subzero freezers would be located in the lab equipment rooms, with air-flow cooling. Heating hot water would provide preheat at the air handler and reheat at the zones. The air handling systems would serve all zones that are not naturally ventilated. A dedicated set of laboratory exhaust fans with integral make-up air and isolation dampers would be mounted on the roof. The fans would be interconnected and configured so that only one fan can exhaust during periods of low flow. All labs would be provided with exhaust duct mains and risers sized to permit potential future conversion of all dry labs to wet labs if desired, and space would be allocated for future exhaust fans. Exhaust fans also would be provided for restrooms, and separate exhausts for fume hoods. The fume hood in the seawater lab would be connected to the central lab exhaust system.

The CBB facility would be provided with seawater, potable water, natural gas, and wastewater connections. A 20,000-gallon seawater storage tank, which would be about 12 feet in diameter and 30 feet high, would be constructed outside the CBB lab building. De-ionized water would be produced from potable water at the building. Other lab gases also would be supplied from tanks inside the building or in a secure outside service yard.

A 40-kW life safety emergency generator, natural gas-fueled with propane backup, would be installed in a small service building to be located north of the greenhouses in Development Subarea 6. This would provide immediate emergency power for lighting, fire alarms, and ventilation sufficient to evacuate the building in the event of an emergency. The CBB Project also would include two 400 MBTH natural gas-fueled standby generators, sited remotely in the Development Subarea 2 Utility Yard. The emergency and standby generators would serve both the lab building and the greenhouses.

Stationary sources of air emissions associated with the CBB Project would include fume hoods with ventilation stacks, emergency and standby electrical generators, and boilers, as described above. The

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generators would not operate under normal conditions, but each would be tested up to 60 hours per year as allowed by Monterey Bay Area Unified Air Pollution Control District regulations.

### Greenhouse Complex Design and Functions

The CBB facility also would include a Greenhouse Complex, located on the opposite side of McAllister Way from the CBB lab building in Development Subarea 6 (Figure 2-2c). The Greenhouse Complex would provide plant research facilities for faculty and students and also would provide space to grow plants for the large-scale YLR terrace lands restoration project ongoing at the MSC.

The Greenhouse Complex would include five 600-sf greenhouses, a double greenhouse (1,200 sf), and one ~~3,900~~<sup>3,300</sup>-sf greenhouse research facility, all within a fenced, graded yard, as shown on Figure 2-2c. All of the buildings would be one story (12 feet) in height. The greenhouses would be pre-manufactured units with concrete slab-on-grade foundations. Some of the greenhouses likely would be connected with the greenhouse research facility. The research facility would house growing chambers, soil storage, an autoclave, an office, and a pesticide room. The exterior yard around the greenhouses would be surfaced with decomposed granite, gravel, or other pervious material.

Utility control systems located remotely in the greenhouse research building would control louvers and dampers in the greenhouse roofs, baseboard hydronic heaters supplied by a condensing boiler, dedicated direct evaporative cooling with a constant volume roof-mounted air circulation unit, and actuated roof vents. Dedicated exhaust fans with exhaust stacks would be provided for a lavatory, the pesticide room, autoclave, and soil rooms. Floors would be equipped with floor drains with sediment traps, which would drain to the sanitary sewer.

Greenhouse utilities also would include water; deionized water for misting and supplemental irrigation; sanitary sewer; electrical power; and data services. Each greenhouse would be supplied with 24,000 watts of electrical lighting. To ensure against light spill into the adjacent Younger Lagoon area, each greenhouse would be equipped with a light screening system (such as blinds, louvers, or shade cloths for walls and roof) that would be closed whenever lighting is used at night. As described above, an emergency generator in the Subarea 6 service yard and standby generators in the Utility Yard in Subarea 2 would provide emergency and standby power to the greenhouse buildings.

The greenhouse research building would be supplied with domestic hot and cold water, purified water for additive humidity in growth chambers, and sink drains and floor drains or condensate pumps connected to the sanitary sewer. Electrical power and standby power would be provided for growth chambers, incubators, greenhouse control systems, remote condensers for the greenhouses and growth chambers, power to general-use electrical outlets, and fire alarms. Data service also would be provided.

CLRDP-required improvements to Younger Lagoon screening in Subarea 7 would be triggered by the Greenhouse Complex development in Subarea 6. The Subarea 7 improvements would include creating a vegetated berm along the YLR perimeter that abuts the west and south edges of Subarea 7, and extending it southward to the NOAA Younger Lagoon storm water outfall (west of McAllister Way, opposite the NOAA building). Soil from utility trenches and other project-related excavations would be used as needed to increase the height and length of the screening berm. The berm would be planted with woody shrubs and other appropriate native plant species, and the existing chain link fence along the YLR margin

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west of McAllister Way would be replaced with new fencing designed to allow the passage of light, air, and wildlife, but prevent unauthorized entry. In areas where the berm and vegetation did not screen movement, the new fencing would also provide visual screening between the Subarea 6 development area and Younger Lagoon. Proposed CLRDP Amendment #1 includes a proposal to place the fence along the McAllister Way side of the berm, rather than the Younger Lagoon side, to provide improved protection for the lagoon area.

### 2.2.1.3 CBB Facility Circulation and Parking

Motor vehicle, bus, bicycle, and pedestrian circulation improvements for the MSC overall would be implemented as part of the MSC Project (see Figure 2-3a). The proposed CBB Project includes two new parking lots, one south of the lab building and one north of the Greenhouse Complex, as well as site-specific circulation improvements, as detailed below.

#### *Circulation*

The overall conceptual layout for the Middle Terrace, as set forth in the MSC Area Plan (Walker-Macy et al. 2008) envisions a central, pedestrian-oriented axis, the Middle Terrace Walk, flanked by a compact arrangement of two-story structures with predominantly east-west orientation. The proposed CBB lab building, to be located near the south end of the Middle Terrace, would be the first of these facilities to be developed under the CLRDP. The buildings would be interspersed with fingers of native plantings to integrate the developed areas of the Middle Terrace with the surrounding natural areas. As the Middle Terrace is developed, minor pedestrian cross-axes would be developed to intersect with the Middle Terrace Walk. However, as the first facility to be developed under this conceptual scheme, the CBB lab building would have its principal entrance at the south side of the building, facing the associated Parking Lot D, described below, and secondary entrances at other sides of the building.

Pedestrian and bicycle circulation to and around the facility would be provided by paths and sidewalks to be developed throughout the campus under the proposed MSC Project, as described below. City bus service currently ends at the entrance to the MSC on Shaffer Road. The project would provide for a future transit stop on McAllister Way, in the vicinity of the CBB facility, to serve anticipated future transit needs.

Bicycle parking would be provided at each of the building's entrances, with a substantial area of covered bicycle parking along the south side of the south wing of the building.

The Greenhouse Complex would be accessed via a paved service road from McAllister Way that would serve both Parking Lot C (described below) and service areas at the greenhouses.

#### *Parking Lot C*

Parking Lot C would be constructed in Subarea 6, west of McAllister Way between the proposed CBB Greenhouse Complex and the existing CDFG facility (Figure 2-2c). At present, the parking lot site is a paved area, which is used infrequently to provide flexible work space for oiled seabird response and for limited marine wildlife research work in temporary above-grade pools that are installed and filled as needed. Oiled bird response operations may continue in the proposed parking lot. The new lot would be

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rectangular, with its long axis perpendicular to McAllister Way. It would be accessed via a driveway from McAllister Way south of the CDFG facility. A “hammerhead” paved area would be constructed at the end of the lot to allow for fire truck turnaround. Parking Lot C would provide 38 parking spaces. Parking stalls would be surfaced with permeable paving. The drive aisles, which are subject to heavier traffic, would have standard asphalt paving. Storm water runoff from the lot would be directed to the Subarea 7 vegetated berm and bioswales. Entry to Parking Lot C would be from a joint driveway with the Greenhouse Complex, from McAllister Way at a point just south of the existing CDFG building. Driveways from the lot would provide service vehicle access to the Greenhouse Complex. A sidewalk along the north side of the lot would provide access to the CDFG facility, and pedestrian crossings would be painted at appropriate locations to provide safe pedestrian access to the Greenhouse Complex and across McAllister Way to the CBB lab building.

#### Parking Lot D

Parking Lot D would be located in Development Subarea 5, at the south side of the CBB lab building between the CBB building and the existing NOAA parking lot (Figure 2-2b). This lot would provide about 77 parking spaces. The vehicle entry to the lot would be directly from McAllister Way at a point just north of the adjacent NOAA parking lot entrance. The new lot would not be connected with the parking lot of the NOAA building, which is federally-controlled, but would be graded to a similar elevation to provide potential future connectivity. A fire lane would extend along the north side of the building from the service access road, terminating in a “hammer-head” at its east end to provide turnaround space.

Parking design would be consistent with CLRDP Design Guidelines (CLRDP Sections 6.3.2-6.3.3), which require screening of development located adjacent to the YLR and environmentally sensitive habitat areas. The lot would be planted with clusters of large shrubs, and screened from wetland W4 and other YLR areas in the vicinity of the development with native plantings along its eastern margin, similar to those in surrounding areas. As in Parking Lot C, parking stalls would have permeable surfaces (pervious asphalt, gravel pavers, or similar materials), while the more heavily-trafficked parking lots’ aisles would have standard impervious asphalt paving. A vegetated swale down the center of the lot would provide storm water treatment. Pedestrian crosswalks would be marked by distinctive paving or painted across the lot, and bridged across the grassy swale with ADA-accessible structures. A broad sidewalk along the northern margin of the parking lot would connect to the CBB lab building and with the adjacent McAllister sidewalk and with the other new pedestrian and bicycle circulation paths that are proposed under the MSCI Project. If financially feasible, photovoltaic panels would be installed over Parking Lot D. These would create a shelter approximately 8 feet high above the parking stalls. The footings for the framework that would support the photovoltaic panels would be installed along the center line of the lot. Runoff from the panels would drain to the pervious surface of the lot and then to the vegetated swale in the lot, or directly to the vegetated swale.

#### Bicycle Facilities

The CBB facility would include bicycle commuter amenities for building employees and users. Two bicycle showers and six bicycle-commuter lockers would be provided in the CBB facility and, with access to a third shower in the nearby CDFG facility, would support bicycle commuting by CBB employees. In

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addition, the project would include sheltered secure covered bicycle storage for about 27 bicycles, with space reserved to provide a total of up to 108 bicycle storage spaces, as warranted by demand (up to one space for each employee of the facility). Secure bicycle racks for about 40 bicycles also would be provided at various locations around the facility, and additional bicycle racks would be added as warranted by demand during the occupancy of the facility. Proposed locations of bike parking on indicated on Figure 2-2b.

## 2.2.1.4 CBB Utility Service

### Storm Water Facilities

The governing plan for drainage design at the MSC is the Marine Science Campus Drainage Concept Plan (Drainage Concept Plan), which is included as part of the CLRDP as Appendix B. The CLRDP Drainage Concept Plan describes 11 distinct hydrologic “basins” on the campus (see Figure 3.9-1, in Section 3.9, *Hydrology and Water Quality*, for locations of drainage basins), which are separated by natural variations in the topography and by roadways that function effectively to divide surface waters. The campus’ shallow slopes and a series of topographic depressions on its upland terraces inhibit rainfall runoff and promote infiltration. Runoff from impervious surfaces is conveyed overland through sheet flow or through the campus’ primarily surficial storm water facilities to outlets that discharge to Younger Lagoon, the Pacific Ocean, onsite wetlands and, via a storm drain, beneath the De Anza residential community. Constructed components of the existing storm water drainage system include roadside ditches, reinforced concrete and corrugated metal pipe culverts, drainage inlets, open trenches, drainpipe, detention/retention ponds, and Stormceptors™ (engineered water treatment units). Small portions of four of the campus’ hydrologic basins discharge runoff to the ocean via 18-inch seawater discharge pipeline. Section 3.9, *Hydrology and Water Quality*, provides a detailed description of existing drainage patterns in each of the campus’ hydrologic basins.

The Drainage Concept Plan identifies specific water quality treatment parameters that must be met by new development, and requires that runoff from new development be controlled to avoid increasing peak flow rates and to maintain infiltration at pre-CLRDP levels to the maximum extent practicable. To achieve these goals, the Drainage Concept Plan describes the ideal storm water management system as a series of natural drainage facilities and engineered filtration systems. The natural drainage facilities include vegetated filter strips and grassy swales that connect to vegetated storm water basins, to remove pollutants from storm water runoff and to provide opportunities for groundwater recharge. These natural systems may be supplemented with engineered treatment systems, as necessary, to ensure that runoff meets water quality objectives set forth in the CLRDP.

The proposed CBB Project and the MSC Project (described in a subsequent subsection) include the following types of natural drainage features:

- Bioretention ponds. Bioretention ponds are shallow, landscaped depressions that allow runoff to pond and infiltrate through layers of mulch, a prepared soil mix, and a gravel base.

- **Vegetated swales.** Vegetated swales are grass-lined channels designed to convey and filter/treat storm water and other runoff. They are similar in shape and conveyance function to typical concrete/asphalt swales, but are generally somewhat wider and much shallower. Runoff velocities are reduced because the water has to travel through dense vegetative cover. Pollutant removal is by filtration of particulates through the grass and soil, by infiltration of soluble nutrients into the soil, and by biological treatment and fixing of pollutants by plant species. The swales would be planted or seeded with appropriate native grass species to increase the ecological and water quality value of these areas, and may include hydrophytic plants.
- **Vegetated filter strips.** The filter strips would be six- to ten-foot wide linear features adjacent to new roadways. These would be planted or seeded with appropriate native grass species planted over porous soil areas to optimize the permeability and filtration potential of the strips. Filter strips would contribute to the settling and mechanical and biological filtration of storm water. Runoff flowing over the filter strips would drain to bioretention ponds or vegetated swales.
- **Vegetated storm water basin.** Vegetated storm water basins are designed to detain water for a short period of time between storms. In between storm events, pollutants in water that remains in the detention areas are removed or reduced by infiltration, settling, and physical and biological processes. In areas with relatively porous soils, most of the runoff infiltrates into the subsurface. The basin would consist of a low-profile berm enclosing a land area planted with native grasses and other suitable native vegetation capable of enhancing water quality.
- **Pervious paving.** Pervious pavement is designed to allow percolation or infiltration of storm water through the surface into the soil below where the water is naturally filtered and pollutants are removed. The use of pervious pavement reduces the volume and rate of runoff (even when pervious pavement structure is saturated, its rough surface texture continues to slow surface flow of storm water), allows groundwater recharge, and reduces the pollutants in runoff.

Estimates of new impervious surface areas associated with the proposed project are provided in Table 2-1 and 2-2. Estimates of post-development flow rates and volumes are discussed in Section 3.9, *Hydrology and Water Quality*.

#### CBB Lab Site Drainage

On the CBB lab site, pervious paving would be used for the parking stalls in Parking Lot D, the bicycle/pedestrian paths, and the fire lane. The gravel fire lane shoulder and the courtyard decking would also be pervious. A small portion of the roof would be vegetated, which would help to reduce storm water runoff, through evapotranspiration. Runoff from the roof of the CBB lab building would drain to a series of bioretention areas east of the building and in the courtyard. A vegetated swale along the northern edge of the building would collect runoff from the fire lane. The ponds and swale would drain to a vegetated storm water basin that would occupy the area between the lab wing and the new parking lot D, and extend to the east across the Middle Terrace utility corridor (future Middle Terrace Walk). Overflow from the basin would drain to the wetland buffer in the YLR, surrounding wetland W4, from which it would infiltrate into the subsurface or flow overland to wetland W4. Construction of the storm water basin would not entail grading in the wetland buffer.

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Runoff from Parking Lot D that does not infiltrate through the pervious pavement would flow to a vegetated swale in the middle of the lot. Overflow from the eastern half of the swale would flow east and discharge through a box culvert within the development area to the wetland W4 buffer. Overflow from the western half of the parking lot would flow west and would discharge to drainage features along McAllister Way and thence Younger lagoon via to the Subarea 7 drainage system described below.

#### CBB Greenhouse Site Drainage

The area around the future CBB Greenhouse Complex, in Development Subarea 6, currently is graveled or covered with existing greenhouses. Runoff from this area currently drains to an existing infiltration feature in Subarea 7. Under the proposed project, the area between the greenhouses would be surfaced with pervious aggregate paving. The greenhouse area would also include three bioretention areas. A new 5-foot-high berm topped with screening vegetation would be constructed along the site margin, in Subarea 7, to provide screening and buffering to protect YLR and its wildlife from visual and other impacts from development. The berm would incorporate storm water infiltration and conveyance features. A vegetated swale would be constructed along the berm in Subarea 6 to collect runoff from the greenhouse area. Flows in the swale would be directed to the YLR at six points along the edge of Subarea 7 via pipes installed at the base of the berm. On the lagoon side of the berm, the flows would be dispersed along the top of the Younger Lagoon bluff through level perforated piping. The CBB berm segment would join, in the vicinity of the existing NOAA outfall, with another berm segment that would be installed as part of Phase A of the MSC Project, as described below. Both projects would include landscaping, and together would provide a continuous visual screen along the Younger Lagoon side of Subarea 7; a fence (like the one along McAllister Way) also would be provided, to ensure protection against unauthorized entry to the lagoon.

#### Other Utility Service

Utility connections to the CBB buildings would be provided from the Middle Terrace utility corridor or from the McAllister Way utility corridor, depending on the utility and the configuration of looping. Like the existing campus utilities, all utility lines serving the CBB Project would be underground. The existing utility infrastructure and the improvements that would be required to serve the proposed CBB facility are described below, in the detailed description of the MSC Project. If financially feasible, the CBB Project would include installation of photovoltaic cells above Parking Lot D and possibly on a portion of the roof of the proposed lab building. Electricity produced by the photovoltaic cells would be distributed to facilities on the MSC. Anticipated utility demand from the CBB Project is reported in Section 3.16, *Utilities and Service Systems*, below.

### 2.2.1.5 CBB Facility Population

About 15 faculty members, eight staff persons (including one assigned to the greenhouses), eight postdoctoral researchers, and up to 65 graduate students would be assigned to offices or work stations at the CBB lab building and Greenhouse Complex, for a total assigned employee population of about 96 persons. Of this population, it is anticipated that about six persons would be new to UC Santa Cruz, 44 would move from other locations on the MSC, and 46 would move from office spaces on the Main

Campus. It is assumed that most or all of the work spaces vacated at the MSC by persons moving to the CBB facility would be backfilled by faculty, staff and graduate students from other departments. It therefore is assumed that the CBB Project would add 96 employees to the daily commute population of the MSC.

It is assumed that the 24-station core seawater lab facility would be used for up to two 24-person upper division undergraduate classes per day, for an average daily undergraduate student population for the lab facility of 48 persons. However, because the addition of a core seawater lab at CBB is designed to alleviate current overcrowding and over use of an existing core seawater lab at the Seymour Discovery Center, the increase in undergraduates associated with the new seawater lab is discounted by 24 persons (the equivalent of one class); thus, an increase of 24 in the average daily undergraduate population at the seawater lab is assumed.

The average daily population associated with the CBB 125-seat seminar/conference room for undergraduate lectures is estimated at about 260 persons. This is based on the current population of EEB lecture/lab classes currently taught at the Main Campus. Average daily student population of the facility's two 20-seat conference rooms, which would be used primarily for small seminars, is estimated at about 22 persons, again based on EEB seminar classes currently taught at the Main Campus. These facilities would also be used for meetings among MSC staff and faculty who have offices at CBB or in other MSC facilities. In addition, about five student interns, each of whom would work part time, would assist the greenhouse staff person. In summary, it is assumed that the CBB Project would accommodate an average daily student population of about 260 students in the large conference room, 22 students in the smaller conference rooms, 24 persons in the core seawater lab, and 5 persons in the greenhouses, for a total average daily undergraduate population of about 311 persons. Note that this student population estimate probably is conservatively high: many students attending lectures or lab sessions at these facilities may have multiple classes at the site in a given day and would not make multiple trips per day to the campus.

In summary, use of the CBB facility would contribute an average daily population of 96 employees and 311 students to the MSC. Both UC Santa Cruz employee and student numbers are within the scope of campus population as analyzed in the CLRDP EIR, for the MSC, and in the 2005 LRDP, for the Main Campus.

Anticipated trip generation for the project is discussed in detail in the Section 3.15, *Transportation and Traffic*, of this EIR.

## 2.2.2 Marine Science Campus Infrastructure (MSCI) Project

### 2.2.2.1 Overview of Project

The MSCI Project would make improvements to the potable water, filtered seawater, sewer, storm drain, electrical, communication, and circulation systems throughout the MSC to address existing utility deficiencies and to support future development on the Middle Terrace as described in the previously-approved CLRDP. The MSCI Project would include two phases of infrastructure development. Phase A (also known as "MSC Infrastructure for the Coastal Biology Building") would be carried out in

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conjunction with the development of the proposed CBB Project. Phase B could either be carried out synchronously with construction of the related elements of Phase A construction (extending the CBB/MSCI Phase A construction period); or subsequently as future CLRDP development projects are implemented.

Phase A of the MSCI Project would include construction of new and/or upgraded utility lines, primarily within existing utility corridors. These utilities would serve the proposed CBB facility, but have been designed with sufficient capacity to support the future program of development described in the CLRDP. In particular, Phase A includes replacement of a major portion of the existing campus wastewater system, which would both serve the CBB Project and provide wastewater capacity and service reliability for the entire CLRDP development program. Phase A also would include circulation infrastructure improvements required by the CLRDP, including abandonment of the existing entry road; parking, sidewalk, and bicycle improvements to improve public access to and around the MSC; and development of a new entry road. In addition, MSCI Phase A would include development of a Utility Yard to house standby generators and an associated backbone standby power distribution system, and a small centralized regulated waste management facility. Phase A also would include development of a Storage Yard in Upper Terrace Development Subarea 1, which would be used for staging during construction and subsequently for outdoor equipment storage or storage boxes. Finally, Phase A would include development of storm water management system elements (a detention basin and other infiltration features) to support the proposed CBB Project, the new Utility Yard and the Upper Terrace Storage Yard.

MSCI Phase B would include development of additional storm water detention basins to support future campus development under the CLRDP; extension of Phase A utility lines and installation of utility stub-outs for connections to presently undeveloped CLRDP development; construction of a service road from the east end of the CBB lab building site to the new campus entry road; and development of a centralized electrical transformer facility at the MSCI Phase A Utility Yard.

Each of these project elements is delineated on Figure 2-3a and 2-3b and described in more detail below.

#### 2.2.2.2 Proposed Utility Improvements

Existing campus utilities enter and run through the campus along three primary utility corridors. The proposed utility improvements will primarily take advantage of these same corridors. Where new utility corridors are required, they will coincide with other infrastructure improvements, i.e., roads, parking lots, or pedestrian pathways. Electrical and telecommunications service currently are provided to the MSC from the north, along an underground utility corridor that extends south along the western margin of the MSC and then along McAllister Way. Potable water, sanitary sewer, and natural gas service enter the campus at the campus entrance at the intersection of Delaware Avenue and Shaffer Avenue, and then extend along the existing campus entry road, known as the Delaware Avenue Extension. There are two existing underground utility corridors into the campus from the Delaware Avenue Extension: the McAllister Way utility corridor, which follows the existing entrance road to McAllister Way and then runs along McAllister Way to the Seymour Center/Long Marine Lab area; and the Middle Terrace utility corridor, which splits off from the Delaware Avenue extension entry road and turns southward to run

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along the north-south centerline of the campus' Middle Terrace development area. The existing utility systems on the campus are described in detail in Section 3.16, *Utilities and Service Systems*. Proposed utility improvements are described in detail below.

### Water System

Three new segments of 10-inch-diameter water distribution pipeline would be constructed as part of the proposed MSCI Project to provide looping and the required domestic service and fire coverage to the existing and future development. Each of these new pipelines would connect the existing distribution main in the north-south utility corridor east of the NOAA facility with the existing distribution main in McAllister Way. Three new pipelines would be constructed under Phase A of the MSCI Project, including

- Approximately 625 feet of pipe along the north end of the CBB lab building site, to connect with the existing 10-inch distribution main in McAllister Way at the CDFG facility.
- Approximately 325 feet of pipe along the north end of the NOAA facility.
- Approximately 385 feet of pipe in and adjacent to the new campus road at the north end of the Middle Terrace.

Under Phase B, 550 feet of new pipeline would be installed under the new service road along the eastern edge of the Middle Terrace Development Zone, and an additional 175 feet of pipeline would connect the southern end of that line to the existing water line in the Middle Terrace Walk utility corridor. New fire hydrants would also be installed along the existing and new water lines to serve future buildings in the Middle Terrace.

The water system improvements would provide a looped backbone for service to the CBB and other future development on the Middle Terrace. The additional lines would ensure that there is adequate fire water pressure throughout the campus, and provide system redundancy for uninterrupted service in the event of a pipeline break or other partial system failure.

### Sanitary Sewer

Phase A of the MSCI Project would increase the reliability of the existing sanitary sewer system by minimizing campus wastewater flows to the NOAA lift station, thereby providing the Campus with more direct control of maintenance and assurance of operational reliability.

The proposed project would extend the existing MSC force main north in McAllister Way by approximately 285 feet to a new manhole near the northwest corner of the NOAA site. From this manhole, the system would drain by gravity approximately 1,400 feet along McAllister Way and the new campus roadway, connecting to the City sanitary sewer at the existing point of connection. The maximum depth of the new sewer line would be 26 feet, deeper than the existing line, which discharges to the City sewer at a depth of 15 feet. The existing NOAA line would tie into the new University-owned system. The south-flowing line from the CDFG facility to the southwest corner of the NOAA facility would be abandoned. The new north-flowing gravity-feed line in the McAllister utility corridor would carry all existing flows now going to the NOAA lift station, with the exception of wastewater from the NOAA facility itself. The existing sanitary sewer line north of NOAA, which is a combination of force main and

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gravity main, would remain in place and would serve future buildings on the eastern half of the Middle Terrace. In the long term, the flow from future development in Development Subarea 9, southeast of the NOAA site, would be added to the NOAA lift station.

### Storm Water

Phase A of the MSCI Project includes storm water drainage facilities to manage runoff from the proposed new main entry road, parking lot, and Utility Yard; and improvements to the storm water outfall in the southern portion of Subarea 7 that conveys runoff from drainage basins 5 and 6 to Younger Lagoon (Figure 2-2a and 2-2b). (Note that storm water drainage improvements related to the proposed CBB Project would be developed as part of that project, as described above).

The new campus roadway (Figure 2-3a) would be paved with impervious asphalt concrete. Consistent with the CLRDP design guidelines and the Drainage Concept Plan, the storm water management system for the new roadway would consist of a 10-foot-wide vegetated filter strip that would slope to a linear bioretention feature that would extend the length of the new roadway (see Figure 2-4). The Upper Terrace staging area/Storage Yard (Figure 2-3a) would be surfaced with an all-weather, essentially impermeable material. Runoff from the Storage Yard would flow to two vegetated storm water basins for detention and infiltration. The proposed bicycle/pedestrian trail would be surfaced with permeable materials, such as pervious cement. The parking stalls in proposed Parking Lot A (Figure 2-3a) also would be surfaced with permeable paving. The drive aisles would be standard asphalt concrete. Storm water runoff from impervious surfaces in the parking lot would drain to bioretention ponds to the east, north and south. The proposed Utility Yard (Figure 2-3a) would be surfaced with impervious asphalt concrete. Storm water runoff from the yard would flow to a bioretention pond surrounding the yard.

Improvement to the southernmost Subarea 7 storm water outfall is one of three improvements to existing drainage facilities identified in the CLRDP.<sup>4</sup> This outfall directs overflow from the NOAA facility and wetland W5, to Younger Lagoon. A drop of about 18 inches immediately below the pipe outlet has been created by past erosion. Because the outlet is adjacent to the fence line, the drop has resulted in a channel under the fence line that poses a public safety hazard and may be used by persons illicitly entering the YLR. Phase A of the MSCI Project would include improvements around the outfall to restore the wetland channel and improve water quality, reduce the public safety hazard, and prevent unauthorized entry into the YLR. This would be accomplished by constructing a 6-inch-deep forebay between the existing 18-inch storm drain discharge and the existing slope break, inside the YLR fence. A vegetated basin, reinforced with rock as needed to dissipate energy, would be placed beneath the discharge, and a vegetated rock weir would be constructed at the downstream end of the forebay. In addition, fill might be

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<sup>4</sup> The other two improvements are: 1) Repair/replace the 24-inch drainage pipe from Wetland 4 (W4) to the De Anza residential community; and 2) Improve the percolation trench and berm in Subarea 7 directing Middle Terrace Development Zone discharge toward Younger Lagoon. The three improvements are described in Figure 9.5 of the CLRDP. The CLRDP calls for these improvements to be completed in conjunction with first Middle Terrace development or earlier; however, they may be eliminated, modified, or replaced with equivalent or better projects as necessary to maximize wetland and other natural area function and value and to be consistent with the terms and conditions of any original coastal development permit authorizations. As discussed further in Section 3.9, *Hydrology and Water Quality*, a wetlands specialist has assessed the outfall from W4 and determined that the damage to the culvert has not adversely affected the hydrology of the wetland and that no repairs are warranted. The improvement to the percolation trench and berm in Subarea 7 would be accomplished through construction of the greenhouse area storm water drainage facilities that are included in the CBB Project.

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built up above the culvert outlet end (and held in place with a small retaining wall if necessary), to close off the fence opening. Alternatively, the western end of the culvert and overlying fill might be extended slightly west, so that the outlet of the outfall is inside the YLR fence. This would stabilize the fence footing and would discourage illicit entrance into the YLR under the fence at this point. Final design and implementation of this project element would be subject to a Clean Water Act Section 404 permit from the Army Corps of Engineers because the outfall is considered Other Waters of the U.S., and is therefore subject to federal jurisdiction.

Phase B of the MSCCI Project would include a vegetated storm water basin (Detention Basin 2) to detain storm water runoff from future CLRDP development in the Middle Terrace Development Zone (Figure 2-3a). The basin would cover an area of approximately 16,000 sf on land designated as Open Space to the east of the Middle Terrace Development Zone that has been incorporated into the YLR, a use consistent with the CLRDP. Phase B would also construct a vegetated swale to convey and treat runoff from the new service road along the eastern edge of the Middle Terrace Development Zone.

#### Electrical System

Phase A of the MSCCI Project would construct the first phase of a standby electrical generation and distribution system for the CBB Project and future Middle Terrace development. In this phase, two 200-kW natural gas-fueled standby generators<sup>5</sup>, which are part of the proposed CBB Project, would be installed at the new Utility Yard (described below), and new electrical conduit in the new campus road and McAllister Way and beneath the fire lane north of the CBB lab building would be installed to distribute the power to the CBB lab building and greenhouses (Figure 2-3b). The MSCCI Project would also install empty conduit and electrical manholes in the new campus roadway and McAllister Way to allow for a possible future Campus-owned electrical distribution.

Phase B of the MSCCI would extend the new electrical line in McAllister Way south from the NOAA facility to the southern end of the road, and east and west within the Lower Terrace Development Zone to serve future buildings. Phase B would also install approximately 550 feet of new electrical line beneath the new service road along the eastern edge of the Middle Terrace Development Zone, and an additional 175 feet of pipeline to connect the southern end of that line to the Middle Terrace Walk utility corridor.

#### Natural Gas System Improvements

Under MSCCI Phase A, a portion of the existing natural gas line that crosses the northern portion of the Middle Terrace Development Zone between the campus entrance and McAllister Way would be abandoned at the CDFG facility, and rerouted along the new campus entrance road. Phase A would also install a new gas line that would run between the CBB lab building and Parking Lot D, from McAllister Way to the (future) Middle Terrace Walk. This line would serve future development in Development Subarea 9, southeast of the NOAA facility, but would be installed in conjunction with other MSCCI Project elements proposed along the same alignment, to avoid future disturbance of that area.

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<sup>5</sup>Or some other combination of one or more generators with a total capacity of 400 to 450 kW.

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MSCI Phase B would install approximately 450 linear feet of natural gas distribution pipeline beneath the proposed service road along the eastern edge of the Middle Terrace Development Zone, to serve future buildings adjacent to the service road.

#### Communications/Information Technology Systems

Phase A of the MSCI Project would make improvements to the AT&T telephone and UC Santa Cruz fiber service to the campus. The existing AT&T telephone service would be expanded by installing additional conduit from the existing primary AT&T Minimum Point of Entry (MPOE) at the Younger Building to a new or secondary MPOE located near the new greenhouses. The new conduit would be installed along McAllister Way between the Lower and Middle terraces.

Phase A of the MSCI Project also would extend the existing UC Santa Cruz dark fiber service to the MSC by installing fiber optic data cable from the MSC entrance, along the existing utility corridor near the route of the new campus entry road, then along the McAllister Way utility corridor to the new Campus Area Distribution Frame (ADF) located in the new greenhouse complex (Figure 2-2c).

Phase B of the MSCI Project would also install approximately 550 feet of new communications line beneath the new service road along the eastern edge of the Middle Terrace Development Zone; 175 feet of new line to connect the service road utility corridor to the Middle Terrace Walk utility corridor; and an additional line that would run east from the new campus entry road at the CDFG facility into the Middle Terrace Development Zone.

#### Filtered Seawater System Improvements

As part of Phase A of the MSCI Project, a series of new connection points will be installed along the existing seawater distribution lines to improve system reliability. Each new connection point would be in the form of a “T” in the main supply line, with a valve and a connector in a below-ground hand hole. In the event of a break or other malfunction in the seawater distribution pipeline, a hose would be laid on the ground between the two connection points to bypass the break. These improvements would make it possible to keep the system in service if a segment of the line needs to be repaired, by using the valves to isolate and bypass the problem portion of pipe. These bypass connection points would be spaced approximately 250 feet apart.

During Phase B of the MSCI Project, the existing seawater supply and return system would be extended north and east, to serve future buildings in the Middle Terrace Development Zone. Approximately 1,800 linear feet of pipeline would be installed in a loop around the exterior boundaries of Development Subareas 4 and 8 to provide a redundant supply to future buildings. The existing gravity return line would be extended north, parallel or beneath McAllister Road, for a distance of approximately 300 feet. A second return leg would extend east and then north, for a distance of approximately 1000 feet, to serve buildings in Development Subarea 8.

#### Utility Yard

Phase A of the proposed MSCI Project includes development of a new centralized Utility Yard in Development Subarea 2, at the north end of the Middle Terrace immediately north of the new campus main entry road (see Figure 2-3a). This facility would provide secure space for stand-by generators.

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Standby generators for the CBB lab building and greenhouse facilities would be the first generators to be sited in the yard. A modular building for temporary storage of regulated waste also would be sited in the Utility Yard.

The proposed Utility Yard would be a graded, graveled area of about ~~3,300~~11,400 sf. Within the Utility Yard, each generator and storage tank would be sited on an individual concrete pad. The entire facility would be screened by a solid wooden fence up to 8 feet in height with a locked gate for security. It would be screened from the new campus entry road and from the abandoned entry road/new pedestrian path by tall shrubs such as willow and alder (if the area is wet) or other appropriate species, planted along the fence line. Limited night lighting for security purposes would be provided within the yard, as described in Section 2.2.5.1. The natural gas, electrical distribution, communications, water, and sewer lines would be extended to the yard.

The regulated materials storage unit would safely store hazardous waste generated by campus research activities and by maintenance of boats, buildings, and landscape between regular off-site shipments. The unit would be a prefabricated one-story building with galvanized steel (or other non-flammable) exterior and interior walls. If the unit is high enough to be visible above the perimeter fence, exterior cladding, if allowable by code, would conform to CLRDP design requirements. If cladding is not permitted under code, the facility would be screened with vegetation to the greatest extent possible. The footprint of the unit would be about 10 feet by 15 feet. The facility also would be equipped with perimeter security lighting and warning signs, and would use an in/out tracking system for personnel.

The interior of the unit would be equipped with hazardous chemical storage units for materials segregation, natural convection vents to prevent accumulation of hazardous vapors, and electrical grounding to prevent accumulation of static electricity. The unit also would be equipped with an integral secondary containment sump. The structure would include fire protection systems as required by applicable codes and regulations. The storage unit would be supplied with domestic water for an emergency shower, electricity, and data service to carry fire and intrusion alarms. Emergency power for lights and fan would be supplied by a storage battery.

No waste bulking or aggregation would occur at the storage unit. The types of wastes that would be accumulated and temporarily stored at the site are of relatively low hazard. These wastes include paints and metals used in boat and underwater equipment maintenance, and lab wastes such as acids, solid materials, aqueous solutions, and volatile organic compounds. No explosives, unstable reactive materials, toxic or highly toxic gases, high hazard oxidizers, or other highly hazardous materials would be stored at the facility. Stored materials would be segregated by hazard category. The segregation of wastes according to compatibility would prevent chemical reactions, fires, and heat release that might otherwise occur if incompatible wastes are mixed or come into contact during emergency events.

Waste would be picked up routinely from satellite accumulation areas at each lab and transported to the storage unit by qualified and trained staff. A licensed regulated waste contractor would regularly pick up waste from the storage unit for disposal off-site. Additional similar units could be built in the yard as future demand from campus labs may require.

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### 2.2.2.3 Parking and Circulation and Related Improvements

The MSCI Project includes substantial new and modified circulation infrastructure, including reconfiguration of the campus entry and rerouting of the entry road. A proposed new entry road would follow a new route across the Middle Terrace south of the existing entry road and rejoin McAllister Way south of the CDFG building. New driveway and pedestrian connections to the CDFG facility would be provided as part of the new entry road. The project also would include driveway connections to proposed new Parking Lots C and D on the Middle Terrace (described above as part of the CBB Project) and to a new public coastal-access parking lot (Parking Lot A) at the main entrance, described below as part of the proposed NEF Project. Locations of proposed circulation improvements are shown on Figure 2-3a.

#### *Modification of Existing Entry Road*

The existing vehicle access road into the campus is a paved two-lane street known as the Delaware Avenue Extension. This road begins at the Delaware Avenue/Shaffer Road intersection on the eastern edge of the campus and runs northwest to the western side of the campus, where it turns southward and becomes McAllister Way. McAllister Way extends southward down the western part of the campus to the coastal bluff. Both Delaware Avenue Extension and Shaffer Road are 20 feet wide and do not include gutters, sidewalks, or bike lanes. These roads provide access to the campus' gravel-surfaced service roads, service yards, and paved parking areas. There presently are no formal pedestrian and bicycle circulation facilities on the campus. Bicycles share the campus roadways with cars, and there is a network of informal, unpaved pedestrian paths around the campus, including some along sections of the McAllister Way road margin.

The existing entry road runs along the southern margins of wetlands W1, W2, and W3, and also segments the grassland habitat in this otherwise undeveloped area. In heavy rains, wetland W2 often overflows and runs onto the roadway near the point at which the entry roadway turns into McAllister Way. CLRDP IM 5.1.6 requires that the portion of the existing main entry road between Shaffer Road and the CDFG facility be abandoned as a campus street and restored as a public trail and habitat buffer area.

Under the proposed project, the existing entry road would be abandoned as a vehicle roadway from the campus entrance to the southern end of the CDFG facility (approx 1,300 linear feet), and converted to an approximately 8-foot-wide pedestrian pathway, the Ocean Shore Railroad Trail (Figure 2-3a). The abandoned entry road would be replaced by a proposed new main entry road for the campus, described below. The majority of the existing paving on the abandoned road segment would be ground down to leave only the width of the pedestrian path, but the existing roadbed fill elevation would be retained to maintain the existing hydrologic regime on the Upper Terrace. The abandoned section of the road width would be replanted with appropriate wetland and wetland buffer native plant species. To protect wildlife and native habitat, pedestrians would be discouraged from leaving the pathway by signage describing wildlife values in the area. This protection could subsequently be augmented, if necessary, by a low post-and-cable border along both sides of the roadway to protect wetlands from foot traffic. Consistent with CLRDP requirements, the new pedestrian route would not include any lighting between the campus entry and the point at which the path returns to the developed area of the campus near the existing CDFG building.

### *New Delaware Avenue Extension Entry Road*

In compliance with the CLRDP, the existing entry road would be replaced with a new main entry road for the campus from the Delaware Avenue entrance, which would become the Delaware Avenue Extension. This new, asphalt-concrete-paved road would be routed to the south of the abandoned road alignment, as shown on Figure 2-3a. At the same time, the configuration and design of the Delaware/Shaffer intersection would be modified to improve its safety and functioning for vehicles, pedestrians, and bicyclists. Improvements would include relocation the City's large above-ground water meter and backflow assembly to a less visible location; installation of new entryway fencing and a new automated gate; and roadway design to realign the entry drive with the end of Delaware Avenue, provide adequate bus turnaround room in the intersection, accommodate the entry to Parking Lot A (an element of the proposed NEF Project), and integrate the pedestrian trail crossing and access to a new pedestrian trail along the abandoned Delaware Avenue Extension, the Ocean Shore Railroad Trail. A sign at the main entrance would be lighted with a shielded, downward-directed light designed to comply with CLRDP specifications.

The new Delaware Avenue Extension would be 22 feet wide with unpaved shoulders and without curbs. Figure 2-4 illustrates a typical cross-section of the roadway and appurtenant features. The roadway would include a sidewalk from the campus entry to McAllister Way, where it would connect to a proposed new sidewalk along McAllister Way near the CDFG facility. A linear bioretention pond would be built along the side of the road for storm water treatment and infiltration. Near the point where the new road joins the existing McAllister Way, the new road would include a driveway into the existing CDFG facility. Low-level bollard lighting would light the sidewalk for safe pedestrian use. Lighting elements of the project are discussed in section 2.2.5.1, below.

### *Central Campus Trail and Bike Path*

A major new bicycle and pedestrian trail, the Central Campus Trail and Bike Path, would start at the campus entrance and curve southwest along the east side of the Middle Terrace Development Zone. At the south end of the NOAA facility, the trail would merge with a new pedestrian path parallel to the east side of McAllister Way, and then terminate at McAllister Way at the north end of the Seymour Discovery Center parking lot. In this vicinity, trail construction may require reconfiguration of an existing drainage swale that carries runoff from wetland W5 and other areas south of the NOAA facility toward a storm water outfall opposite the NOAA facility. To avoid altering drainage patterns, existing piping from the swale to the outfall may be extended southward, under the trail alignment, and reconnect with the swale a short distance south of the existing location. The Central Campus Trail would serve as the primary bicycle access to the campus as well as a pedestrian path. This trail would be 12 feet wide and would be surfaced with permeable or semi-permeable material designed to preserve preconstruction infiltration patterns, such as permeable concrete.

CLRDP Resource Management Plan (RMP) Management Measure 19 calls for development of a low, irregularly shaped raised berm along the northern and western edges of the wetland W5 buffer, in conjunction with development of the proposed pedestrian/bicycle facility along McAllister Way south of the NOAA facility. The purpose of the berm is to provide screening and attenuation of noise from activity along McAllister Way for the seasonal pond. It is proposed that the new pedestrian path described above

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be placed on the western edge of the existing berm. The existing berm would be extended slightly to the east as needed, and planted with shrubs along its eastern side, to serve as a vegetation barrier to screen W5 and discourage human entry into the this area. The drainage swale that parallels the existing berm and would parallel the new trail would be planted with wetland plants to create a vegetated swale.

#### McAllister Corridor

The proposed new Ocean Shore Railroad Trail along the abandoned entry road, described above, would connect at its southwest end with a new pedestrian path along the east side of McAllister Way. In conjunction with excavation in the McAllister roadway for utility installation, McAllister Way would be slightly reconfigured between CDFG on the north and the vicinity of the Seymour Center on the south. Figure 2-4 provides a schematic typical cross-section of the proposed road and appurtenant features. A new 22-foot-wide asphalt concrete roadway would be laid down, with a linear bioretention pond along the east side and a sidewalk beyond. The McAllister sidewalk would run along the east side of McAllister Way from campus entry road sidewalk from a point opposite the CDFG building to a point south of the existing NOAA building. The sidewalk would connect with the Central Campus, Discovery and Bluff trails (the latter trails are elements of the proposed NEF Project, described below). The McAllister sidewalk would be separated from the edge of McAllister Way by a linear bioretention pond 5 feet wide. The path itself would be 6 feet wide and would be surfaced in pervious materials, such as pervious concrete.

#### Abandon Informal Parking on McAllister Way and Restore Area

At present, the road shoulders in two areas along McAllister Way are being used for informal parking: 1) the area on the west side of the road between the existing greenhouses and the Ocean Health Building parking lot in the Lower Terrace area; and 2) on the east side of the road adjacent to the NOAA facility (see Figure 2-3a). Both areas are unsurfaced and are not striped. The areas presently accommodate about 50 cars parked diagonally or perpendicular to the roadway. The CLRDP (Section 9.2) determined that the use of these areas along McAllister Way for parking is not consistent with its function as a buffer for the original Younger Lagoon Reserve, to the west, and for wetland W5, to the east. Under the proposed project, the use of these areas for informal parking would be abandoned, and the areas would be restored to their natural state with native plantings (a CLRDP requirement). This would entail scraping of the surface, scarification, import of suitable topsoil, and hand and mechanical replanting with native shrubs and grasses.

In the same vicinity (as shown on Figure 2-3a), the proposed MSCI Project also would augment an existing berm that extends along the west side of McAllister Way as a buffer between the YLR and adjacent development noise, light, and activity. The existing berm extends north from the Long Marine Lab area and ends in the vicinity of the informal parking north of the Ocean Health Building. The proposed project would extend this berm northward along the same alignment to the NOAA outfall, where there would be a break in the berm. In conjunction with extension of the berm, the MSCI Project also would replace the existing chain link fence that runs along the road side of the berm with a less aesthetically obtrusive fence, which would allow light and air and small wildlife to pass, but would inhibit unauthorized entry into the lagoon area. In areas where the berm would not provide a visual barrier to the

lagoon, the fence would be constructed of material that provides a visual barrier between the campus area and Younger Lagoon. A drainage swale/percolation trench along the base of the berm would provide infiltration for any runoff from McAllister Way. The berm would be enhanced with native vegetation in a strip about 8 feet wide and up to 200 feet long. The segment of the berm north of the NOAA outfall and around Development Subarea 7 would be addressed by the CBB Project in conjunction with improvements in the Greenhouse area, as described in the CBB Project description, above.

#### 2.2.2.4 MSCI Upper Terrace Storage Yard

Phase A of the proposed MSCI Project would include development of a staging area and Storage Yard of about 58,000 sf in Development Subarea 1, on the east side of the campus' Upper Terrace adjacent to Shaffer Road (Figure 2-3a). At present this is a level area of coyote brush and previously disturbed grassland with a mix of native and non-native species. Development of this area for a shared campus warehouse and laydown area was analyzed at the project level in the previously certified CLRDP EIR. This area would be used for construction staging and then developed as an open-air Storage Yard as part of the proposed project (the warehouse would be developed at a later time).

For the CBB/MSCI construction period, site improvements in Subarea 1 may be limited to those necessary to develop Subarea 1 as a temporary construction staging area, as described for all the projects under "Staging Areas," below. After construction is complete, the temporary staging area would be converted into a Storage Yard. The yard would house items such as research boats and sea-land-type storage containers for marine research equipment used by researchers at the MSC. Development of the Storage Yard would require final grading of the yard prior to permanent surfacing. As required by CLRDP IM 3.2.3, the proposed Upper Terrace Storage Yard would include fencing at the development zone boundary to screen Upper Terrace Development Zone noise, lights, and activities that might deter wildlife from moving through nearby wildlife corridors/buffers. The yard would be surrounded by an 8-foot-tall wooden fence that is consistent with CLRDP design requirements (Section 6.8.3), augmented by earthen berms and plantings of native shrubs. Consistent with CLRDP IM 5.1.4, the driveway entrance into the Upper Terrace Development Zone would be located in the center of the zone (e.g., as shown on CLRDP Figure 7.2), to ensure that adequate areas for wildlife passage are preserved north and south of the development zone. The Storage Yard fence would be provided with a secure gated entry set back from Shaffer Road a sufficient distance to allow a vehicle to pull off the road to unlock the gate. Security lighting would be provided within the site, and would be shielded as specified in the CLRDP (see "Lighting Plan." below) to ensure that light is not shed into wildlife habitat off site.

No permanent structures are proposed as part of the current project, but the yard would be supplied with a fence and a permanent durable all-weather surface such as stabilized aggregate. Connections to utilities such as City water, or electrical and telecom/data service would be made in Shaffer Road. If necessary, a connection to City of Santa Cruz water service in Shaffer Road would be provided for fire protection and temporary irrigation. No sanitary sewer connections are anticipated. Runoff from the yard will drain to a bioretention area along the southern edge of the yard. Overflow from the bioretention area would flow to two vegetated storm water basins south and southwest of the yard, in the adjacent wetland buffers. The

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southern detention basin would discharge to the wetland W3 buffer; the southwestern basin, to the wetland W2 buffer.

The Upper Terrace pedestrian trail between the realigned McAlister Way and the railroad tracks (described as part of the NEF Project, below) would be built immediately after development of the Storage Yard.

The CLRDP establishes a 300-foot-wide east-west wildlife corridor/buffer area along the northern margin of the campus immediately south of the railroad, and a second 220-foot-wide wildlife corridor/buffer immediately south of the proposed laydown yard/staging area (Figure 3 in the Introduction to this EIR). CLRDP IM 3.2.3 calls for enhancement of habitat values and wildlife connectivity along these corridors in the area between YLR and the Moore Creek/Antonelli Pond system, east of the MSC, by eliminating invasive weeds, planting native species to improve protective cover and visual screening for wildlife, controlling access, and providing screening between wildlife area and Upper Terrace development areas. The CLRDP RMP provides more specific requirements for native planting in these corridors, to be implemented when drainage improvements for the first development project north of the Delaware Avenue Extension are constructed (CLRDP Table A-12, RMP Management Measures 9, 10, 26). The University is also required to coordinate with the owners of the properties immediately east of Shaffer Road and with the City of Santa Cruz to promote the extension of the wildlife corridors and wildlife corridor buffers across Shaffer Road and to Moore Creek/Antonelli Pond. These enhancements and the related consultation would be carried out as part of the MSC Phase A Project.

As described below, the proposed SRP Phase 1B Project includes enhancement of wetland areas within the wildlife corridors, in particular the channel that flows from wetlands W1 and W2, through wetland W6, to Younger Lagoon. The development of the Storage Yard would trigger certain requirements of the CLRDP RMP for enhancement of these corridors.

Consistent with IM 5.1.4, IM 5.1.5, and IM 3.2.3, RMP Management Measure 29, and CLRDP Section 9.3.1, concurrent with the development of the Storage Yard the Campus would consult with U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) to determine whether safe passage features (e.g., bridge, underpass, box culverts, etc.) are required across Shaffer Road at locations north and south of the Upper Terrace Development Zone to facilitate wildlife movement across the road. The Campus would coordinate with the City of Santa Cruz on any wildlife passage improvements across Shaffer Road. The Campus also will conduct outreach to adjacent landowners to promote the extension of these wildlife corridors and wildlife corridor buffers across Shaffer Road and to Moore Creek/Antonelli Pond in the manner most protective of wildlife in conjunction with the MSC Phase A Project. The design and location of wildlife passage features that are determined by USFWS and CDFG to be warranted to avoid potential impacts of increase development in this area upon wildlife movement would be determined as part of the consultation process.

In compliance with CLRDP IM 5.1.3, the Campus has consulted with the City of Santa Cruz regarding permanent closure of the segment of Shaffer Road north of the Upper Terrace Storage Yard entrance, in conjunction with CLRDP development. It was concluded that Shaffer Road should remain open to provide access to an envisioned future emergency at-grade crossing of the Southern Pacific Railroad

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(SPRR) tracks at Shaffer Road. Therefore, the segment of Shaffer Road north of the Storage Yard entrance would not be abandoned and restored as a habitat corridor as part of the proposed MSC Project.

Consistent with CLRDP RMP Management Measures 9 and 10, the reconnection of wetlands W1 and W2 and vegetation restoration in wetlands W1, W2, and W6 (proposed below as part of the SRP Phase 1B Project), are to be implemented in conjunction with completion of any drainage improvements for the first project north of the Delaware Avenue Extension. This requirement therefore would be triggered by the development, under proposed MSC Project, of the Upper Terrace Storage Yard and associated drainage features, and would be carried out as part of proposed SRP Phase 1B Project, described below. The campus is proposing, under CLRDP Amendment #1, to allow some flexibility in the timing of the implementation of the wetland reconnection, such that it might be carried out any time within the first seven years subsequent to CLRDP approval (that is, by 2015), during the term of SRP Phase 1, but not necessarily at the same time as the other proposed MSC Projects.

### 2.2.3 Nature Education Facilities (NEF) Project

#### 2.2.3.1 Project Overview

The proposed Nature Education Facilities (NEF) Project consists of a suite of public access and interpretive improvements for the entire MSC (for trail and parking lot locations, see Figure 2-3a). The “backbone” of the project is the development of an integrated 1.2 mile pedestrian and bicycle trail system that would link MSC facilities, public coastal access overlooks, and a new public access parking lot near the main trailhead at the MSC main entrance. The NEF Project also would provide a shelter at an existing public overlook for use as an outdoor interpretive space; one new overlook along the trail system; and improved educational exhibits and wayfinding and interpretive signage throughout the campus along the trail system (Figure 2-5).

A series of improvements/upgrades to existing public access overlooks A, C, D, and F and associated access paths, and also development of a new Overlook E, were the subject of a previously approved Initial Study/Mitigated Negative Declaration (UC Santa Cruz January 2011).

#### 2.2.3.2 Project Elements

##### *Natural Features Trail and Outdoor Exhibits*

###### Trails

A key element of the proposed project is construction of 1.2 miles of pedestrian and pedestrian/bicycle multi-use trails from the campus’ upland terraces to the coastal bluff (Figure 2-3a). Trails will form a loop from the campus entrance to the coastal bluff, along the bluff, and back through the campus terraces. Trails will provide views and educational interpretation of coastal features, grasslands, wetlands, and the campus’ habitat restoration and sustainable storm water system projects. The trails would connect the existing and proposed overlooks.

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The trail network would consist of both major and minor trails, as defined in the CLRDP (Section 6.4.3). Minor trails primarily would follow existing informal trail routes on the campus, with some augmentation. A new minor trail, the Upper Terrace Trail, would extend north from the campus entry parking lot to the campus' northern margin, parallel with Shaffer Road, to provide the public with views of the campus' Upper Terrace grasslands and wetlands. Another minor trail, the De Anza Trail, would extend along the campus' eastern margin from the campus entry (parallel to the wall that demarcates the De Anza residential community) to the coastal bluff. It would then turn south, as the Bluff Trail, to run along the coastal margin of the campus, past the small spur trail to Overlook F, and then continue on to existing Overlook B, at the south end of McAllister Way. Another minor trail, the Discovery Trail, would intersect the Bluff Trail just east of the Seymour Marine Discovery Center, and would extend north and westward around the center parking lot, past Overlook A, to intersect with the Central Campus pedestrian/bicycle trail. Each of the minor trails would be 6 feet wide and fully ADA compliant with respect to gradient and surfacing. In general, after minor grading (excavation of a 6 to 10-inch section, depending on surfacing material), the trails would be surfaced in permeable or semi-permeable materials such as engineered wood fiber, gravel pavers or grass pavers, pervious cement, or aggregate paving. No night lighting would be provided for the minor trails.

The proposed De Anza Trail would follow the route of an existing informal dirt path. One segment of the existing path is adjacent to the edge of wetland W4 (a federal jurisdictional wetland), and flows from the wetlands enter a culvert that runs under the path and under the De Anza wall at this location (see Figure 2-6). The width and prism of the formal trail will be constrained in this vicinity if necessary, in order to avoid the potential for fill into the wetland. The exposed end of this culvert, just west of the existing path, has been slightly crushed. The CLRDP calls for repair of this crushed culvert. Recent inspections indicate that flows from wetland W4, under existing conditions, do not overflow the culvert onto the adjacent campus trail, and that there is no significant channel incision in the vicinity of the culvert. Repairs to the existing culvert therefore do not appear to be necessary to the maintenance of drainage or wetland function; however, the culvert could be repaired in conjunction with trail work, either by pushing a sleeve through the culvert or by simply pounding out the crushed portion of the culvert pipe. Details of trail and culvert work in this area will be developed during the Clean Water Act Section 404 consultation process to ensure that wetland impacts are avoided.

All the trails would be furnished with benches, trashcans, recycling bins, bike racks, and similar amenities at appropriate locations. Minor barriers to restrict pedestrian movement to the trails (e.g., rope and pole) may be installed. Project lighting elements is described in Section 2.2.5.1, below.

Development of the Upper Terrace Trail is required in conjunction with the first Upper Terrace Development. Thus, if the Upper Terrace Storage Yard is developed as part of Phase A of the MSCI Project, the Upper Terrace Trail would be developed as part of that project if the NEF Project is not grant-funded. Development of all of the other trails is required by Middle Terrace development, so these trails would be developed in conjunction with the CBB and Phase A of the MSCI Project.

### Overlook G and Overlook A Interpretive Shelter

Interpretive overlooks will provide small group opportunities for nature education. The proposed project includes one new overlook, Overlook G, and a new covered interpretive shelter at existing Overlook A (Figure 2-3a). (Note that additional overlooks and overlook improvements were approved as a separate project in February 2011 [see UC Santa Cruz 2011].) Overlook G, on the south side of the Central Campus Trail, would provide a viewpoint to the south to wetland W5 for bicyclists and pedestrians. The overlook would consist of a 6-foot by 10-foot pervious-paved area adjacent to the Central Campus Trail. The overlook would include a bench and interpretive signage related to the wetland and other natural features. At Overlook A, which provides a view of the same wetland from the south, the proposed project would add a small covered shelter with interpretive signs/exhibits at the previously approved overlook site, to provide an outdoor learning space for larger groups for both self-guided and guided exploration. The shelter would be an open structure up to 400 sf in size with simple roof and a wall or slatted fence on the prevailing wind side (west) and possibly a partial wall or slatted fence on the storm wind side (south) for wind protection. These facilities are not required by the CLRDP, and timing of development would be based on funding.

### Interpretive Signage

Interpretive signage at Overlook A would include two interpretive panels, each around 2 feet by 3 feet (one facing W5 and the other facing the ocean) and an outdoor exhibit (such as a model of the Monterey Submarine Canyon) which would be located at the edge of the shelter.

An interpretive exhibit and visitor information will be provided at the campus main entry along with an orientation and wayfinding signboard (Figure 2-5). An interpretive panel would be placed along the De Anza Trail near wetland W4 interpreting the wetland habitat, native plant restoration activities and storm water treatment improvements on the MSC.

### Public Access, Circulation and Amenities

#### Parking Lot A

The proposed project would include development of a 15-space parking lot designated for public coastal access parking, immediately north of the new main entry road at the campus main entrance (Figure 2-3a). This lot would provide trailhead parking for pedestrians using the public access trails. The parking lot would include ADA-accessible parking spots. The lot would be surfaced in pervious material, would include bioretention basins, and would be surrounded by vegetated swales.

Development of this parking is required by the CLRDP in conjunction with development on the Upper Terrace, and therefore would be triggered by development of the Upper Terrace Storage Yard.

#### Wayfinding Signage

Under the proposed project, wayfinding signage would be installed or replaced throughout the campus to facilitate public access to all current and proposed interpretive features and amenities (Figure 2-5). Wayfinding signage would include both locational identifiers, and also maps and directional signs to direct visitors to overlooks, interpretive and education exhibits, the Seymour Marine Discovery Center, and other visitor amenities. A major wayfinding exhibit orienting visitors to the campus would be

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included in Parking Lot A. All signage would comply with CLRDP design requirements. Wayfinding signage would be developed as part of the MSCI Phase A Project if NEF grant funding is not received.

### Population

The NEF Project is not expected to result in a direct increase in campus employee, student, or visitor population. In 2009 (the last full year for which data are available), about 60,000 persons visited the Seymour Center. Over the past 10 years, visitation to the facility has varied from year to year, but overall has increased at the rate of about 4 percent per year (Heffington personal communication 2010). Public visitation to the center is anticipated to continue to increase at about this rate, but the increase is not directly attributable to the proposed project. The development of Parking Lot A will provide convenient parking for campus visitors wishing to use pedestrian trails, but is not expected to result directly in an increase in visitors to the campus.

## 2.2.4 Specific Resource Plan Phase 1B (SRP 1B) Wetland and Habitat Restoration

### 2.2.4.1 SRP 1B Project Overview

SRP Phase 1B consists of activities proposed to implement the elements of habitat restoration under the Phase 1 Specific Resource Plan (SRP), developed in compliance with the previously approved CLRDP RMP. Phase 1B of the SRP consists of elements that entail work in wetlands or that could directly or indirectly affect wetlands or wetland habitat. Significant elements of this project include: minor earth moving and/or minor manipulation of the outflow of wetland 1 (W1) to restore the historical connectivity of this agricultural drainage with the adjacent wetland 2 (W2); hand work within wetlands W3, W5, and W6 to remove non-native plants and restore the balance of native vegetation; work in the outflow channel from wetland W1 toward Younger Lagoon to reduce erosion and improve water quality; and habitat improvements to enhance the wildlife movement corridors that extend across the Upper Terrace. The project also would install 10 to 15 piezometers around the Upper Terrace to monitor wetland hydrology and the effects of the wetland W1/W2 reconnection. The locations of the project elements described below are shown on Figure 2-7a and 2-7b. Note that the CLRDP (Table A.12) requires that RMP Management Measures 9 and 10, which address the reconnection of wetlands W1 and W2 and vegetation restoration in wetlands W1, W2, and W6 (proposed below), be implemented in conjunction with completion of any drainage improvements for the first project north of the Delaware Avenue Extension. This requirement therefore would be triggered by the proposed development of the Upper Terrace Storage Yard under the MSCI Project, as described above.

All restoration would be carried out under the direct supervision of YLR staff and restoration biologists and would follow SRP Phase 1 specifications (UC Santa Cruz Staff and the Younger Lagoon Reserve Scientific Advisory Committee, June 1, 2010). With the exception of mechanical excavation and earth-moving for wetland reconnection, most project elements would be carried out by small groups of student interns or volunteers under the supervision of YLR staff.

If rainfall is insufficient, new plantings would be hand watered or temporarily irrigated for the first year after planting, to ensure that they are adequately established. Weeding for removal of non-native plants, replanting, and additional planting would be continued as needed to meet the restoration success criteria set forth in SRP Phase 1A.

#### 2.2.4.2 Project Elements

SRP Phase 1B would implement some elements of the CLRDP RMP over a period of about five years. The actions described below are under consideration as means to achieving the goals of reconnecting wetlands W1 and W2, restoring the channel that connects these wetlands to Younger Lagoon, and improving wildlife corridors and habitat on the Upper Terrace. The actions to be implemented will be selected from those described below through consultation among the SAC that was formed to plan the implementation of the RMP. Some actions, such as the wetland reconnection efforts, may be carried out experimentally and adjusted depending on initial outcomes; other actions, such as efforts to restore and enhance the channel to Younger Lagoon, may require multiple iterations to achieve the project goals. Further, since the proposed actions would entail work in federal jurisdictional wetlands, they will require a Clean Water Section 404 permit from the Army Corps of Engineers and, as such, are subject to modification to meet USACE requirements and any mitigation measures that might be imposed by other federal agencies, such as U.S. Fish and Wildlife Service.

##### Reconnection of Wetlands W1 and W2

The CLRDP Resource Management Plan requires that campus habitat restoration activities include the reconnection of Upper Terrace wetlands W1 and W2. Wetland W1, on the western margin of the Upper Terrace, is a former agricultural ditch, probably constructed to drain the adjacent agricultural field. It is separated from wetland W2 (located immediately to the east) by a slightly elevated area that may partially represent spoils left from the ditch construction.

Two options for carrying out the wetland reconnection are being considered (Figure 2-7a). The project may implement either or both options, over time, as needed to achieve the project objectives. The first option under consideration is removal of the elevated area between wetlands W1 and W2. The area from which soil would be removed would be about 20 feet wide by 640 feet long. Mechanical grading, using a bulldozer, backhoe, or small grader, would be used to remove the soil and create a smooth rise in elevation from the edge of wetland W1 eastward to the low upland around Wetland W2. Under high-flow conditions, water would overflow from wetland W1 into wetland W2. This result would be enhanced by the use of ditch plugs (described below), if the accumulation of vegetative matter in wetland W1 substantially reduced the ditch's flow capacity. This option would entail disturbance of about 1 acre of wetland and adjacent upland habitat, with about 0.5 acres of cut in the upland (the berm) and 0.14 acres of fill in wetland W1. In total, about 1,000 cubic yards (cy) of soil would be excavated and moved on site. This option would reduce the duration of seasonal inundation in wetland W1, but would provide connectivity between the two wetlands.

Alternatively, or in addition to this action, the berm between wetland W1 and wetland W2 could be breached with targeted small mechanical excavations. The extent of each breach would vary depending

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on immediate topography, but a typical breach would be around 20 feet wide (the width of the berm) by about 33 feet long. Breaching would establish points from wetland W1 from which water would overflow under high-flow conditions. This effect would be enhanced if breaching of the wetland W1 berm were combined with the topographic alterations described below, or with the use of ditch plugs, described below. As noted above, the project may be iterative, based on initial results; the methods used and extent of ground disturbance in the wetland areas also will be subject to the terms of the Clean Water Act Section 404 permit that would be required for the project. For purposes of the analyses below, the maximum extent of possible ground disturbance is assumed.

#### Wetland W1 Ditch Plugs

Another method for reconnecting wetlands W1 and W2, possibly to be used in conjunction with the other actions described above would be to create “ditch plugs” across the width of the wetland W1 ditch (Figure 2-7a). These could be constructed from the earth excavated during berm removal or breaching—or, alternatively, vegetative material such as jubata grass (*Cortaderia jubata*) or coyote brush slash from the site, or imported straw bales, could be used. Depths of fill could vary, ranging from a low dam across the ditch to complete fill of short segments. It is estimated that up to eight ditch plugs, each of about 60 cy, would be created. About 0.3 acres would be disturbed, including 0.2 acres of cut in uplands (the berm) and 0.05 acres (480 cy) of fill placed in wetland W1 under this action.

#### Flashboard Dam and Pond

The wetland W1 channel joins Wetland 2 near the northern edge of the Delaware Avenue Extension. The slightly elevated Delaware Avenue Extension roadway serves as a dike that directs most of the water into a joined wetland channel, which runs westward along the north side of the road through a dense willow patch, and then onward to Younger Lagoon. Prior to the construction of the Delaware Avenue Extension, runoff from wetlands W1 and W2 likely flowed in a less defined channel. The diking effect of the road has resulted in a concentrated flow, and channel erosion has resulted. A farm road once extended northward from the north edge of the Delaware Avenue Extension near the point at which Delaware turns southward and becomes McAllister Way. North of the Delaware Avenue Extension at this point, the water channel from the wetlands runs between a pair of concrete headwalls at the location where the channel once ran under the farm road via two culverts, since removed. (Note that this channel is sometimes wet and includes some wetland indicators, but has been determined not to be a jurisdictional wetland in this area).

Under the proposed action, a flashboard—a movable weir—would be installed at the culvert headwall, which would be modified to provide support for the flashboard (Figure 2-7b). The flashboard structure would be designed in such a way that the crest could be adjusted to create a pooled area in the outflow channel from wetland W1 upstream of the headwalls, which would create deeper water and longer lasting emergent wetland habitats, provide temporary storage and a gradual release of storm water runoff, and potentially result in improved amphibian and wetland habitat.

Two options for sizing and management of the flashboard weir are under consideration. Under the first (“Smaller Pool Option”), the crest of the flashboard could be adjusted to create a small pooled area with a water depth of 1 to 1.5 feet during base flow conditions and 1.5 to 2.0 feet under storm flow conditions.

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The flashboard would be designed with a freeboard of 1.0 foot for the design storm, to reduce the risk of inundation of the Delaware Ave Extension/ McAllister Way. Under the “Larger Pool Option”, the flashboard would be designed to be adjustable to create a pooled area with maximum water depth of 2.0 to 2.5 feet during base flow conditions, and 2.5 to 3.0 feet under storm flow conditions. Under this option, storm flow would inundate the edge of the existing road. As noted above, the project may be iterative, based on initial results; the methods used and extent of ground disturbance in the wetland areas also will be subject to the terms of the Clean Water Act Section 404 permit that would be required for the project. For purposes of the analyses below, the maximum extent of possible ground disturbance is assumed.

The proposed action, with its maximum extent would disturb about 0.2 acres and would result in 0.1 acres of fill in wetland W1. Creating the pond would require about 200 cubic yards (cy) of soil, either imported or excavated from the elevated areas adjacent to wetland W1. The flashboard control structure would require 3 cy of concrete and would require installation of two 20-foot-long steel pipes, 4 feet in diameter.

#### Piezometers

In conjunction with work to reconnect wetlands W1 and W2, the project would include installation of 10 to 20 piezometers at locations scattered throughout the Upper Terrace. The objective of this work would be to monitor the hydrology of wetlands throughout the terrace as well as the hydrologic effects of wetland reconnection efforts. Each piezometer would consist of a length of 2-inch-diameter PVC pipe, consisting of a filter tip joined to a riser pipe, which is inserted into a drilled bore hole and left in place with an above ground standpipe, for future monitoring. Readings of water level are obtained with a water level indicator. These would be semi-permanent installations. Holes would be drilled with a gas powered auger or a hand-operated drill, hand-carried to each site.

#### Brush Packing in YLR Channel Downstream of Wetland W1

The channel connecting wetlands W1 and W2 to Younger Lagoon is incised and has a steep grade—in some places greater than 5 percent. Active erosion is occurring in the channel, which, if uncontrolled, could migrate upstream and, over time, cut channels in wetland W2. Channel incision in this area poses risks of increased sedimentation to Younger Lagoon and also of accelerating drainage of wetlands W1 and W2, which could lower the water table in this area and diminish the wetland functions over time.

Incision in this area currently is controlled to some degree by the presence of willow roots and woody debris. Under the proposed action, additional grade-control points would be established by packing additional willow and/or other appropriate native brush in the channel (Figure 2-7b). Some of this material would root and establish new plants, which would provide low-impact erosion control. The channel currently extends through Wetland 6 en route to Younger Lagoon; some of the proposed brush packing would occur within this wetland. The proposed action would disturb 0.03 acres and would include placement of 0.01 acres of vegetation within wetland W6. Work would be carried out by hand. Up to 20 cy of vegetation would be placed at 10 locations. The action would likely need to be repeated annually for five years.

#### Restoration Weeding and Planting within Wetlands

Restoration activities, under SRP Phase 1B, would include planting of native grasses and wetland species and removal of non-native plants within wetland habitats. All activities would follow standard native

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vegetation restoration practices outlined in the previously approved SRP Phase 1A and would be consistent with the requirements of the RMP previously approved as a component of the CLRDP. Virtually all of this work would be carried out by hand, with small crews working intermittently. Only locally derived native plants would be used for the restoration. If rainfall is inadequate, plantings would be irrigated by hand as needed for their establishment.

## 2.2.5 Specifications and Practices Common to All the Proposed Projects

### 2.2.5.1 Lighting Plan

Figure 2-5 indicates locations and types of proposed lighting for the projects described above. The CBB Project would include shielded lighting on the exterior of the CBB lab, greenhouses, and pathways through Parking Lots C and D. Site lighting would include pole-mounted fixtures in the parking lots and bollard-mounted fixtures along major pedestrian circulation paths. These fixtures would have cut-off shields to prevent horizontal and vertical light pollution. The greenhouses would include shielding of interior lighting, to ensure that no direct light is shed into the Younger Lagoon area and that indirect light is minimized.

The MSC Project would install lighting for the McAllister Way pedestrian path, bus stops, the Utility Yard (including security lighting on the regulated waste storage building), and the Upper Terrace Storage Yard. A campus identification sign at the main entrance also would be illuminated. The MSC Project will develop a detailed lighting plan that is consistent with CLRDP requirements with respect to placement and types of outdoor lighting, which will coordinate lighting for all MSC Project elements, to ensure the combined output of the existing and new lighting remains below the limits specified in the CLRDP.

The proposed new main road alignment from the campus entrance to the Seymour Marine Discovery Center parking lot would be lighted by low bollard type lighting along the sidewalk from the entry to McAllister Way and along the McAllister sidewalk. This lighting would be augmented by taller cut-off shielded lighting only at entrances to parking lots, building entries and at pedestrian crossings. Parking Lot A would not be used at night and would not be lighted.

Other proposed pedestrian and bicycle trails, including the multi-use Central Campus Trail, would not include lighting except as needed for safety, such as at vehicle road and parking lot driveway crossings, and intersections of pedestrian paths with the multi-use trail route. Future transit stops would be equipped with electrical service to provide lighting in future when the stops become functional.

### 2.2.5.2 Post-Construction Vegetation Restoration

In addition to landscaping planned for the CBB lab building site, Greenhouse Complex site, and parking lots, and the vegetation restoration included in the SRP Phase 1B Project (described above), several project elements would entail restoration of native vegetation within the footprint of disturbance. These

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include the restoration of the existing Delaware Avenue Extension entry road, the informal parking areas west of McAllister Way, berms and/or vegetation screening along the edge of Subarea 7 and around wetland W5, and the proposed temporary staging area in Subareas 4A and 4B.

With the exception of Subarea 4 (restoration of which is discussed below), areas to be restored would be replanted as natural areas consistent with CLRDP requirements. The CLRDP requires the use of native plants from seeds, cuttings, or other propagules collected from similar habitats on the marine terraces. Because of the proximity of these areas to the YLR, the post-construction vegetation restoration planting palette will be made up exclusively of native taxa that are appropriate to the habitat and region. Seed and/or vegetative propagules will be obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties will not be used. The collection zone for these propagules will include similar habitats along the coast of western Santa Cruz county and southern San Mateo County (first and lower reaches of the second marine terraces) as per the guidelines of the approved SRP Phase 1A. Plantings would be managed to avoid the introduction of invasive species and prevent the dispersal of such species into the YLR. Berms may be planted with taller native shrubs to provide windbreaks for developed areas of the campus and screening of the natural areas of the YLR from introduced light and development.

Other areas to be restored would be scraped, if necessary to remove any surface material that potentially has been contaminated by petroleum or other possible motor vehicle leaks. The areas would be scarified to prepare the soil and then would be planted, by hand, with native grass and shrub seedlings. Depending on the size and location of the restoration area, temporary irrigation (by drip or sprinkler system or by hand) would be supplied for the first year after planting to ensure that plantings have been established. New planting areas also would be supplied with straw blankets or other appropriate erosion control, and with temporary fencing to limit pedestrian traffic until the plantings are established. Plantings would be monitored for to ensure adequate growth and coverage, and would be filled in, or irrigation adjusted as needed, until eight or more native plant species comprise at least 40 percent cover for shrubs and at least 25 percent for other plants. SRP Phase 1 also includes a restoration target of natural recruitment by native species after seven years.

The proposed staging area adjacent to the CBB facility in Subarea 4 (see Figure 2-2b) is slated for future development, so full restoration as native habitat subsequent to construction is not warranted. However, short-term restoration of this area is required both for aesthetic reasons and to avoid creation of a weedy lot that might serve as a seed bank for invasive plants that could migrate into the adjacent YLR. Prior to staging use, ground cloth and then several inches of gravel would be laid down over the staging area. At the conclusion of construction, the gravel and ground cloth would be removed and the ground lightly scarified to alleviate any compaction. The area would then be hydroseeded in a sterilized annual grass cover crop, such as barley, that does not have the capacity to reseed and therefore could not spread into adjacent areas. Irrigation would be supplied to ensure the success of the ground cover. This process would be repeated annually, if vegetation cover is not maintained, until the initiation of development in this area.

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### 2.2.5.3 Sustainable Design Features of the Proposed Projects

#### *Sustainable Design Policies and Elements*

The CBB Project would comply with the *University of California Policy on Sustainable Practices*. As required by this policy, the project will adopt the principles of energy efficiency and sustainability to the fullest extent possible consistent with budgetary constraints and regulatory and programmatic considerations. The project also will undergo review under the Savings by Design program to maximize energy efficiency and minimize energy use. This program, funded by California utility customers and administered by utility providers, including PG&E, offers design assistance, financial incentives to owners when the efficiency of their new building exceeds a certain threshold, financial incentives to design teams, and energy design resources. The design goal of the CBB Project is to achieve Leadership in Energy and Environmental design (LEED™) Gold certification.

In the CBB lab building, offices and administrative spaces in the building that do not require exhausted air and stringent vibration controls would be separated from laboratory spaces. This will allow for the use of operable windows for natural ventilation in office spaces (consistent with LEED standards), and minimize overall energy consumption related to mechanical ventilation. Energy efficient fumehoods would be used, and users would be trained in procedures to minimize unnecessary mechanical ventilation when the hoods are not in use to further minimize energy demand. As explained above, if financially feasible, photovoltaic cells above Parking Lot D and on a portion of the roof of the CBB lab building would supply a small portion of the CBB electrical demand.

In the Middle Terrace development areas, development would consist of a series of linear buildings with a primary axis in an east-west orientation to allow for the greatest exposure of each building's façade to natural light. This orientation minimizes solar heat gain and reduces the need for artificial lighting, thus maximizing energy conservation. In addition, an east-west axis would shelter most of the occupied space from the stronger sunlight of early morning and late afternoon. Uses that would benefit from softer, more uniform indirect lighting would be placed along the northern facades of the building. Southern facades would receive direct sunlight, allowing passive heating during winter days. The installation of solar panels on south-facing roof planes will be considered as a means of supplying a portion of the building's energy demand. Shading devices above windows would minimize overheating during the warm months.

The CLRDP requires the inclusion in development projects at the MSC of sustainable features such as the use of Low Impact Development principles and Best Management Practices for storm water management, including minimizing the use of impervious surfaces to preclude increases in storm water runoff. The Middle Terrace development would be served by a naturalistic storm water system, including bioswales and vegetated detention ponds to facilitate infiltration on site. Facilities such as bicycle lockers, sheltered bike parking, and showers and lockers for bicycle commuters would be installed in conjunction with new development (as described above), and the facility would be served by bicycle and pedestrian paths to encourage use of alternatives to motor vehicles for access to the site. Foundation plantings would feature unobtrusive, place-appropriate native plants. Plantings that would increase water demand, such as turf, would be minimized. The flat portion of the CBB lab building roof will be designed as a green roof. Soil and plantings on the roof will provide storm water storage. Storm water will be used by the plants and

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will evaporate from storage in soil, which will reduce the amount of storm water that will enter project bioswales and retention areas.

The principal development elements of the proposed NEF Project are a new parking lot and an enhanced trail system. Both the parking lot and the trails would be surfaced with pervious materials to avoid or minimize any increase in storm water runoff. Interpretive signage would be installed throughout the campus to help to develop the public's understanding of and appreciation for the MSC's natural resources and of the Campus' efforts to protect these resources.

The SRP Phase 1B Project is a wetland restoration project and, as such, would be beneficial to the campus' natural environment. The goals of the project are to improve wetland habitat and increase native biodiversity in the Upper Terrace and to improve the water quality of flows to Younger Lagoon. Project implementation would use a minimum of heavy equipment and would rely on low impact development and "soft" engineering solutions where possible (such as the use of willow wattles rather than engineered structures for drainage improvements). This would minimize disturbance of soils and native vegetation and reduce erosion potential.

#### 2.2.5.4 Construction Staging, Activities and Schedule

##### Staging Areas

The Parking Lot D site, the CBB greenhouse facility site (including Parking Lot C), a 1.5-acre site immediately north of the CBB lab building site in Development Subarea 4, and the Upper Terrace Development Subarea 1 would be used for project construction staging as needed (figures 2-2a, 2-2b and 2-2c). In general, these areas would be used for heavy equipment parking, materials and spoils storage, and worker parking. To minimize vehicle noise in the vicinity of Younger Lagoon, staging in the greenhouse area would be confined to the least noisy staging activities, such as contractor parking and possibly some materials staging. Each of these areas, as well as the construction footprint of each of the proposed facilities, would be temporarily fenced with chain link fencing for safety and security during construction. Each staging area would be supplied with temporary electrical and data service via temporary overhead lines, and temporary water service for construction trailer rest rooms. Prior to staging use, filter fabric and 8 inches of rock would be installed over native soil to protect soil from vehicles. Temporary and structural storm water BMPs (such as straw wattles and silt fence, swales, berms, and/or a temporary detention basin) would be installed as necessary to protect storm water runoff water quality.

The proposed Upper Terrace staging area would provide space for construction trailers, additional parking and materials, and possibly spoils storage space. Permanent fencing and screening of the Upper Terrace staging area (that is, the fencing that would be retained after the area is converted to a Storage Yard, as proposed under the MSC Project) would be implemented during preparation for the staging use. This fencing would minimize light shed into adjacent wildlife areas and also buffer construction noise.

Site preparation for the Upper Terrace and Subarea 4 staging areas, both of which are currently undeveloped, would include clearing and grubbing of the site; grading and compaction; installation of geotextile and base rock as necessary to create a stable, all weather driving surface; and installation of perimeter controls.

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### Construction Activities and Sequence

Construction for the CBB, MSCI and NEF projects would take place concurrently and would require a total of approximately 21 months. Table 2-3, below, illustrates construction sequencing. Most of the MSCI and NEF project work would be completed in the first seven months; this would include removal of the existing road, trenching, installation of utilities, and compaction and paving of the new roadway and sidewalk. The deeper parts of the proposed sewer trench could generate a substantial quantity of spoils, which may in part be stored on site for reuse; or off-hauled if not suitable for reuse. If spoils from the trench are not suitable for utility trench backfill or roadway underlayment, some might be used for the augmentation of the berms along the edge of Development Subarea 7 and the berm around the wetland W5 buffer. Spoils that cannot be reused would be off-hauled, which could require three to five truck trips per day for up to six weeks. The new trails and the associated landscaping would be installed over a period of four months during this seven-month period.

Demolition of the existing greenhouses, rough grading for the CBB lab building and Greenhouse Complex, and drilling for the lab building foundation piers would all coincide with the first three months of MSCI construction. Building construction would begin in approximately the fourth month and would take about 13 months. The final phase of construction—consisting of landscaping, parking lot grading and paving, grading and planting of the storm water swales, and site work finishes such as lighting and benches—would take about five months.

SRP Phase 1 is a program of habitat restoration that covers the initial seven years of the anticipated 20-year program described in the CLRDP. The work described for this project would be spread over the seven-year period. Most project elements would be carried out by hand or with hand-held equipment by a small crew of laborers and minimal equipment support.

For proposed SRP Phase 1B Project, only the work to reconnect wetlands W1 and W2/W3 could be considered as construction activity. This work would require a small grader/excavator. The wetland work likely would be iterative, with fine adjustments made in grading as the success of the reconnection strategy is evaluated over a several-year period.

Construction for these related projects would be coordinated and sequenced to maximize the flexible use of staging areas, to minimize construction noise and air emissions in the vicinity of sensitive receptors (in particular the De Anza residential community), to minimize conflicts in necessary construction activities, and to maintain adequate traffic circulation and emergency access to the campus during construction.

#### 2.2.5.5 Workforce and Construction Vehicle Trips

The largest number of daily construction vehicle trips would occur when construction of the CBB lab building has begun and construction of the MSCI and NEF Projects is still in progress. During this period, there would be about 50 to 100 worker commute trips and about 20 vendor trips daily. At other times during construction, the number of trips would range from about 25 to about 50. This information is pertinent to the analysis of construction-related traffic, air emissions, and possibly noise.

### 2.2.5.6 Construction Traffic, Noise and Air Emissions Controls

Construction traffic estimates are presented in Section 3.15, *Transportation and Traffic*, below. These estimates are based on the average size of the workforce and the sizes and types of facilities to be constructed. Consistent with the CLRDP, no material will be imported for construction of berms or other earthen features on the campus. However, because of the substantial depth required for the proposed sewer line, and because it is unlikely that all of the material excavated will be reusable on site, it is likely that three to five truckloads per day will be required for spoils off-haul.

With respect to potential noise and air quality effects from construction, the closest sensitive receptors to the campus are the residence in the De Anza residential community, which is adjacent to the eastern boundary of the southern part of the campus. Potential air emissions and fugitive dust emissions from project construction are assessed in detail in Section 3.3, *Air Quality*. The four proposed projects include construction-period dust controls consistent with the mitigation requirements of the CLRDP EIR. The CLRDP also includes implementation measures that require that sensitive wildlife habitats in the Younger Lagoon and the Younger Lagoon Reserve generally be protected from noise from construction and development. These constraints are incorporated in the proposed MSC Projects as a basis for determining appropriate locations for various types of construction staging activities, as discussed in relevant sections of the environmental analysis, in Chapter 3.

### 2.2.6 CLRDP Amendment #1

The Campus proposes CLRDP Amendment #1 to be considered in conjunction with the certification of this EIR and approval of the four MSC Projects. Since final approval of the CLRDP in January 2008, the Campus has continued to refine plans for near-term development on the MSC and long-term restoration efforts for the terrace lands of the YLR. Adoption of these refinements will require several minor amendments to the CLRDP, which are grouped together here as Amendment #1 to the CLRDP. None of the proposed amendments would alter the intent of the CLRDP in regards to conformance with the Coastal Act, public access, or resource protection.

As identified for each item discussed below, some of the proposed revisions are related to and would be required for CLRDP consistency for one or more of the projects proposed above. Other refinements are proposed to clarify CLRDP language in response to minor changes to CLRDP language during the Coastal Commission Notice of Intending Development (NOID) approval process, or in response to the evolution of the CLRDP Resource Management Plan under the guidance of the SAC that was established to guide YLR restoration efforts, as required by the CLRDP. The proposed revisions, individually and collectively, meet UC criteria to qualify as minor amendments under University policy. That is, none of the revisions would affect the siting of a building, shift more than 30,000 gross square feet of development, or change the land-use designation of more than 4 acres of land. The amendment of the CLRDP is subject to approval both by the Regents of the University of California, through delegation to the Senior Vice President of the Board of Regents as set forth in UC Policy DA 2135, and by the Coastal Commission.

**Table 2-3  
Construction Schedules<sup>6</sup> (Approximate)**

Phase	July-December, 2012				2013												Jan-April, 2014			
<b>Demolition</b>	CBB																			
<b>Excavation and grading</b>	CBB																			
	MSCI Ph.A/ NEF				MSCI Ph. B															
	SRP Ph. 1B																			
<b>Trenching/ Utilities</b>	CBB																			
		MSCI Ph.A/NEF		MSCI Ph. B																
<b>Building Construction</b>					CBB															
<b>Paving/ Landscaping</b>																				
																	MSCI Ph.A/ NEF		CBB	
																			MSCI Ph.B	

<sup>6</sup> At the time of preparation of the Final EIR, it is anticipated that construction will start in approximately October 2013 and be concluded in June 2015. Estimated construction durations are unchanged.

The following actions comprise the proposed CLRDP Amendment #1. Table 2-4 indicates which proposed amendments are applicable to each of the proposed MSC Projects. The potential environmental effects of implementation of the proposed amendments are addressed in Chapter 3 of this EIR. CLRDP figures as amended under proposed Amendment #1 are provided in Appendix A of this EIR.

**Table 2-4**  
**Applicability of Proposed Amendment #1 Actions to Proposed MSC Projects<sup>7</sup>**

<b>Action</b>	<b>Text</b>	<b>Independ ent of MSC Projects/ Future Projects</b>	<b>Required as condition of CLRDP</b>	<b>Needed for ongoing land management</b>	<b>CBB</b>	<b>MSCI A</b>	<b>MSCI B</b>	<b>NEF</b>	<b>SRP 1B</b>
<b>1</b>	<i>Incorporation into YLR of all terrace lands outside of development areas.</i>	<b>X</b>	<b><u>X</u></b>						
<b>2</b>	<i>Distinguish between CLRDP references to original YLR and to YLR terrace lands</i>	<b>X</b>		<b><u>X</u></b>	<b>X</b>				
<b>3</b>	<i>Wetland boundary and buffer expansions</i>	<b>X</b>	<b><u>X</u></b>	<b><u>X</u></b>		<b>X</b>			
<b>4</b>	<i>Windbreak and screening vegetation</i>	<b>X</b>		<b><u>X</u></b>	<b>X</b>	<b>X</b>			
<b>5</b>	<i>Sources of native plants</i>	<b>X</b>		<b><u>X</u></b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>6</b>	<i>Public access trail routes</i>	<b>X</b>				<b>X</b>		<b>X</b>	
<b>7</b>	<i>Main entry road route</i>					<b>X</b>			
<b>8</b>	<i>Utility corridor locations</i>					<b>X</b>	<b>X</b>		
<b>9</b>	<i>Timing of wetland reconnection</i>								<b>X</b>

<sup>7</sup> For final project approvals, MSCI A and B have been subsumed within the CBB Project, which also encompasses MSC Parking Phase 1 (described in CBB Project Description, above) and MSC EH&S Facility (described in MSCI Project Description, above).

Table 2-4

Applicability of Proposed Amendment #1 Actions to Proposed MSC Projects<sup>7</sup>

Action	Text	Independent of MSC Projects/ Future Projects	Required as condition of CLRDP	Needed for ongoing land management	CBB	MSCI A	MSCI B	NEF	SRP 1B
	and wildlife corridor enhancements								
10	Location of YLR fencing					X			
11	Accommodation of campus parking	X		X	X				

Incorporation into YLR of all Terrace Lands outside of Development Areas

**Action 1.** Amend the CLRDP Land Use Diagram (Appendix A, amended CLRDP Figure 5.2), consistent with CLRDP IM 3.14.1, to incorporate all terrace lands in campus areas not designated as “Research and Development, Mixed Use”, into the Younger Lagoon Reserve (YLR). All areas thus designated in the CLRDP will henceforth be referenced as “YLR (Terrace Lands),” which includes the areas referenced in the CLRDP as “Terrace ESHAs<sup>8</sup>.” The original YLR and the YLR (Terrace Lands) designations are delineated on Figure 5.2. Collectively, the original YLR and the YLR (Terrace Lands) now comprise the Younger Lagoon Reserve.

CLRDP IM 3.14.1 requires that the land-use diagram amendment be made within 2.5 years of CLRDP approval (by July 2011), independent of any project development on the Campus.

Distinction between Original YLR and YLR Terrace lands

**Action 2.** Amend all references to Younger Lagoon Reserve (YLR) in CLRDP text and IMs, with the exception of the references in CLRDP IM 3.14.1, to apply explicitly to “YLR (original YLR)”, the area within the YLR prior to incorporation of the terrace lands in 2008.

CLRDP Policies 3.5 and 3.6 explicitly set forth development protections for Younger Lagoon Reserve. These policies were intended to apply to YLR as it existed at the time the CLRDP was drafted—that is, the original YLR. The terrace lands, including lands immediately adjacent to designated development areas, were added to the YLR as part of the final approval of the CLRDP. Some of the implementation measures under Policies 3.5 and 3.6 are not practicable for application to terrace lands immediately adjacent to CLRDP-approved development areas that are now included in the YLR. In particular, IM 3.5.7 (Movement Not Visible from YLR), which requires that movement associated with development (including within outdoor activity/research areas and buildings, and including all windows in buildings)

<sup>8</sup> Environmentally sensitive habitat areas.

shall not be visible from within YLR. This provision, which protects the YLR lagoon and surrounding bluffs from indirect disturbance, was not intended to apply to CLRDP terrace lands, as it is not feasible to screen these lands immediately surrounding development areas from all activity within those development areas. Furthermore, some of the terrace lands now in the YLR are not ESHAs or wetlands or their associated buffers. The CLRDP includes several IMs and policies to protect wetlands and other ESHAs on the terrace lands. The proposed amendment would not reduce the intended protection of these areas as set forth in the CLRDP. Terrace ESHAs will be screened from development to the greatest extent feasible with berms, buffers, and vegetation cover, as provided by the CLRDP.

Similarly, CLRDP IM 3.4.3 (Noise at Boundary of YLR) should be considered as applicable specifically to the original YLR, and not to YLR Terrace Lands. IM 3.4.3 specifies that YLR shall not be exposed to noise generated by human activity on the terrace portion of the MSC in excess of 60 dBA CNEL as measured at the boundary of the YLR. This measure was not intended to constrain normal development activity in the terrace development areas, which likely will produce noise in excess of 60 dBA at the development zone margins at times in some areas. The ESHAs in the YLR Terrace Lands are protected from excessive development noise by the provisions of CLRDP IM 3.4.1 and by the development buffers around these ESHAs that are provided by the CLRDP, which would not be amended by the proposed action.

The correction of text and IM references to the YLR is pertinent to all development projects on the campus, including CBB, with respect to the levels of protection afforded to the original YLR from indirect effects of noise and activity. The CLRDP standards applicable to protection of Terrace ESHAs from indirect light, development activity within line of sight, and excessive noise from development would not be altered by the amendment.

#### Wetland Boundary and Buffer Extensions

**Action 3.** *Amend the CLRDP to change the boundaries and associated buffers of wetlands W2, W3, and W5, to reflect the revised campus wetland delineation (Huffman-Broadway Group 2011) prepared in compliance with CLRDP IM 3.3.2; correspondingly amend the affected boundaries of Development Subareas 1 and 15 to redesignate areas included in the revised wetland buffers as Resource Protection Buffer; incorporate the small areas affected by the amendment into the YLR (Terrace Lands), consistent with CLRDP IM 3.14.1; amend CLRDP Figure 5.2 to reflect the amended wetland and buffer boundaries, development area and YLR (Terrace Lands) boundaries.*

This action implements both CLRDP IM 3.3.2 and 3.14.1 in revising wetland boundaries and incorporating additional protected lands into the YLR.

As required by CLRDP IM 3.3.1, a wetlands biologist reinspected all campus wetlands during development of the current project (Huffman 2011). This survey revealed that, under CCC criteria, wetland W2 has expanded slightly to the east and Wetland 3 has expanded slightly to the north. The 100-foot buffer for the expanded areas of wetlands W2 and W3 encroaches into the western end of Development Subarea 1 and slightly reduces the developable area. At wetland W5, coyote brush (*Baccharis douglasii*), which is a wetland indicator species, has expanded along the southwestern edge and the southern arm of the wetland. To the southwest, the revised wetland buffer encroaches slightly into

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Development Subarea 15, where the MSC Area Plan anticipates a future expansion of the Seymour Marine Discovery Center parking lot (which is not proposed as part of the current project). Proposed boundary and buffer adjustments, made in compliance with CLRDP IM 3.3.2, are shown in Appendix A, Figure 5.2. The small areas of Development Subarea 1 and Development Subarea 15 that are affected by this amendment are incorporated into the YLR (Terrace Lands). CLRDP Figures 5.2 is amended to reflect these changes.

This amendment is pertinent to the MSC Project, which includes development in Development Subarea 1. It also will be pertinent to future development.

#### Windbreak and Screening Plantings

**Action 4.** Amend titles of and references within IMs 2.3.3, 3.5.5 and 4.2.11 from "windbreak trees" to "windbreak vegetation"; amend the CLRDP Design Guidelines (Chapter 6) to allow the use of tall native shrubs or other appropriate native plants (as specified in the previously-approved Specific Resource Plan Phase 1A) in place of trees, for screening of new development and development activity. Explicitly permit the removal of existing Monterey cypress and replacement with tall shrub screens or other appropriate native vegetation in conjunction with earthen berms as needed to obtain appropriate height.

The referenced IMs assume the trees will be used as windbreak and screening on the campus. CLRDP Design Guidelines (Chapter 6) identify Monterey cypress, Monterey pine, Bishop pine, Gray pine, Torrey pine, and Western hemlock as tall screening trees for new development and as a buffer between developed areas and the YLR. However, as identified in Phase 1 of the SRP, the SAC has determined that these species are not native to the site and tend to be invasive and therefore should not be planted on the campus, and that existing examples should be removed. SRP Phase 1 identifies other tall vegetation, such as coffeeberry (*Rhamnus californica*), coyote bush (*Baccharis pilularis*), and lizard tail (*Eriophyllum staechadifolium*) and other native vegetation, that can serve as screens in place of tree plantings, particularly when planted in conjunction with earthen berms around development or ESHAs.

This amendment is applicable both to restoration projects that include windscreens and to proposed and future development projects, including the CBB and MSC Projects, which proposed landscape plantings along the edges of development and landscaping of a new YLR berm, respectively.

#### Sources of Native Plants for YLR Terrace Lands Restoration

**Action 5.** Amend CLRDP IM 3.2.14 as follows: "All landscaping and vegetation on the Campus (including restoration and enhancement plantings, screening vegetation, storm water system plantings, ornamental plantings, and all other plant material) shall be limited to non-invasive native plant species that are appropriate to the habitat and region and that are grown from seeds or vegetative materials obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties shall not be used. ~~Except for the planting of Monterey cypress,~~ **Only** locally collected seed, cuttings, and/or other propagules shall be used for landscaping. If feasible, materials should be collected from **similar habitats on the first and lower reaches of the second marine terraces along the coast of western Santa Cruz County and southern San Mateo**

~~County coastal habitats that are located within approximately one mile of the Campus and seaward of Highway 1.~~

The SAC, which is guiding development and implementation of SRP Phase 1 for YLR restoration, recommended this change, as the previously defined collection area was impracticably restrictive. This change was included in UC Santa Cruz' NOID 10-2 for SRP Phase 1A, which was approved by the CCC in 2010.

This amendment is applicable to restoration activities under SRP Phase 1B, as well as to landscaping for the CBB Project and revegetation as needed for the MSC1 and NEF Projects. It also will be applicable to all future development and restoration on the campus.

### New Public Access Trail Routes

**Action 6.** Amend CLRDP Figure 5.6 as indicated in the revised figure (Appendix A, amended CLRDP Figure 5.6), eliminating the previously-envisioned east-west trails in the eastern half of the Middle Terrace except as indicated on the figure and adding a new dedicated pedestrian/bicycle trail (Middle Terrace Walk) from the campus entry to McAllister Way; amend CLRDP Figure 9.1 (Trail and Overlook Improvements) as indicated in Appendix A, amended CLRDP Figure 9.1. The figures should be understood to be schematic representations of trail locations. Trails around development areas will be situated as close as practicable to the margins of development.

Amend related Figure 9.2 (Timing of Public Trail Improvements) as follows:

#### *Trail Group      Timing of Improvement*

- |                |  |
|----------------|--|
| <i>Group 1</i> | <i>Improvement/ construction of <del>this group of trail segments</del> <b>the De Anza Trail, the Bluff Trail, the Discovery Trail, Middle Terrace Walk and Ocean Shore Railroad Trail</b> shall be undertaken and completed concurrent with the development of any new building in the Lower or Middle Terrace development zones.</i>   |
| <i>Group 2</i> | <i><del>Improvement of this group of trail segments</del> <b>Construction of additional east-west trails between the Middle Terrace Walk and McAllister Way</b> shall be undertaken and completed concurrent with the development of <del>the realigned "Major Campus Street."</del> <b>adjacent new buildings on the Middle Terrace.</b></i>                                  |
| <i>Group 3</i> | <i><del>Improvement of this group of</del> <b>Construction of the Upper Terrace</b> trail segments shall be undertaken and completed concurrent with any new development in the Upper Terrace development zone, or when the first 10% of the new building floor area (square footage) contained in the Campus building program set forth in subsection 5.2.1 is completed.</i> |

CLRDP Figure 5.6 shows a series of new public access pedestrian trails and trail improvements throughout the campus. CLRDP Figure 9.1 groups the trails by priority of implementation, and CLRDP Figure 9.2 specifies when each trail group will be developed. The Campus proposes to slightly revise the layout of CLRDP public access trails as shown on CLRDP Figures 5.6 and 9.1. The peripheral trails and several cross-campus trails laid out in the CLRDP would be developed essentially as proposed; four envisioned east-west trail segments across the YLR terrace lands would not be developed. This elimination of the previously planned east-west trails was proposed by the YLR manager and the SAC, to

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avoid fragmentation and potential human intrusion into campus wildlife habitat; the change was previously presented to the Coastal Commission in the SRP Phase 1A NOID. Public viewing access of wetlands on the terrace would be provided by two public access overlooks and also by a new central pedestrian/bicycle trail (Middle Terrace Walk), proposed as part of the current MSCI Project, which would run from the main entry of the campus and along the eastern and southern edges of the Middle Terrace development areas (see below).

This action is applicable to development proposed by the MSCI and NEF projects.

#### Campus Entry Road Route

**Action 7.** *Amend route of main entry road as indicated on CLRDP Figure 5.5 with the revised route for the main entry road route as proposed under the MSCI Project.*

The CLRDP (Section 5.5.1 and IM 5.1.6) requires that the existing main entry road to the campus be abandoned and restored as a pedestrian trail, and that a new entry road be developed, and presents the assumed new route in CLRDP Figures 5.5 and 7.2. Subsequent to CLRDP approval, the campus has proposed a modified route for the main entry road that curves southwest across the campus, rather than heading straight west and then south. Most of the revised route remains within the designated development areas, but would improve connectivity between development areas. The former entry road would be abandoned and restored as planned.

This action is applicable to MSCI Project.

#### Utility Corridors

**Action 8.** *Amend CLRDP Figure 5.7 to reflect utility corridor revisions as proposed in MSCI Project (Appendix A of this EIR, amended CLRDP Figure 5.7).*

Since approval of the CLRDP, the campus has continued to refine utility planning for the campus. The proposed action would place new utility main lines within the entry road corridor as realigned under Action 7, above, but otherwise is wholly consistent with the CLRDP provisions regarding locations of utility lines.

This action is pertinent to the proposed MSCI Project, and to future projects with respect to the alignment of east-west utility connections not proposed as part of the MSCI Project.

#### Timing of Reconnection of Wetlands W1 and W2 and Wildlife Corridor Enhancements

**Action 9.** *Amend CLRDP RMP Table A-12 (Appendix A of this EIR, amended CLRDP Table A.-12) to indicate that reconnection of wetlands 1 and 2 (RMP MM 9) and revegetation planting of wildlife corridors (RMP MM 26) will be undertaken during SRP Phase 1, but will not necessarily be completed in conjunction with the first development north of the Delaware Avenue Extension.*

The proposed action would amend the implementation timing of the RMP, consistent with the procedure set forth in IM 3.2.10, which allows the SAC to set timing for the implementation of each element of the RMP. Consistent with CLRDP RMP Management Measures 9 and 10 and the implementation timing schedule set forth in CLRDP Appendix A, Table A.12, the reconnection of wetlands W1 and W2 and

vegetation restoration in wetland W1, W2, and W6, are to be implemented in conjunction with completion of any drainage improvements for the first project north of the Delaware Avenue Extension. IM 3.2.3 and RMP PS 27 call for vegetation enhancements of wildlife corridors along RR track and E-W corridor south of the Storage Yard. These requirements would be triggered by drainage improvements associated with the development of the Upper Terrace Storage Yard (under the proposed MSCI Project); however, the wetland reconnection and corridor restoration work may not be fully implemented under Phase 1 of the SRP. In particular, the wetland reconnection may require several iterations to achieve optimal functioning, and these adjustments could continue into SRP Phase 2. Whether this action requires a CLRDP amendment is at the discretion of the Executive Director of the California Coastal Commission, as detailed in CLRDP Appendix A, p.5.<sup>9</sup>

This action is relevant to the proposed SRP Phase 1B Project.

#### Location of YLR Fencing

**Action 10.** Amend RMP MM 30 as follows: "~~Remove existing chain link fencing and install new solid fencing~~ additional berm along or just outside of the YLR boundary (see Fencing Design in CLRDP Section 6.8). **Augment the screening provided by the berm with visually permeable fencing and vegetative screening on the McAllister Way side of the berm such that YLR is screened from noise and activity consistent with RMP PS 31 criteria. Plant windbreak and linear mass of trees-tall shrubs...**

CLRDP RMP Management Measure 30 calls for the removal of the chain link fencing existing at CLRDP certification and installation of new solid fencing (and/or addition to the berm) along or just outside of the YLR boundary west of McAllister Way (see also "Fencing Design" in CLRDP Section 6.8.3). The campus proposes to remove and replace the existing chain link fence with a new fence in the approximately the same location as the existing fence that is compliant with the visual and wildlife specifications set forth in the CLRDP. In the opinion of UC Natural Reserves staff and the SAC, placing the fence on the inside of the berm would result in increased trespass into the YLR as well as increased exposure to noise and movement. The Campus would therefore like to amend the CLRDP to allow the fencing to be placed on the outside (McAllister Road side of the existing and new berm. Whether this action requires a CLRDP amendment is at the discretion of the Executive Director of the California Coastal Commission, as detailed in CLRDP Appendix A, p. 5.

This action is applicable to the proposed MSCI Project.

#### Accommodation of Campus Parking

**Action 11.** Amend IM 5.3.7 as follows: "~~All parking demand for employees, students and visitors shall be satisfied on Campus and n~~New development shall include adequate and enforceable measures to ensure that ~~all parking demand is satisfied on campus~~ **does not impact public parking or coastal access on streets adjacent to the MSC, including Delaware Avenue.**

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<sup>9</sup> "...the RMP goals and performance standards are not static requirements per se so much as initial guidelines that may be refined during the SAC process so long as such refinement is consistent with current professional restoration, enhancement, and management goals and standards, and with achieving high quality open space and natural habitat area in perpetuity consistent

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The intent of CLRDP Policy 5.3 is to ensure that parking demand associated with campus development does not negatively impact public coastal access. The proposed revision of IM 5.3.7 would honor the purpose and intent of CLRDP Policy 5.3 to preserve public coastal access, while at the same time providing additional flexibility in accommodating fluctuating parking demands associated with classes held at the MSC without unnecessarily building additional MSC parking. In the absence of the proposed revision, the CBB project and future development contemplated in the CLRDP would be inconsistent with IM 5.3.7.

The proposed CBB and NEF projects include development of three new parking lots at the MSC, which would provide a total of 130 new parking spaces, including 110 spaces that would be available for UC Santa Cruz-affiliate parking, and 20 spaces that would be designated for coastal access visitor parking only (a CLRDP requirement). Analysis of net parking supply and demand at the MSC with implementation of the proposed MSC Projects is detailed in Section 3.15 (*Transportation and Traffic*), Section 3.15.2.2, in Chapter 3 of this EIR. It is recognized that unmet MSC-generated parking demand could overflow to City streets. The proposed revision to IM 5.3.7 would accomplish the intent of CLRDP Policy 5.3 by requiring the campus to ensure that the parking needs of MSC users do not impede public coastal access parking on streets adjoining the MSC. Conformance with IM 5.3.7 as proposed for modification would be monitored and enforced through implementation of MSC Mitigation Measures TRA-1A through -1C, which will reduce motor vehicle traffic to the MSC and associated parking demand; require the Campus to monitor the utilization of off-campus parking near the campus entrance; and enhance Campus transportation demand management measures and transportation alternatives as necessary to support the use of alternative transportation modes and reduce the demand for motor vehicle parking.

The potential insufficiency of MSC parking to fully satisfy MSC demand is due, in part, to the Campus' efforts to implement CLRDP Policy 5.5 and related IMs to encourage the use of transportation modes other than single occupant vehicles through implementation of parking restrictions, and also to comply with other CLRDP requirements regarding designation on the campus of coastal access and visitor parking and removal of informal parking areas. The Campus proposed a parking management program in compliance with CLRDP IMs for separate consideration by the Coastal Commission under a Notice of Impending Development filed in September 2010. The proposed program would require employees who wish to park on the MSC to obtain a permit, and undergraduate students would be prohibited from parking on the campus. In addition, the parking management program would redesignate 50 existing parking spaces at the Seymour Marine Discovery Center parking lot for the exclusive use of Discovery Center and/or coastal access visitors, as required by the CLRDP. Further, the CLRDP requires the removal of existing informal parking along the west side of McAllister Way, which presently accommodates about 48 vehicles. Removal of this parking is proposed as part of the MSC Phase A Project. With implementation of the required CLRDP visitor-designated spaces and the required removal of informal parking, there could be a shortfall in available parking spaces on the MSC. However, with

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with this CLRDP. RMP adjustments in this respect may require a CLRDP amendment, unless the Executive Director determines that an amendment is not necessary.”

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implementation of the campus' proposed parking permit program, sufficient parking supply would be available for all employees, visitors and graduate students.

Although the proposed parking permit program could result in the use of portions of Delaware Avenue and Shaffer Road near the MSC entrance for parking by undergraduate students who would be prohibited from parking at the MSC or persons who do not obtain a parking permit, implementation of MSC Mitigation Measures TRA-1A through -1C would reduce the potential for MSC-development to generate traffic that would conflict with the CLRDP TDM goal for of 40 percent use of alternative transportation modes; and would ensure that MSC-related parking demand does not impair parking for coastal access along Delaware Avenue. The proposed revision of IM 5.3.7, identified as a mitigation measure in Section 3.10 (*Land Use*) of this EIR eliminates the Project's potential inconsistency with the land use plan.

UC Santa Cruz has a long-standing commitment to encouraging the use of transportation alternatives to single occupant vehicles. The UC Santa Cruz TDM program has been extremely effective in reducing the use of single-occupant vehicles for access to the Main Campus. The proposed parking management program under consideration for the MSC (under a separate NOID) is consistent with the Main Campus TDM programs and is expected to further reduce single-occupant vehicle use and parking demand. UC Santa Cruz has committed to offering alternative transportation solutions for undergraduates, the campus population most likely to take advantage of alternative transportation modes. The proposed CBB Project includes mitigation measures requiring the Campus to disseminate information on alternative transportation options to MSC employees and students, and to promote and support options such as Zimride (for carpooling) and bicycling.

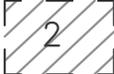
The potential land use compatibility effects of the proposed amendment to IM 5.3.7 are addressed in this EIR in Section 3.10 (*Land Use*). The potential physical environmental effects of increased circulation and parking on Delaware Avenue near the campus entrance are addressed in Section 3.15 (*Transportation and Traffic*).

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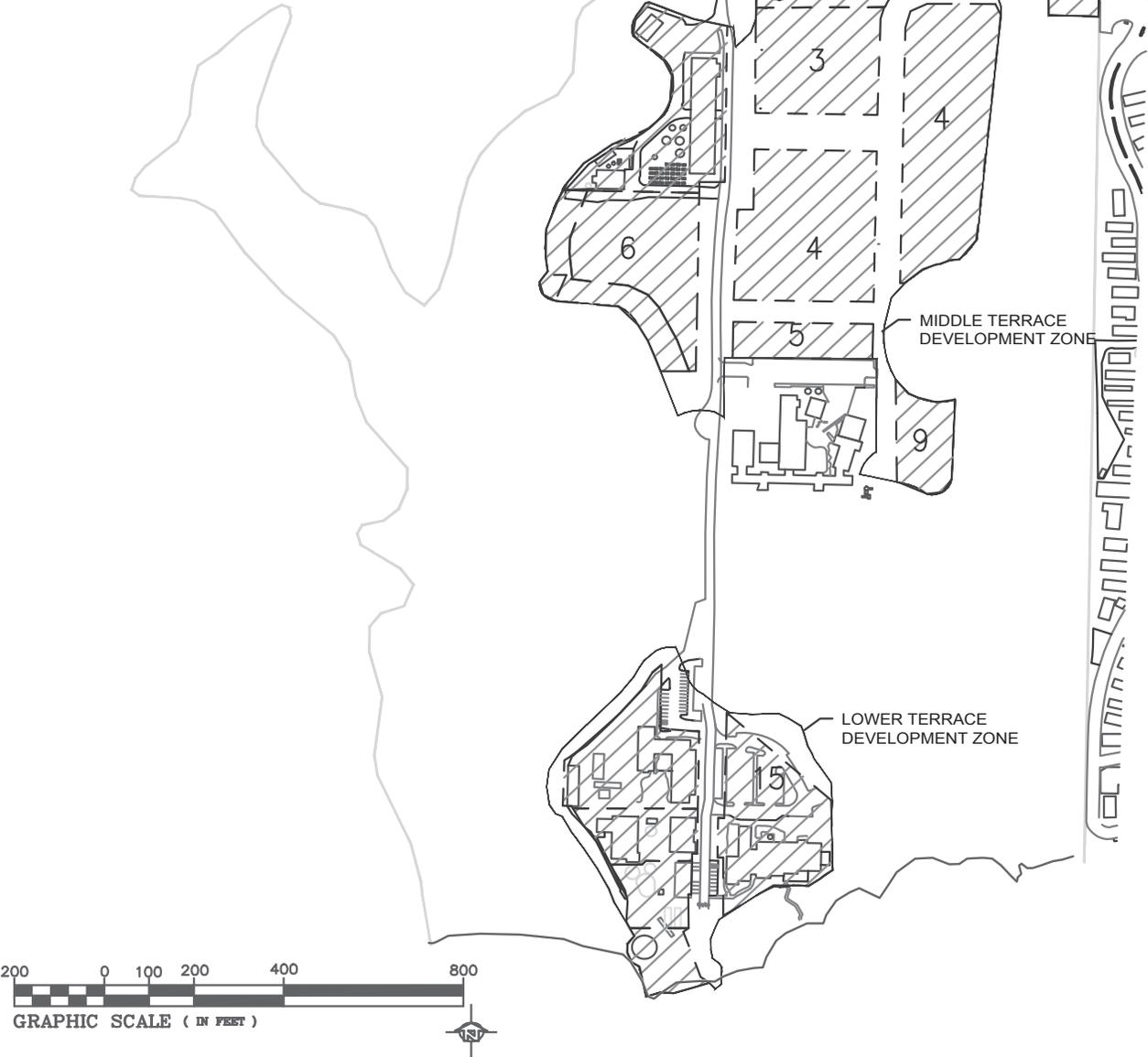
## 2.3 REFERENCES

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**LEGEND**

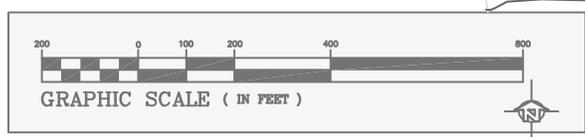
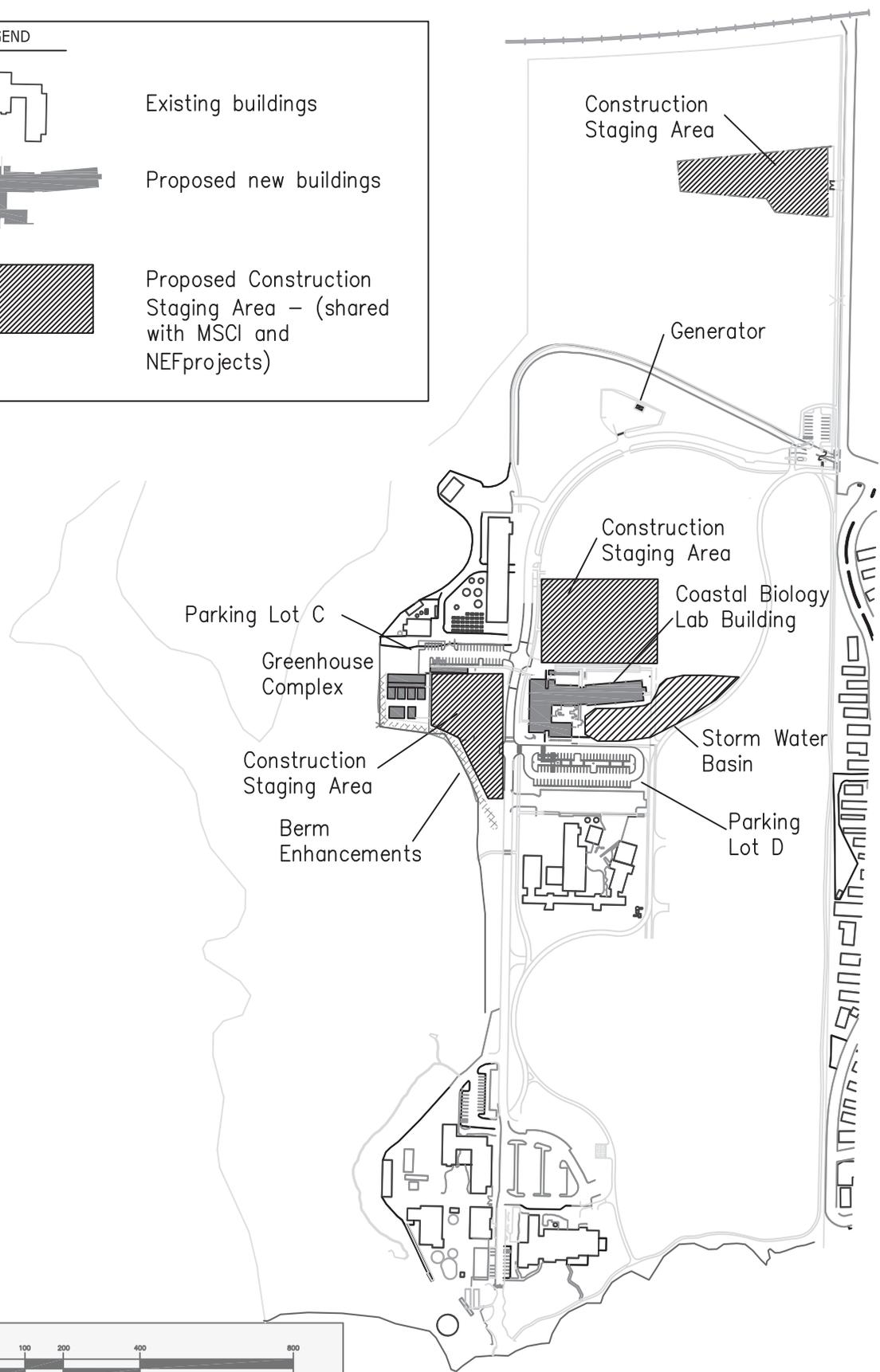
 DEVELOPMENT SUB AREA

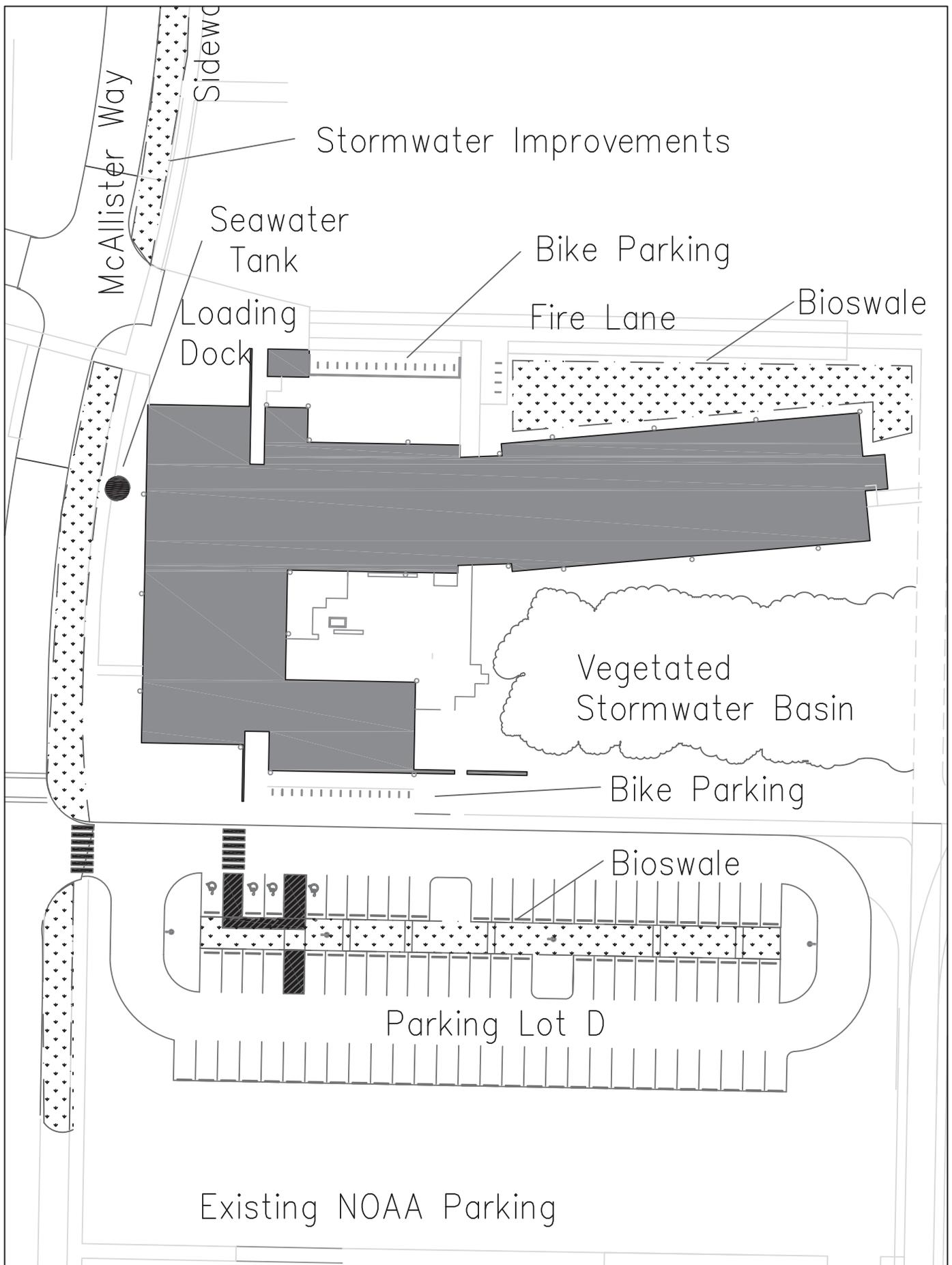
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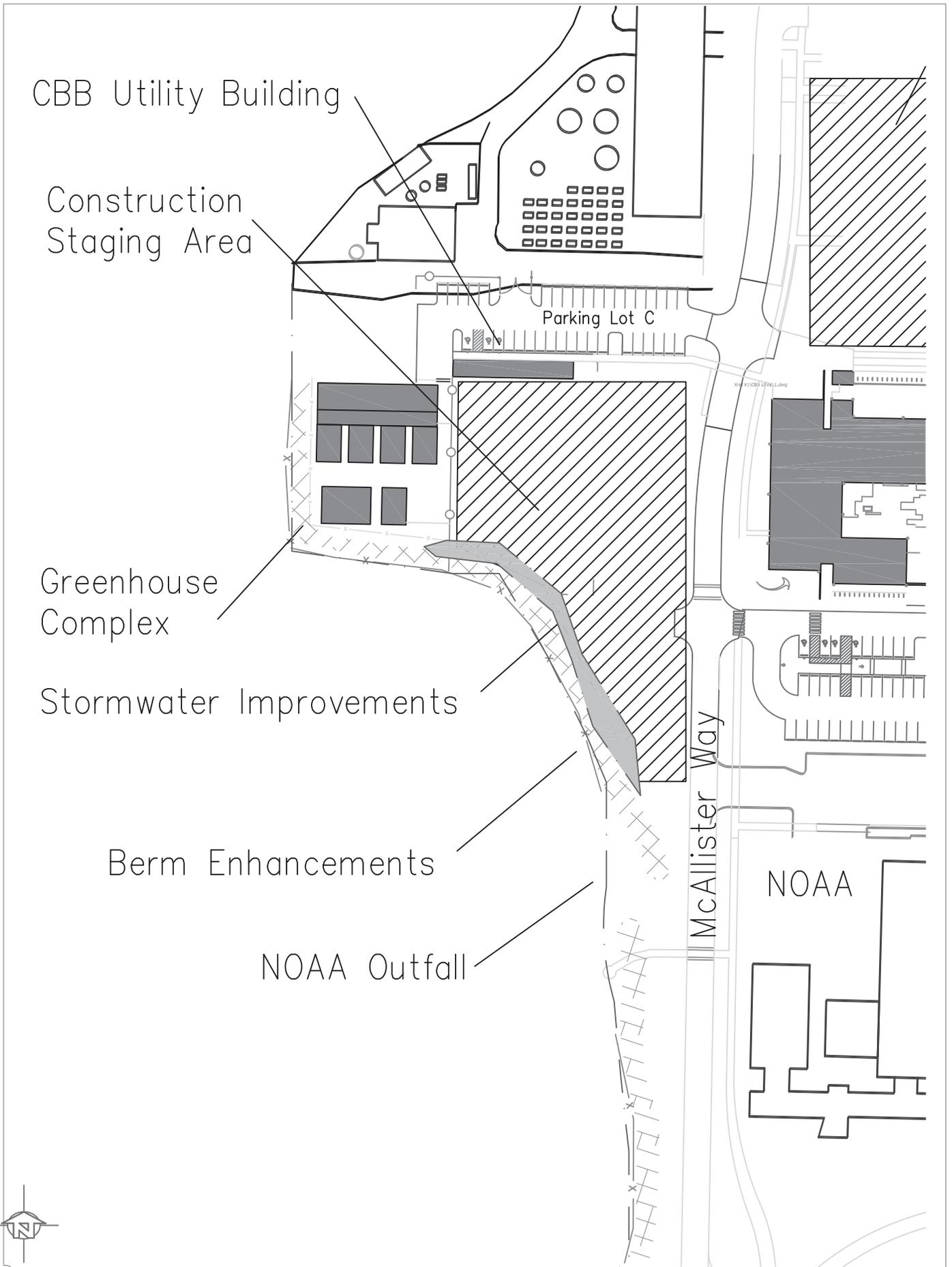


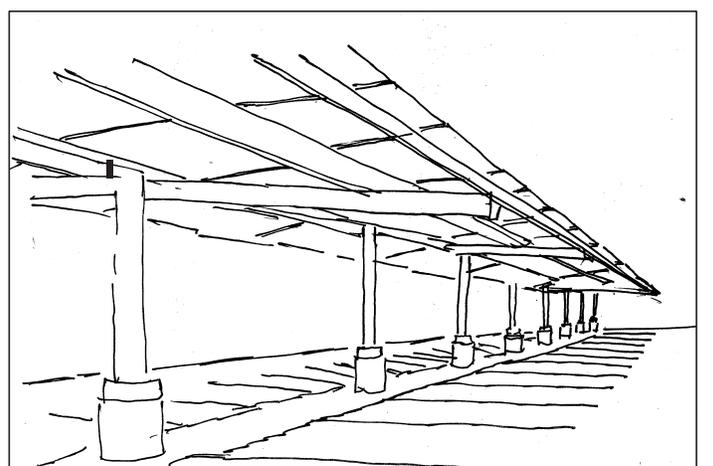
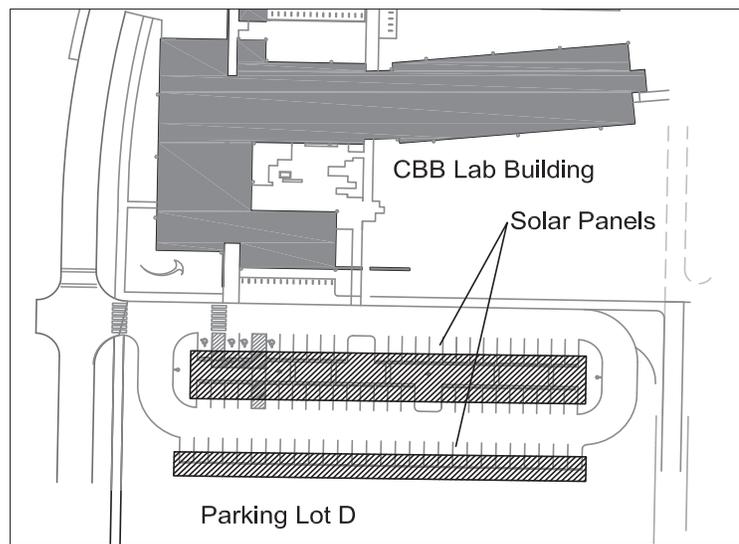
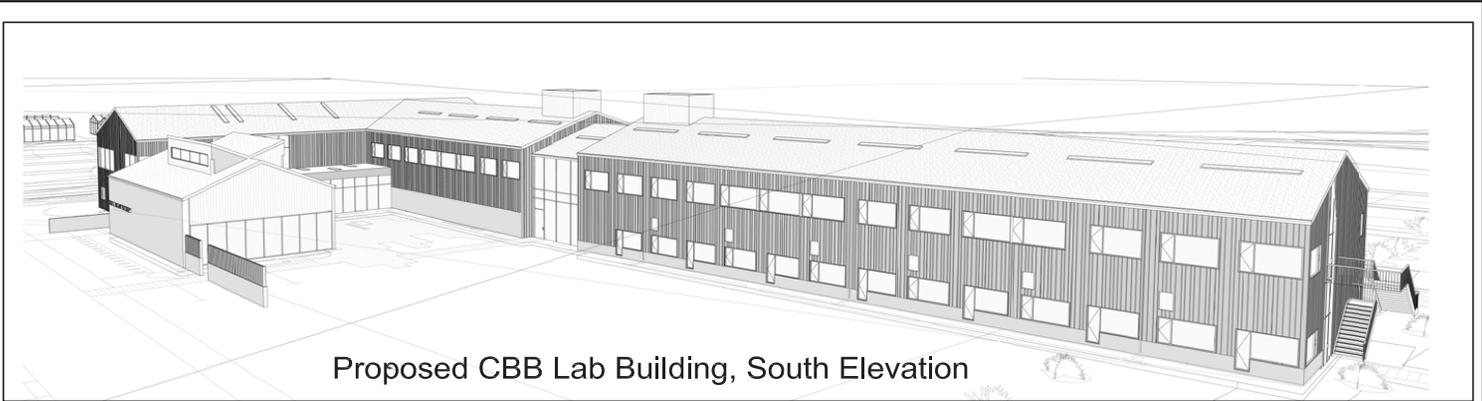
**LEGEND**

-  Existing buildings
-  Proposed new buildings
-  Proposed Construction Staging Area – (shared with MSCI and NEF projects)









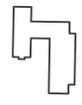
Proposed Parking Solar Panels -  
Plan View & Schematic Elevation

UC Santa Cruz Marine Science Campus  
Coastal Biology Building and  
Infrastructure Improvements  
Final Environmental Impact Report November 2011

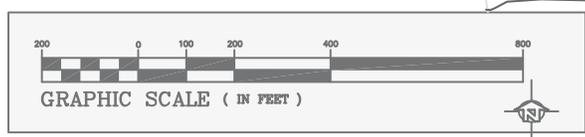
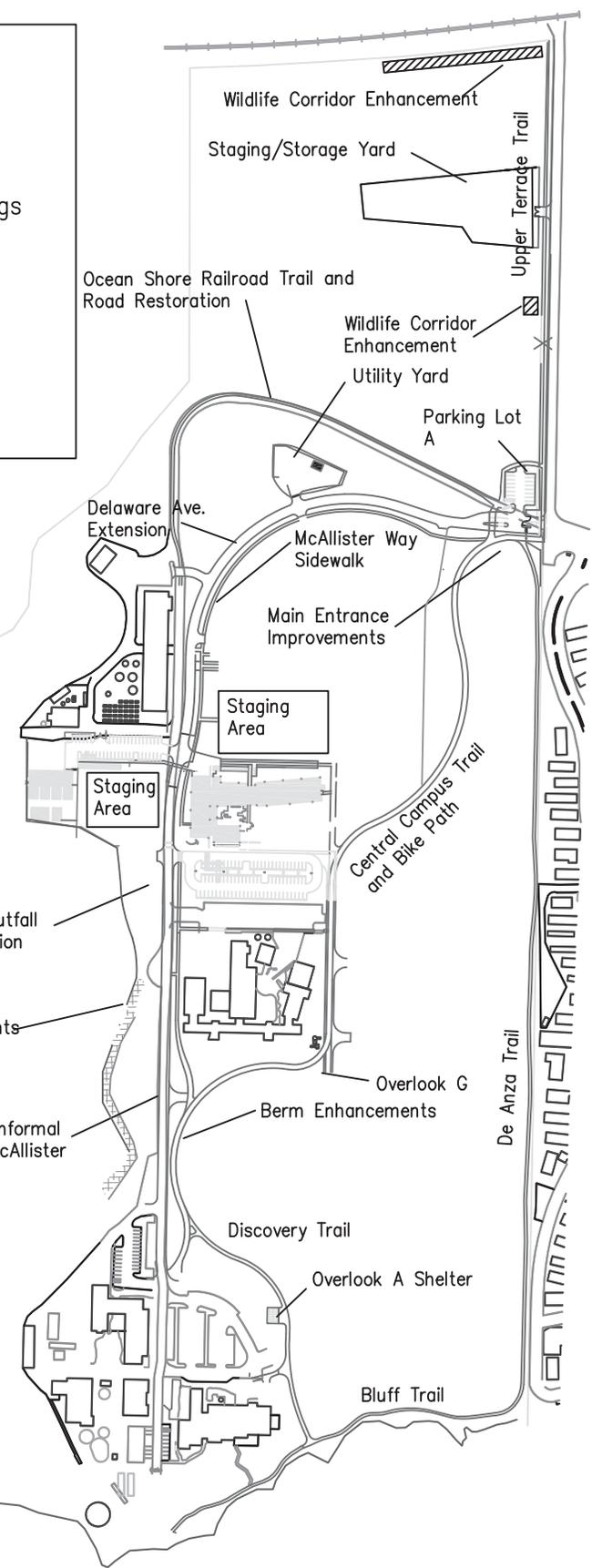
Proposed CBB Lab Building  
and Parking Solar Panels

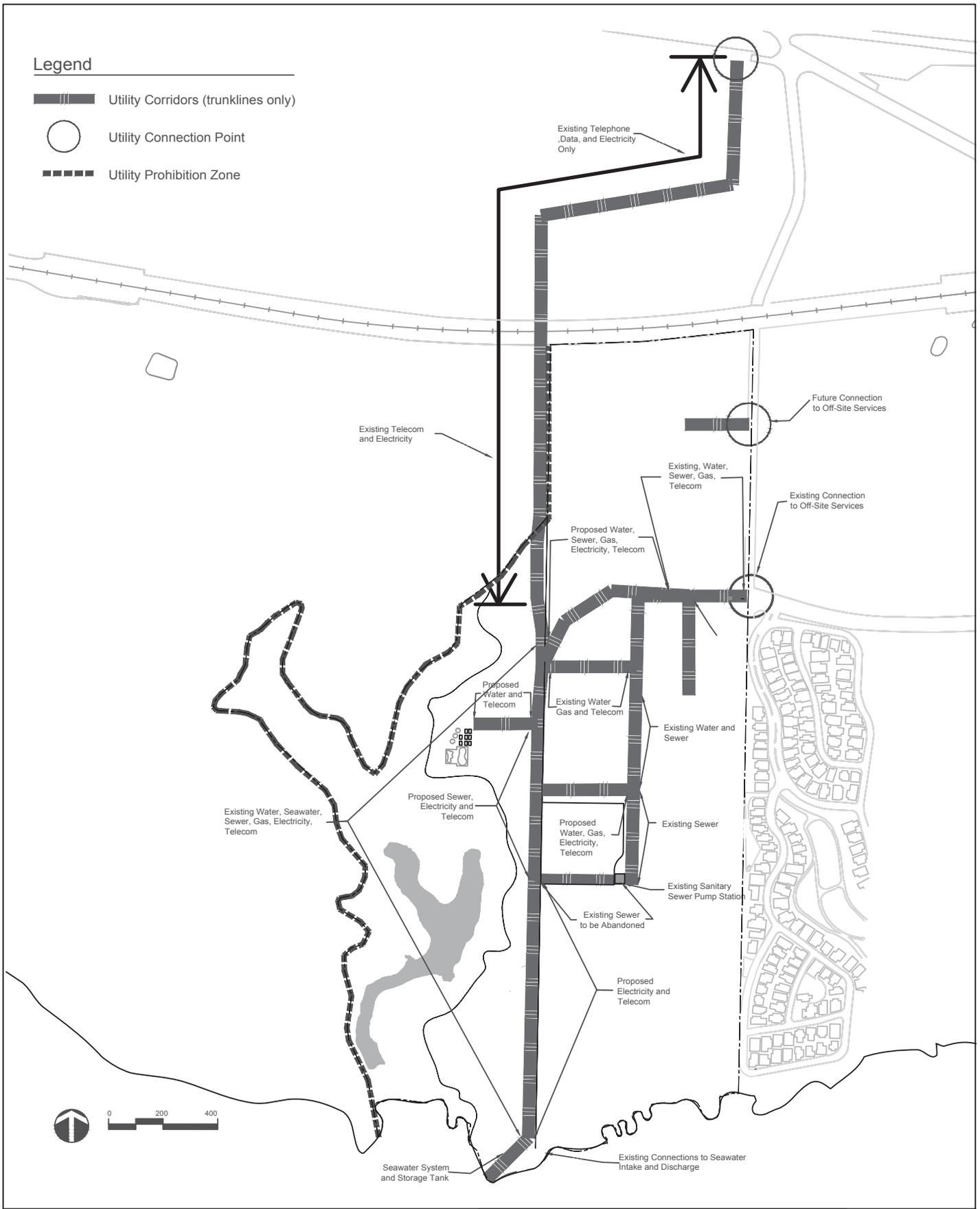
Figure  
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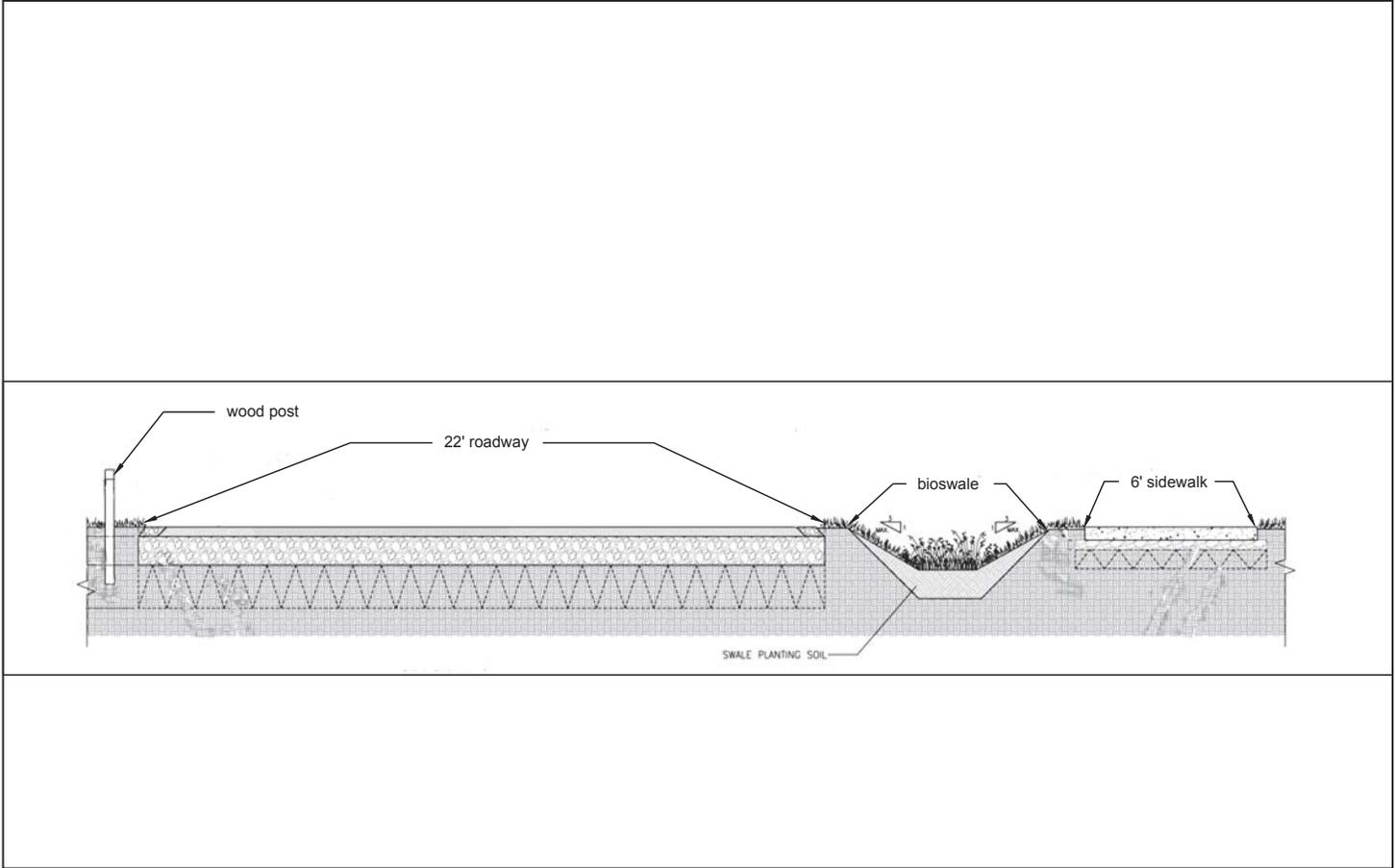
**LEGEND**

 Existing buildings

 Proposed new buildings







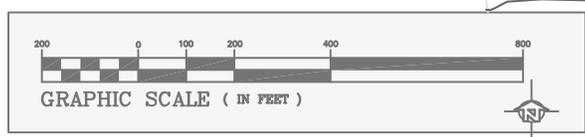
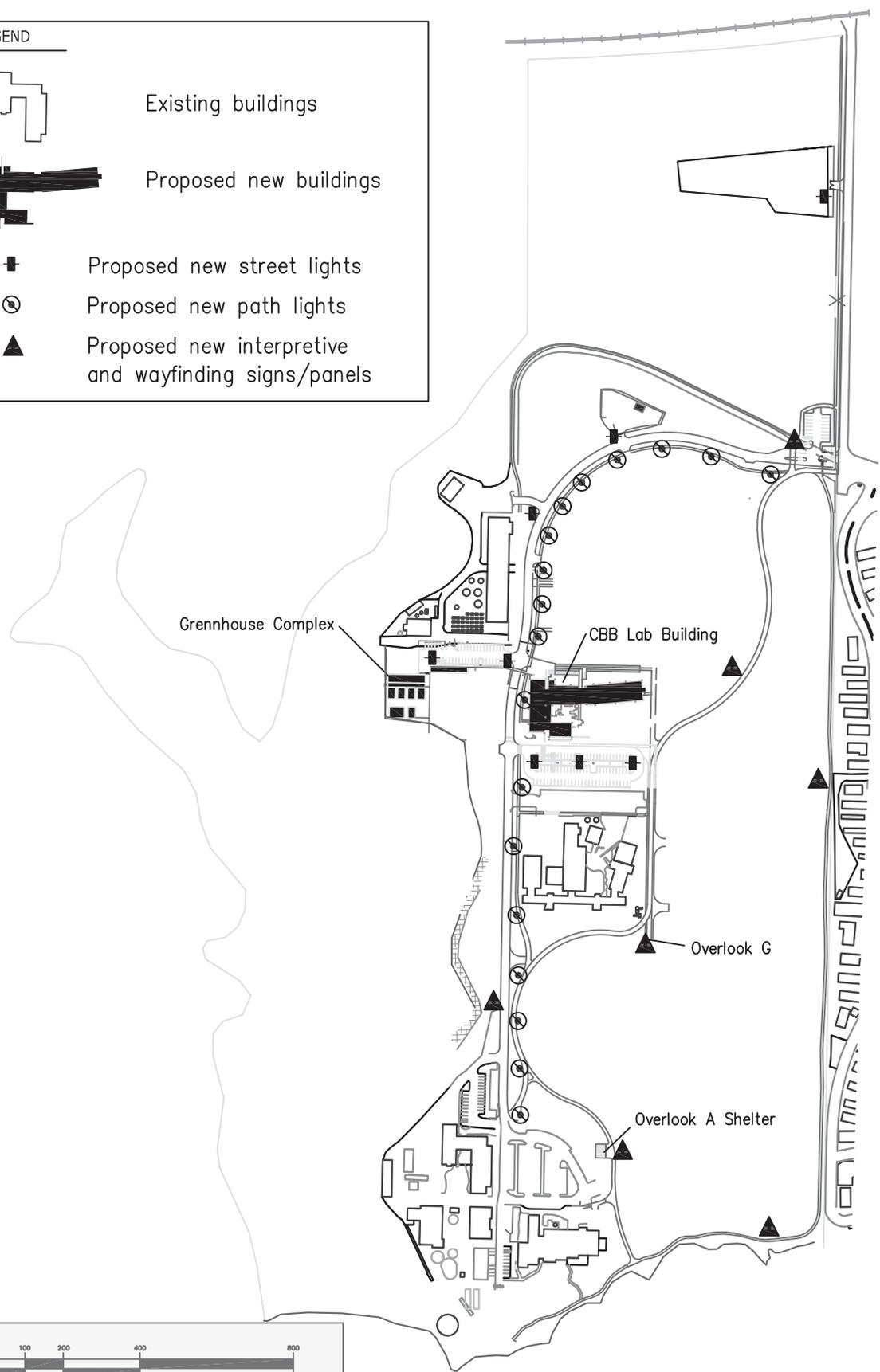
UC Santa Cruz Marine Science Campus  
 Coastal Biology Building and  
 Infrastructure Improvements  
 Final Environmental Impact Report Nov. 2011

Typical Cross-section of New Roadway

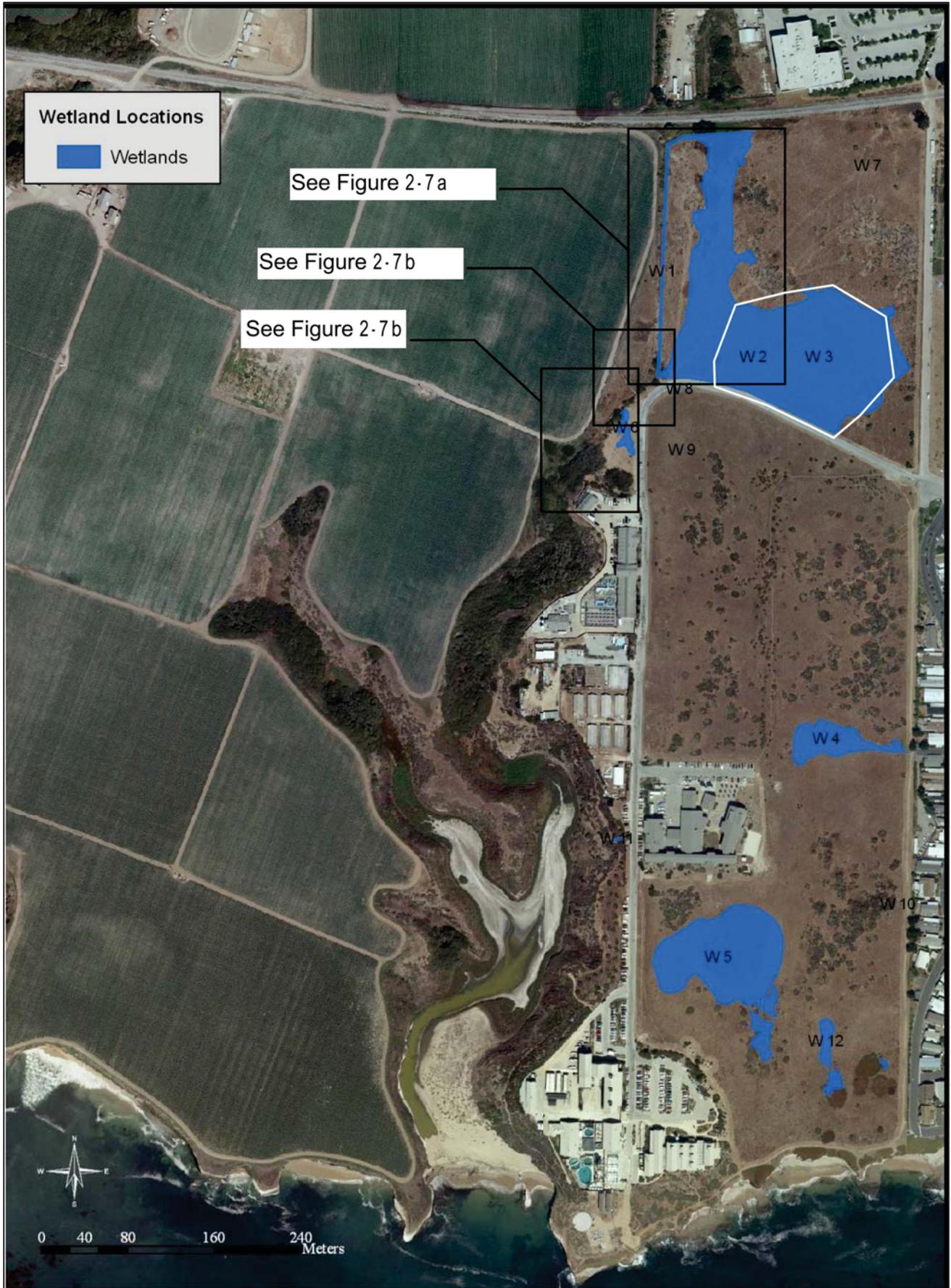
Figure  
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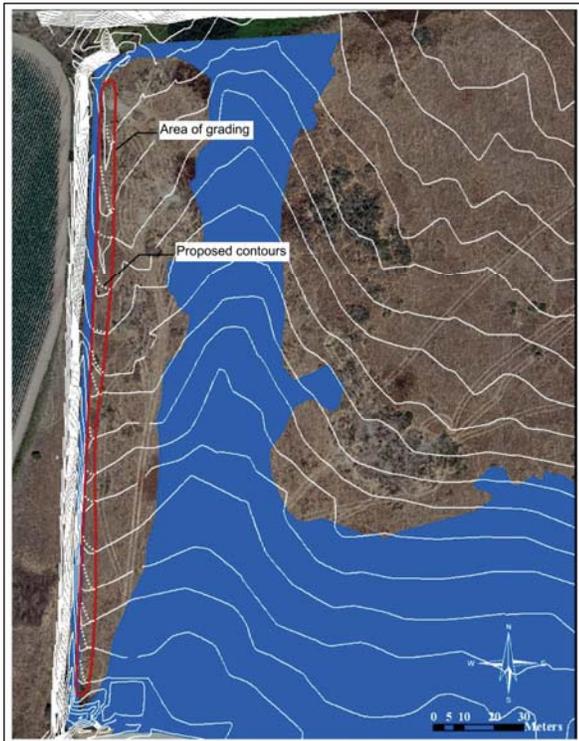
**LEGEND**

-  Existing buildings
-  Proposed new buildings
-  Proposed new street lights
-  Proposed new path lights
-  Proposed new interpretive and wayfinding signs/panels



<p>UC Santa Cruz Marine Science Campus Coastal Biology Building and Infrastructure Improvements Final Environmental Impact Report Nov. 2011</p>	<p>Proposed Lighting and Interpretive Signs</p>	<p>Figure 2-5</p>
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Option 1: Berm Removal



Option 2: Breach Berm



Flashboard Dam (large pond option)



Incised Channel Brush Packing

UC Santa Cruz Marine Science Campus  
 Coastal Biology Building and  
 Infrastructure Improvements  
 Final Environmental Impact Report November 2011

Specific Resource Plan Phase 1B  
 Flashboard Dam and Brush Packing

Figure  
 2-7b

Chapter 3 Environmental Setting,  
Impacts, and Mitigation

3.1 Aesthetics  
3.2 Agricultural and Forestry Resources  
3.3 Air Quality  
3.4 Biological Resources  
3.5 Climate Change  
3.6 Cultural Resources  
3.7 Geology, Soils, and Seismicity  
3.8 Hazards and Hazardous Materials  
3.9 Hydrology and Water Quality  
3.10 Land Use and Planning  
3.11 Noise  
3.12 Population and Housing  
3.13 Public Services  
3.14 Recreation  
3.15 Transportation, Traffic, and Parking  
3.16 Utilities and Service Systems

TABLES

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Table 3.0-1 Pending, Approved, or Reasonably Foreseeable Projects

## Chapter 3

## Environmental Setting, Impacts and Mitigation

This chapter of the Final EIR presents potential environmental impacts of the proposed Marine Science Campus (MSC) Projects. The scope of the analysis and key attributes of the analytical approach are presented below to assist readers in understanding the manner in which the impact analyses have been conducted in this EIR. This chapter of the Final EIR does not differ substantively from Chapter 3 of the Draft EIR in any respect.

### SCOPE OF THE ENVIRONMENTAL IMPACT ANALYSIS

In accordance with Appendix G of the CEQA Guidelines, the potential environmental effects of the proposed Projects are analyzed for the following resource areas:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Climate Change
- Cultural Resources
- Geology, Soils, and Seismicity
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

The CLRDP EIR determined that no mineral resources are known or expected to occur on the MSC. Therefore no impacts to mineral resources would occur as a result of development under the CLRDP. Accordingly, mineral resources are not discussed further in this draft EIR.

### Definition of Baseline or Existing Conditions

According to Section 15125 (Environmental Setting) of the CEQA Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the “baseline physical conditions” against which project-related changes can be compared. The baseline condition is the physical condition that exists when the Notice of Preparation (NOP) is published. The NOP for the MSC Projects was published on June 30, 2010, so the baseline for this EIR is June 2010. For analyses that refer to academic year, such as campus population, the baseline year is the closest year to the baseline for which complete data are available, in this case, academic year 2009–10. For analyses that require data for a full calendar year, such as utilities, 2010 is the baseline year, or the most recent year for which complete data are available.

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## Definition of Study Area

The extent of the study area varies among resources, depending on the extent of the area in which impacts could be expected. For example, for traffic impacts the study area includes not just the MSC but also roadways and intersections in the city and county of Santa Cruz that might experience traffic from the MSC Projects. Cultural resource impacts, however, are assessed only for the project site and immediate vicinity, which are the only areas in which cultural resources could be affected by the Projects. The study area for each resource area is defined in each section of this chapter.

## CUMULATIVE IMPACTS

CEQA requires that, in addition to addressing project impacts, an EIR must also discuss cumulative impacts. According to Section 15355 of the CEQA Guidelines:

*“ ‘Cumulative impacts’ refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.*

- a) The individual effects may be changes resulting from a single project or a number of separate projects.*
- b) The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.”*

Section 15130(a) of the CEQA Guidelines clarifies a number of issues with respect to cumulative impacts, as follows:

- An EIR should not discuss cumulative impacts to which the project would not contribute.
- If the combined cumulative impact (impacts from other projects combined with the impact from the proposed project) is not significant, then the EIR should briefly indicate why the impact is not significant, and no further evaluation is necessary.
- If the combined cumulative impact is significant, the EIR discussion must reflect the severity of the impact and the likelihood of its occurrence.
- If the combined cumulative impact is significant, the EIR also must indicate whether the project’s contribution to that significant cumulative impact will or will not be cumulatively considerable.
- An EIR may determine that the project’s contribution is rendered less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

Section 15130(b) of the CEQA Guidelines provides additional guidance with respect to how an adequate cumulative impact analysis might be completed and notes that this may be based on:

*“A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or*

*A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact.”*

To evaluate the regional cumulative impacts of the proposed MSC Projects, this Draft EIR uses a list of past, present and probable future projects including: reasonably foreseeable UC Santa Cruz projects in the University’s Ten-Year Capital Plan; and a list of City and County projects that were recently constructed, are under construction, have been approved, or have pending applications as of the MSC Projects’ baseline date of June 2010. That list is presented in Table 3.0-1, below.

**Table 3.0-1  
Pending, Approved, or Reasonably Foreseeable Projects**

Name/Address	Description	Status
<b>City of Santa Cruz Projects</b>		
<i>Recently Constructed</i>		
Almar Center Expansion	Demolish and replace Safeway (27,000 sf)	Being Occupied
1804 Mission Street	18 MFD and 1,617 sf commercial	Being Occupied
1375 Pacific Avenue	36,177 sf retail and 54,265 sf office	Being Occupied
<i>Under Construction</i>		
119 Ortolon Circle	8-lot subdivision and demolition of 1 SFD	Under Construction
2200 Delaware	395,400 sf industrial; 248 maximum residential units (197,100 sf)	Under construction
224 Laurel	16 MFD and 10,150 sf commercial	Under construction
555 Pacific Avenue	82 room hotel	Under construction
Misty Court -114 Rapetta Rd	4-lot minor land division	Under construction
605 Pacific	8 SOUs and 344 sf commercial	Under construction
170 Frederick	9 SFD and 3 ADU	Under construction
207 Church	5,340 sf addition to a commercial building	Under construction
517 Cedar	17 SROs	Under construction
627-629 Seabright	6 townhouse units and demolish 2 SFD	Under construction
1266 Soquel	5,690 sf commercial building addition	Under construction
<i>Approved</i>		
1547 Pacific	58 residential units and 11,500 sf commercial-restaurant	Approved
Tannery Arts Center	120,000 sf art center	Approved

**Table 3.0-1  
Pending, Approved, or Reasonably Foreseeable Projects**

<b>Name/Address</b>	<b>Description</b>	<b>Status</b>
408 Broadway	2 townhouses	Approved
706-708 Frederick St	22 condos and 1,600 sf office	Approved
716-720-724 Seabright	12 condos	Approved
107 109 Blackburn	9 condo/townhouse units	Approved
550 Second	13-room addition to existing 21-room hotel	Approved
352 Market Street	4 townhouses	Approved
313-321-325 Riverside Ave.	155-room hotel with 200-seat banquet hall, café, pool, exercise room; replace 3 existing motels (64 rooms and manager unit) for net increase of 91 rooms	Approved
1314 Ocean Street	14 condos, 4 townhouses, 1 SFD, 1591 sf commercial	Approved
1109 Ocean Street	975 sf commercial; 6 1-br and 3 studio units	Approved
111 Frederick Street	Demolish SFD and construct 4 townhouses	Approved
1024 Soquel Avenue	2 commercial condos with 4 residential condos above	Approved
410 Dakota Avenue	Demolish SFD and construct 4 townhouses	Approved
1016 West Cliff Drive	3-lot minor land division	Approved
555 Meder Street	3-lot minor land division	Approved
2232 Mission Street	11 MFD and 574 sf commercial	Approved
110 Lindberg Street	21 MFD	Approved
Marine Sanctuary Exploration Center	Public education/visitor center, approx. 10,000 sf	Approved
719 Darwin	Demolish SFD and construct 3 condos	Approved
212 Mora	4 Townhouses	Approved
150 Fernside Street	Demolish SFD and construct 6 townhouses	Approved
215 Beach-La Bahia	Convert 44 unit apts. to 125 hotel units	Approved
710 Soquel Avenue	9 apartment units, 5,300 sf commercial	Approved
745 Ocean Street	2,200 sf restaurant (Chipotle)	Approved
44 Front Street	2 condos and 400 sf commercial	Approved
2956 Mission	86 room hotel (Fairfield Inn)	Approved
514 Frederick Street	4 townhouses	Approved
325 John	2-lot minor land division	Approved
335 Linden	2-lot minor land division	Approved
1225 Shaffer Road	51-unit mini-storage facility (35,340 sf)	Approved
<b><i>Pending Applications</i></b>		
340 Highland Ave.	Demolish 13 MFD and replace with 18 townhouse units	Pending application
Branciforte Creek Subdivision	32 SFD	Pending application
1114 Water Street	Demolish daycare facility and construct 7,147 sf retail bldg.	Pending application
1930 Ocean Street Extension	40 condo units	Pending application

**Table 3.0-1  
Pending, Approved, or Reasonably Foreseeable Projects**

<b>Name/Address</b>	<b>Description</b>	<b>Status</b>
350 Ocean Street	82 condo units (with demolition of 24 existing MFD and 2 SFD) and 8,870 sf retail and 7,495 sf spa	Pending application
1013 Pacific Avenue	Demolish existing mixed-use building and construct 17 condos	Pending application
433 Ocean	Demolish gas station and construct 45 hotel rooms/restaurant	Pending application
728 Western Drive	4-lot minor land division	Pending application
407 Broadway	111-unit hotel	Pending application
<b>UC Santa Cruz On-Campus Projects: Ten-Year Major Capital Improvements</b>		
<b><i>Occupied</i></b>		
Cowell Student Health Center	Renovation and 7,600 new asf	Occupied in fall 2010
Porter A Student Residence Addition	Student housing (177 beds)	Occupied in fall 2010
<b><i>Under Construction</i></b>		
McHenry Library	Renovation and 85,400 new asf	Addition occupied in 2008; renovation under construction; occupancy in 2011–12
Biomedical Sciences Facility	Research labs and offices: 59,728 asf	Under construction; occupancy in 2011–12
Infrastructure Improvements Phase 1	Cooling water and stormwater improvements	Under construction; completion in 2010–11
<b><i>Approved</i></b>		
UC Santa Cruz Ranch View Terrace	84 SFD	Phase 1 (45 units); occupied 2008–2009; 2 <sup>nd</sup> phase (39 units) planned; estimated occupancy in 2015
Infrastructure Improvements Phase 2	Electrical, core heating, natural gas systems, and stormwater improvements	In design; completion in 2013–14
<b><i>Submitted for Funding</i></b>		
Cogeneration Plant Replacement Phase 1	Replace and upgrade cogeneration system	Submitted for funding; completion in 2013–14
Infrastructure Improvements Phase 3 (includes MSCI Project)	Electrical systems and stormwater improvements	Submitted for funding; completion in 2013–14
Environmental Health and Safety Facility	New waste handling facility, 5,200 asf	Submitted for funding; completion in 2014–15
<b><i>Planned</i></b>		
Alterations for Physical, Biological, and Social Sciences	Alterations to existing facilities	Planned; completion in 2013-14
Social Sciences Facility	New instructional and research space and offices, 50,000 asf	Planned; estimated occupancy in 2016–17
Circulation and Infrastructure Extensions Phase 1	New road and utility lines	Planned; estimated completion in 2016–17

**3.10...LAND USE AND PLANNING**

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Table 3.10-1 Proposed and Allowed Building Space by Subarea

## 3.10 LAND USE AND PLANNING

This section describes the existing land uses on and around the project site, and evaluates the potential effects of the proposed Projects on those land uses. Impacts on agricultural and recreational land uses are discussed in Sections 3.2, *Agricultural and Forestry Resources*, and 3.14, *Recreation*, respectively. This section provides project-level analysis and additional detail regarding land use and planning, and it supplements and augments, pursuant to CEQA Guidelines Section 15152, the analysis provided in Section 4.9 of UC Santa Cruz's CLRDP EIR. The land-use plan applicable to the proposed Projects is the Coastal Long Range Development Plan (CLRDP), which was the subject of an EIR that was certified by the University in 2004 and approved in its final form by the University in 2008 and by the Coastal Commission in January 2009.

No public comments related to Land Use and Planning were received during the scoping period for this EIR.

### 3.10.1 Environmental Setting

#### 3.10.1.1 Regulatory Setting

The UC Santa Cruz Marine Science Campus (MSC) is located within the California Coastal Zone, where all development is governed by provisions of the California Coastal Act (Public Resources Code, Division 20). Before the Coastal Commission certified the CLRDP in January 2009, development on the MSC was permitted by the Coastal Commission on a case-by-case basis. As an alternative to project-by-project review, the Coastal Act provides for a state university to prepare a Long Range Development Plan (LRDP) and submit it to the Commission for review for consistency with Coastal Act policies. In certifying the CLRDP, the Coastal Commission determined that the plan is consistent with the Coastal Act. Under the CLRDP, primary development authority over University land is exercised by the University; the Coastal Commission retains limited authority to review projects and impose conditions on them, as needed to assure consistency with the CLRDP.

The Coastal Act requires that each local government prepare a Local Coastal Program (LCP). After the Coastal Commission certifies a LCP, the local government assumes authority for issuing coastal development permits in that area. As state universities are exempt from regulation by local agencies, the City and County LCPs do not have regulatory effect on the MSC. However, under Section 30605 of the Coastal Act, the University must coordinate and consult with local governments in the preparation of CLRDPs so as to be consistent, to the fullest extent feasible, with the appropriate Local Coastal Program. The City of Santa Cruz has a certified LCP, which is included in its General Plan (City of Santa Cruz 1994). However, the City's LCP does not include the MSC. The University has owned portions of the MSC since 1975; the City deferred LCP certification of the remainder of the land in 1981, as well as for the property on Shaffer Road to the east of the campus. The City is in the process of updating its General Plan/LCP. The County of Santa Cruz has a certified LCP that applies to the areas to the west of the site (County of Santa Cruz 1994).

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### 3.10.1.2 CLRDP Land-use Plan and Policies

The CLRDP is a comprehensive physical development and land-use plan that governs development, land use, and resource protection at the UC Santa Cruz Marine Science Campus (MSC), including Younger Lagoon Reserve (YLR). The CLRDP land-use plan identifies five land-use designations for the MSC and describes the types of development and other uses which are allowed under each designation. Figure 5.2 of the CLRDP, Land Use Diagram (also see Appendix A of this EIR) shows the geographic location of these designations on the MSC. The CLRDP also includes a building program for the MSC that consists of eight program elements. Figure 5.1 of the CLRDP, Building Program (New Construction Only), sets forth the maximum allowable floor area for each building program element prescribed by the CLRDP. Additional guidelines governing development and other uses of the MSC are provided in the policies and associated implementation measures presented in Chapter 5 of the CLRDP. Development on the MSC also must follow the design guidelines presented in Chapter 6 of the CLRDP. Further, the CLRDP stipulates that development shall be authorized by the University and allowed to commence only if all University commitments identified in the CLRDP have been met. These commitments include a Capital Improvement Program detailed in Chapter 9 of the CLRDP, as well as a number of requirements incorporated into the policies and implementation measures of Chapter 5. Appendix C of this EIR presents the full text of all of the policies and implementation measures that are applicable to the proposed MSC Projects, and summarizes the manner in which these measures will be carried out.

### 3.10.1.3 Existing Land Uses

#### Project Vicinity

The land uses in the vicinity of the MSC are described in detail in the CLDRP EIR (pp. 4.9-3 to 4.9-6). The Union Pacific Railroad (UPRR) right-of-way borders the MSC on the north (see Figure 2, *Marine Science Campus Existing Conditions*, in the Introduction to this EIR). Agricultural lands within the jurisdiction of Santa Cruz County extend to the west and north of the project site. Agricultural uses, primarily row crops, are generally located along the coastal terraces just west of Highway 1. Younger Lagoon separates the existing development and proposed CLRDP development areas on the Lower and Middle Terraces from the agricultural lands to the west. Cultivated fields adjoin the western edge of the Upper Terrace, north of Delaware Avenue Extension. The 150-acre Natural Bridges Industrial Park is located north and northeast of the MSC. The 198-unit De Anza Santa Cruz residential community is separated from the eastern edge of the project site by an approximately 1,900-foot-long, 4- to 5-foot-high masonry block wall and a few stands of trees. Farther east are neighborhoods of single-family detached homes. Public open space near the project site includes Wilder Ranch State Park to the west; Natural Bridges State Beach east of the De Anza Santa Cruz residential community; the City's Moore Creek open space (formerly known as the Bombay property) to the north of the MSC beyond Highway 1; and Antonelli Pond to the northeast.

Most of the existing development on the MSC is located on the original 16 acres of land owned by the University, in the western portion of the Lower Terrace. Existing buildings consist of the Long Marine Lab (LML), which is a complex of permanent buildings, temporary and ancillary support structures, and outdoor storage and staging space, with a net total of 108,604 sf of building space. The 20,000 gsf

Seymour Marine Discovery Center and parking lot occupy a 3-acre site on the Lower Terrace west of McAllister Way. A 2.5-acre federal inholding on the Middle Terrace is occupied by the 53,400 gsf, two-story National Oceanic and Atmospheric Administration (NOAA) facility and associated parking lot. The CDFG facility, Avian Facility, and 13 greenhouses, most of which are abandoned, are located in the central portion of the MSC, west of McAllister Way.

Approximately 72 acres of the MSC make up the Younger Lagoon Reserve (YLR). The YLR was established in 1987 as one of the 36 reserves in the University of California Natural Reserve System of protected natural lands available for university-level instruction, research, and public outreach. The original YLR consisted of the 25-acre Younger Lagoon and adjacent marsh and bluffs. Approximately 47 acres of MSC land outside of the CLRDP development zones were incorporated into YLR in July 2008.

#### *Project Site*

The site of the proposed CBB Building and Parking Lot D is vacant, undeveloped grassland, bounded by the NOAA facility parking lot on the south; by McAllister Way on the west; and by undeveloped grassland on the north and east. The site of the proposed Greenhouse Complex and Parking Lot C is currently used as an outdoor storage yard. The proposed greenhouse site is bounded on the north by the CDFG buildings, on the east by 13 mostly abandoned greenhouses, and on the west and south by Younger Lagoon. The proposed new MSC roadway would be constructed on undeveloped grassland, as would the proposed generator yard, the new trails and overlooks, and the public access parking lot at the campus entrance (Parking Lot A). Utilities would be constructed beneath McAllister Way, in the existing utility corridor in the grassland on the Middle Terrace, and under the new campus roadway. The SRP Phase 1B would restore wetland habitat in the area north of the existing Delaware Avenue Extension.

#### 3.10.1.4 Planned/Proposed Land-Use Changes in the Project Vicinity

There is one vacant parcel adjacent to the MSC: an 11-acre parcel on the east side of Shaffer Road across from the Upper Terrace. A portion of this parcel, which is known locally as “the Swenson parcel,” is currently used for agriculture by the Homeless Garden Project, a non-profit job-training program. The current zoning for this parcel is Low-Medium Density Residential. Action LU1.1.4 in the City’s Draft 2030 General Plan (City of Santa Cruz 2009) is to obtain LCP certification for the Shaffer Road parcel, with the requirements that Neighborhood Commercial and Office land uses be between 10 and 20 percent of the total net developable area; that the height, scale, and bulk of development take into consideration the rural transition at the city’s edge; that the circulation system of the specific plan provides access from Shaffer Road; and that public access to Antonelli Pond (which bounds the parcel on the west) be preserved. The City’s preliminary General Plan land-use designation map shows the 11-acre parcel on the east side of the Shaffer Road adjacent to the MSC as Low-Density Residential.

The vacant Shaffer Road parcel is also being considered by the City as one of two potential sites for a proposed desalination plant. The plant would be sited to avoid the Homeless Garden Project.

The other potential site for the City’s desalination plant is about 1,800 feet east of the MSC entrance on the north side of Delaware Ave., in the Natural Bridges Industrial Park. This parcel is currently occupied

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by a vacant industrial building as well as undeveloped land. The 2120 Delaware Mixed-Use Project is currently under construction on a 20-acre parcel to the east of the Natural Bridges Industrial Park desalination plant alternate site. The 2120 Delaware Project is a phased development of up to 535,553 sf of building space, including 248 residential units.

### 3.10.2 Relevant Project Characteristics

The proposed Coastal Biology Building (CBB) Project includes development of a new, 40,000-gsf lab building, two new parking lots, a Greenhouse Complex, and associated utilities and stormwater system. The proposed Marine Science Campus Infrastructure (MSCI) Project consists of campus utility and circulation improvements to serve both the CBB Project and future campus development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage and outdoor exhibits. Under the proposed SRP 1B, CLRDP-mandated wetland restoration and habitat improvements would be implemented in the wetlands on the campus' Upper Terrace. Proposed CLRDP Amendment #1 consists of 11 separate actions (minor amendments) that would amend CLRDP figures and or implementation measure text to resolve minor inconsistencies and implementation issues that have been identified since the final approval of the CLRDP. Minor adjustments to the language of some CLRDP implementation measures are proposed to facilitate implementation of CLRDP goals.

As shown in Figure 3, *CLRDP Land Use Plan*, in the Introduction to this EIR, the CLRDP land-use designation for the proposed CBB building, parking lots, stand-by generator yard, greenhouses and support space, new utilities, and staging areas, is "Research and Education Mixed Use." Most of the new campus roadway and portions of some of the trails would also be constructed on land designated Research and Education Mixed Use. The primary purpose of this land-use designation is to accommodate existing permitted uses and elements of the CLRDP building program. Additionally, utilities, lighting, signage, trails, drainage facilities, and landscaping are allowed in this designation. Figure 5.3 in the CLRDP, *Locational Restrictions for Building Program*, provides additional control over the location of individual building program elements within the Research and Education Mixed Use designation.

The overlooks and most of the trail improvements that would be constructed under the MSCI and NEF Projects would be in land designated as Resource Protection Buffer and as Open Space. The primary purpose of the Resource Protection Buffer designation is to protect wetlands and environmentally sensitive habitat areas from impacts that would significantly degrade them, and to enhance wildlife corridors by providing additional areas within which movement and protection of wildlife can occur. The uses and development allowed in Resource Protection Buffer areas are limited to habitat creation, enhancement, and restoration; resource-dependent activities such as scientific, educational, and nature/interpretive study; public access and recreation facilities; existing streets, trails, and underground utility corridors and their maintenance; fencing, berms, and vegetative screening; and interpretive panels and signage.

Open Space areas include all other areas of the MSC not contained in one of the other CLRDP land-use designations. The primary purpose of this designation is to maintain, restore, and enhance the scenic and

visual quality and the habitat value of the MSC. These areas are to be maintained as open space to allow continued views of the ocean, agricultural coastline, and northern hillsides from and through the campus, and to enhance and protect native flora and fauna. Uses and development permitted in the Open Space designation are limited to: all uses and development allowed in areas designated Resource Protection Buffer; streets, parking, and trails consistent with Sections 5.5 and 5.6; lighting for safety and wayfinding; and vegetated stormwater basins and discharge attenuation swales.

The SRP Phase 1B Project would consist of wetland restoration within land designated as Resource Protection. The primary purpose of this designation is to protect wetlands and Environmentally Sensitive Habitat Areas (ESHA). Areas that are identified in the CLRDP as Resource Protection include most of Younger Lagoon Reserve, intertidal areas along the coast, and the delineated seasonal wetlands on the upland terrace. Uses and development allowed in the Resource Protection designation are limited to: habitat creation, enhancement, and restoration; scientific, educational, and nature/interpretive study; public access trails and recreational facilities; existing underground utility corridors; seawater systems located in the coastal cliff area; fencing, berms, and vegetative screening; interpretive panels and signage; and repair and maintenance of existing and future facilities authorized by the CLRDP.

A short segment of the new MSC roadway would be constructed in land designated as Open Space. The primary purpose of this designation is to maintain, restore, and enhance the scenic and visual quality and the grassland habitat of the MSC. The uses permitted in land designated Open Space are limited to the uses and development allowed in areas designated Resource Protection Buffer; streets, parking, and trails; lighting for safety and wayfinding; and certain stormwater management features.

### 3.10.3 Applicable CLRDP EIR Mitigation Measures

There are no CLRDP EIR mitigation measures related to land use that are applicable to the proposed MSC Projects.

### 3.10.4 Impacts and Mitigation Measures

#### 3.10.4.1 Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, implementation of the proposed Projects would have a significant impact with regard to land use if they would:

- Conflict with any applicable land-use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.
- Result in development of land uses that are substantially incompatible with existing adjacent land uses or with planned uses.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

The CEQA checklist item related to physical division of an established community is not analyzed below. The implementation of the CLRDP, including the proposed Projects, would not include development outside of established campus properties or boundaries, nor would it result in incursion into, or division of, the surrounding communities.

### 3.10.4.2 Analytical Method

The CLRDP EIR analyzed the consistency of the CLRDP with the Coastal Act and with the City and County LCPs. This section assesses the consistency of the proposed MSC Projects with the adopted CLRDP by analyzing compliance of the proposed Projects with applicable CLRDP policies, implementation measures and design guidelines.

### 3.10.4.3 Project Impacts and Mitigation Measures

#### *Inconsistency with Applicable Land-Use Plan without Significant Physical Environmental Change*

<b>MSC Projects Impact LU-1</b>	CLRDP Amendment #1 proposes ten actions that would require minor changes to text, implementation measures, and/or figures in UCSC's CLRDP, the applicable land-use plan, but these do not entail physical changes in the environment and/or would not result in any new or more severe environmental impacts than previously identified in the CLRDP EIR.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/Project Elements(s)</b>	All
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure LU-1:</b> Implement CLRDP Amendment #1, proposed actions 1 through 10.
<b>Residual Significance</b>	Not applicable

The proposed CLRDP Amendment #1 includes 10 minor amendments to the CLRDP, as detailed in Section 2.0, *Project Description*, of this EIR. For each of the proposed amendment actions listed below, an explanation is provided as to why this amendment would not result in significant physical effects to the environment. As appropriate, cross reference is made to additional analysis of specific issues provided in other sections of this EIR.

1. Incorporate all MSC terrace lands outside of campus development zones into the Younger Lagoon Reserve as required by CLRDP IM 3.14.1.

This amendment is administrative. It adjusts the CLRDP to reflect the changes in YLR boundaries that were implemented in 2009. This amendment would have no environmental effect.

2. Amend CLRDP Text and IMs to distinguish between the original YLR and YLR terrace lands incorporated into the MSC under Action 1.

This amendment also is administrative and would clarify the applicability of certain CLRDP IMs by distinguishing between requirements intended to apply to the original YLR and those that were intended to apply to the YLR terrace lands. The existing protections provided to the YLR by the CLRDP would not be altered.

3. Update expanded wetland boundaries and buffers consistent with 2011 delineation.

This amendment responds to CLRDP requirements that wetlands be reassessed in conjunction with new proposed development, and that any changes in wetland boundaries and buffers be shown on amended CLRDP figures. The wetlands and buffers would be slightly expanded beyond the areas currently illustrated in the CLRDP, and existing wetland and buffer requirements would be applied to the expanded area. No adverse environmental effect would occur.

4. Amend CLRDP provisions regarding “windbreak trees” to refer to “screening vegetation”.

The RMP Scientific Advisory Committee (SAC) determined, in the Specific Resource Plan Phase 1, that the planting of trees on the campus (such as the CLRDP-recommended Monterey cypress) would be inconsistent with restoration of native habitat, as the site likely has never had trees, and these tree species could be invasive. The screening, windbreak and buffering provided by trees would instead be provided by plantings of tall native shrubs and other native vegetation, as appropriate. In conjunction with the appropriate the building orientation and design consideration, earthen berms, light controls and other buffering elements already included in the CLRDP, screening shrubs will provide adequate screening of the YLR from campus development and activity, such that this amendment would not result in any significant change in the effects of CLRDP development. This issue is discussed in more detail in Section 3.2, *Aesthetics*, of this EIR.

5. Slightly expand geographic area from which native plant propagules for campus restoration may be obtained, consistent with the recommendations of the Scientific Advisory Committee.

The RMP SAC determined in SRP Phase 1A that the geographic area designated in the CLRDP from which native plant propagules could be obtained was too restrictive, as much of the designated area is under agriculture. It does not appear that the designated area can feasibly provide the necessary propagules. The area from which these propagules may be collected is expanded to extend slightly further inland on the coastal terraces of Santa Cruz and San Mateo counties to ensure that adequate sources of materials are needed. This amendment would allow wider foraging for plant sources, while still ensuring that material of appropriate genetic stocks are obtained for propagation and planting on the MSC. This change would have no significant environmental effects.

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6. Amend CLRDP figure and table regarding public access trail routes and timing of trail development, consistent with RMP Scientific Advisory Committee advice and refined campus planning.

The RMP SAC has recommended that some of the proposed east-west trails included in the CLRDP not be constructed, as the construction of these trails might result in increased human incursion into sensitive wetland areas, and increased activity in areas where sensitive wildlife might be present. The Campus has refined trail alignments and proposed a central bicycle and pedestrian path to reflect these concerns while also ensuring that adequate public coastal visitor access is provided. The proposed trail alignments are consistent with CLRDP provisions; that is, none would enter a wetland, although some would be within wetland buffers. Trails would include screening as specified in the CLRDP. As the timing of trail improvement/ construction implementation in the CLRDP was tied to the groups of trails identified in the CLRDP, the amendment also included changes in the timing of trail development. These changes would result in earlier development of most trails than previously proposed. These changes would not alter or increase the severity of the environmental effects of trail development previously identified in the CLRDP development. Potential biological effects of trail development are identified in Section 3.4, *Biological Resource*, and Section 3.14, *Recreation*, and other relevant sections of this EIR.

7. Amend CLRDP figure illustrating campus main entry road route to reflect refined campus planning.

The CLRDP identified a new main entry road route and schematic routes for subsidiary roadways for the campus. In more recent refined Campus planning, a slightly revised route was proposed that would improve circulation. The revised route would not encroach upon any wetlands or buffers or other protected area of the YLR, would entail the same amount of new impervious surface, and would comply with the same design guidelines as were applied for the main entry road and secondary roadways as originally proposed. The altered routes would not alter the conclusions of the prior environmental analysis in the CLRDP EIR. Project-specific analysis is provided in Section 3.4, *Biological Resources*, and other relevant sections of this EIR.

8. Amend CLRDP figure illustrating utility corridors to reflect refined campus planning.

The CLRDP identified new utility corridors for the campus. In more recent refined Campus planning, a slightly revised circulation system for the campus was proposed. Utilities routes have accordingly been refined to align with the revised circulation system, so that most or all new utilities would be constructed within existing utility corridor or new road corridors. The altered routes would not alter the conclusions of the prior environmental analysis in the CLRDP EIR. Project-specific analysis is provided in Section 3.4, *Biological Resources*, and other relevant sections of this EIR.

9. Amend CLRDP RMP to extend the period during which wetland reconnection and wildlife corridor enhancements may be carried out on the Upper Terrace, to provide more flexibility in SRP Phase 1 implementation.

SRP Phase 1B proposes the reconnection of wetlands W1 and W2, but envisions that this work would be done over the seven year period addressed by SRP Phase 1A. The approved CLRDP requires that the wetland reconnection be carried out in conjunction with the first development on the Upper Terrace, which would be the Upper Terrace Storage Yard that is proposed as part of MSC Phase A. While these projects might be carried out simultaneously, the SAC would prefer to have more

flexibility in the timing of this project, which may be carried out in iterative stages, depending on initial result of the proposed work. Additional conditions may be imposed upon this work by regulatory agencies, as the work would be subject to a Clean Water Act permit. Project-specific analysis is provided in Section 3.5, *Biological Resources*, and other relevant sections of this EIR. The potential environmental effects of project implementation would not be affected by extending the timing of implementation.

10. Amend CLRDP text and IMs to provide for YLR fencing along McAllister Way to be placed on the street side rather than the YLR side of the screening berm.

The CLRDP includes improvements to the berm and fencing along the west side of McAllister Way to improve the buffering of the original YLR from campus development and activity. Under the CLRDP, fencing would be placed on the YLR side of the berm, which would make the fencing less visually obtrusive. The manager of the YLR has proposed that buffering of the YLR would be improved by placing fencing on the McAllister Way side of the berm, because the berm otherwise might serve as a route for human intrusion over the fence and into the Reserve. Fencing would be designed to have a rural agricultural appearance, consistent with CLRDP design requirement, and to be permeable to small wildlife. Project-specific analysis is provided in Section 3.4, *Biological Resources*, and other relevant sections of this EIR. The potential environmental effects of project implementation would not be affected by the proposed amendment action.

For the reasons discussed above, Actions 1 through 10 of proposed CLRDP Amendment #1 do not have the potential to result in physical changes to the environment that were not previously addressed in the CLRDP EIR. The impacts of these amendment actions would be less than significant.

*Inconsistency with the Applicable Land-Use Plan Related to Physical Change in the Environment*

<b>MSC Projects Impact LU-2</b>	The CBB and MSC Projects would be inconsistent with CLRDP IM 5.3.7, which requires that all parking demand be satisfied on campus, in support of Coastal Act provisions that seek to protect public coastal access.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects / Project Elements</b>	CBB Project <u>MSCI Project (McAllister Way parking restoration)</u>
<b>Significance</b>	Potentially Significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure LU-2A:</b> Amend CLRDP IM 5.3.7, as follows: <del>All parking demand shall be satisfied on Campus, and a</del> New development shall include adequate and enforceable measures to ensure that all parking demand <del>is satisfied</del> <b>associated</b>

	<b>with CLRDP development does not impact public parking or coastal access on Campus on streets adjacent to the MSC, including Delaware Avenue. <del>on Campus.</del></b>
	<b>MSC Projects Mitigation Measure LU-2B:</b> The University will Implement MSC Mitigation Measures TRA-1A through -1C.
<b>Residual Significance:</b>	Less than significant

As noted in Section 2.3, *Project Description*, the proposed CBB Project is expected to increase average daily employee and student population at the MSC, and associated motor vehicle trip generation and parking demand. UC Santa Cruz has a robust TDM program, which has proven to be highly effective in encouraging and facilitating the use of alternative transportation modes and reducing single occupant motor vehicle commute trips. The proposed CBB Project includes an extensive suite of TDM measures, including new bicycle facilities to support bicycle commuters. The proposed MSC and NEF Projects include extensive improvements to campus bicycle and pedestrian circulation systems, also in support of alternative transportation modes. However, depending on the effectiveness of campus TDM measures and the commute choices of employees and students, total parking supply at the MSC, with the implementation of the MSC Projects, could be inadequate to accommodate all campus-related parking demand. If parking demand generated by the campus, as analyzed in detail in Section 3.15 of this EIR (*Transportation and Traffic*), exceeds campus parking capacity, campus affiliates could elect to park on Delaware Avenue and Shaffer Road, the streets adjacent to the MSC entrance. If this parking demand were to take up a substantial part of the parking capacity of the street segments near the campus entrance, this potential campus-related parking could impede public coastal access for members of the public who wish to park on the street to access the nearby Natural Bridges State Beach. This would conflict with Coastal Act public coastal access policy and with the intent of CLRDP IM 5.3.7, which would be inconsistent with the applicable land use plan; however, this land-use policy inconsistency would not result in a physical change in the environment. MSC Projects Mitigation Measure LU-2 proposes to amend the text of CLRDP IM 5.3.7 in a manner that ensures that parking capacity for public coastal access is preserved. The existing IM 5.3.7 accomplishes the coastal access policy of the Coast Act protects by requiring that all campus-related parking be accommodated on the MSC. The proposed amendment (which is Action 11 of proposed CLRDP Amendment #1) preserves the intent of the original IM 5.3.7, but provides more flexibility in the methods used to ensure that adequate parking is available on city streets around the MSC entrance to accommodate parking demand associated with Natural Bridges State Beach and other coastal amenities.

MSC Projects Mitigation Measure LU-2B would implement MSC Projects Mitigation Measures TRA-1A through -1C, detailed in Section 3.15, below, which are identified specifically in relation to traffic generation associated with the proposed CBB Project. These measures address the potential physical environmental effects of the CBB Project, and of other future development at the MSC in general, with respect to potential trip generation and potential impacts to coastal access of associated parking demand in excess of TDM goals, and of increased motor vehicle circulation on the blocks of Delaware Avenue and Shaffer Road adjacent to the MSC entrance, which could increase the potential for motor

vehicle/bicycle/pedestrian conflicts and would be inconsistent with regional planning goals for alternative transportation. TRA-1A through -1C would reduce campus trip generation and, as a result, parking demand. The mitigation measures also provide for monitoring of campus-related parking demand, and identify a threshold of use of 80 percent of parking capacity along the blocks of Delaware and Shaffer adjacent to the campus entrance; and require that the Campus implement additional measures (such as campus shuttles) to reduce parking demand if parking occupancy exceeds this threshold. With the implementation of these measures, MSC-related trip generation would not result in excessive circulation on the affected segments of Delaware Avenue and Shaffer Road, and public coastal access would be protected. The potential physical environmental effects of increased circulation and conflict with the certified CLRDP's coastal access policies are reduced to a less-than-significant level by implementation of MSC Projects Mitigation Measure LU-2B, which would implement MSC Projects Mitigation Measures TRA-1A through -1C. This issue is analyzed and discussed in detail in Section 3.15 of this EIR (*Transportation and Traffic*).

#### Consistency with Other CLRDP Policies and Goals

**CLRDP Land-Use Designations and Locational Restrictions.** The CLRDP land-use designation for the proposed CBB building, parking lots, utility yard, and Greenhouse Complex; the new campus roadway; and the staging areas, is Research and Education Mixed Use (CLRDP Figure 5.2). Most of the new MSC roadway and underground utility corridors, and portions of some of the trails, would also be constructed on land designated Research and Education Mixed Use. All of the facilities proposed for construction in land designated for Research and Education Mixed Use are consistent with this designation. Figure 5.3 in the CLRDP, *Locational Restrictions for Building Program*, provides additional control over the location of some of the individual CLRDP building program elements. Equipment storage and maintenance facilities are allowed only in the Middle Terrace Development Zone and are not allowed in Subareas 4, 5, 6, 7, 9, or 10. The proposed regulated waste facility would be constructed in the Utility Yard in Subarea 2, which is consistent with these restrictions. There are no locational restrictions for the Marine Research and Education facilities (the CBB lab building and Greenhouse Complex), public access and recreation facilities, and parking facilities that are included in the proposed Projects.

The overlooks and most of the trail improvements would be in land designated as Resource Protection Buffer and are consistent with this designation. The SRP Phase 1B Project would consist of wetland enhancement and restoration within land designated as Resource Protection, which are consistent with this designation. Short segments of the new campus roadway and the main bicycle/pedestrian trail, and most of the De Anza Trail would be constructed in land designated as Open Space. Construction of these facilities is consistent with the Open Space land-use designation.

**New Building Space.** The proposed CBB Project would construct a total of about 47,500~~48,100~~ gsf<sup>1</sup> of building space in the category of Marine Research and Education Facilities, in the Middle Terrace Development Zone. This is within the 254,400 gsf of building space in this category in the CLRDP Building Program (CLRDP Figure 5.1). The MSC Project would construct about 150 sf of building space

<sup>1</sup> The CLRDP specifies the maximum building space in each category in square feet of gross floor area. Gross floor area is defined as the Basic Gross Area (the sum of finished and unfinished areas on all floors of an enclosed structure) plus 50 percent of the Covered Unenclosed Area (the sum of all covered or roofed areas of a building located outside the enclosed structure).

(the regulated waste storage facility) in the Subarea 2 Utility Yard. This is within the 37,400 sf of building space under the category Equipment Storage and Maintenance Facilities included in the CLRDP Building Program (CLRDP Figure 5.1).

CLRDP Figure 5.4 specifies the total building space, maximum number of stories, maximum height, and maximum building coverage allowed in each of the development Subareas. The CBB Project would construct a lab building in Subarea 4, and the Greenhouse Complex in Subarea 6. The MSCI Project would construct a hazardous waste storage facility in Subarea 2. Table 3.10-1 compares the building space proposed as part of the CBB and MSCI Projects with the building space allowed in each of these subareas. As Table 3.10-1 shows, the proposed Projects are consistent with the development restrictions of CLRDP Figure 5.4.

**Table 3.10-1**

**Proposed and Allowed Building Space by Subarea**

Subarea	Subarea Size	Proposed Building Area	Maximum Building Coverage (percent)		Maximum Height (feet)		Number of Stories	
			Allowed	Proposed	Allowed	Proposed	Allowed	Project
2	44,900	150	30	0.3	18	8	1	1
4	105,500	40,000	60	38	30 (36 for bldgs. with ventilated lab space)	36	2	2
6	73,000	8,100	40	11	24	12	1	1

**City and County Plans and Policies.** As discussed above, there are no local land-use plans or policies that apply to UC Santa Cruz projects on the MSC.

*Incompatibility with Existing or Planned Land Uses*

As analyzed in Section 3.1, *Aesthetics*, the proposed MSC Projects would not have a significant adverse effect on views from off-campus locations, and thus would not impinge aesthetically on neighboring land uses. The effects of construction and operational noise and air pollutant emissions on neighboring land uses are analyzed in Sections 3.3, *Air Quality*, and 3.11, *Noise*. Potential conflicts with adjacent agricultural uses are analyzed in Section 3.2, *Agricultural and Forestry Resources*. As discussed in these sections, the impacts of the proposed Projects on would be less than significant with mitigation. Potential future uses on the Shaffer Road parcel to the east of the MSC Upper Terrace include residential development or a desalination plant. The proposed MSCI Phase A would construct a new Storage Yard in the Upper Terrace development area. This facility would not create noise, odor, or other nuisances that would be incompatible with residential development. The Storage Yard also would not be noise sensitive and therefore would be compatible with an industrial use such as the desalination plant. The actions included in proposed CLRDP Amendment #1 have no potential for incompatibility with existing or planned land uses. They have no implications for the use of the agricultural land west of the campus. Under Action #11, discussed above, the CLRDP requirement that all MSC-related parking be accommodated on the MSC would be modified, and some MSC-related parking might occur on city streets near the MSC entrance. Mitigations included in the proposed Projects (TRA-1A through -1C)

would ensure that any additional demand for parking did not impede public access to Natural Bridges State Beach. The De Anza residential community east of the campus and adjacent to Delaware Avenue has its own on-site parking, so parking on Delaware would not conflict with that residential land use. No impact with respect to incompatibility with existing or planned land uses would occur.

*Conflict with Habitat Conservation Plan or Natural Community Conservation Plan*

No Natural Community Conservation Plan or Habitat Conservation Plan is applicable to the campus. Therefore, no impact would occur with respect to any such plan.

#### 3.10.4.4 Cumulative Impacts and Mitigation Measures

As discussed above, the proposed MSC Projects would be consistent with the CLRDP, which is the applicable land-use plan, and would not introduce any land uses that would be incompatible with existing or planned land uses on the MSC or on off-campus lands at the periphery of the campus. Off-campus projects would be subject to City General Plan and zoning requirements and would be required to be compatible with adjacent land uses. Therefore, the proposed Projects would not contribute to a significant impact related to land use.

#### 3.10.5 References

City of Santa Cruz. 1994. *General Plan and Local Coastal Program, 1990-2005*. Adopted October 27, 1992. Last amended October 25, 1994.

City of Santa Cruz. 2009. *General Plan 2030*. Administrative Draft. February 27.

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UC Santa Cruz. 2008. *Marine Science Campus, Coastal Long Range Development Plan*. December.

	<b>3.11</b>	<b>NOISE</b>
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T A B L E S

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Table 3.11-1	Noise Monitoring Results
Table 3.11-2	Existing Roadway Noise Near the Project Site
Table 3.11-3	Operational Noise Modeling Results
Table 3.11-4	Summary of Estimated Roadway Noise Near the Project Site

This section describes the existing ambient noise environment of the project vicinity, including the sources of noise in the area of the proposed MSC Projects and the current locations of noise-sensitive land uses that potentially would be affected by the proposed Projects. The relevant noise standards and guidelines are described. Potential project-related noise sources, including construction activity, are discussed. The changes in estimated noise levels due to the proposed MSC Projects are compared to thresholds of significance to determine the significance of the changes in the ambient noise environment that are anticipated to result from implementation of the proposed Projects. This section provides project-level analysis and additional detail regarding noise and, pursuant to CEQA Guidelines Section 15152, augments and supplements the analysis provided in Section 4.11 of UC Santa Cruz' CLRDP EIR.

Public comments in response to the Notice of Preparation of this EIR requested that the following issues be addressed in the EIR:

- The effects of construction noise on residents of the De Anza Santa Cruz residential community.
- The level of noise from the standby generators, frequency of generator testing, and the effects of this noise nearby residents.
- The overall noise levels at the facility.
- The effects of generator noise on sensitive habitats.

The effects of construction and operational noise, including that of the standby generators, on nearby residential receptors are addressed in this section. Potential impacts of noise on sensitive habitats are analyzed in Section 3.4, *Biological Resources*.

### 3.11.1 Environmental Setting

#### 3.11.1.1 Fundamentals of Environmental Noise

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements weight more heavily those frequencies to which humans are sensitive. This process is called "A-weighting," and A-weighted noise measurements are expressed in "dBA." The A-weighted sound level is measured on a logarithmic scale such that a doubling of sound energy results in a 3.0 dBA increase in noise level (U.S. Department of Transportation 2006). In general, changes in a community noise level of less than 3.0 dBA are not typically noticed by the human ear (U.S. Department of Transportation 1980). Changes from 3.0 to 5.0

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dBA may be noticed by some individuals who are extremely sensitive to changes in noise (U.S. Department of Transportation 1980). A greater than 5.0 dBA increase is readily noticeable, while the human ear perceives a 10.0 dBA change in sound level to be a doubling or halving of sound (U.S. Department of Transportation 1980).

Different types of metrics are used to characterize the time-varying nature of sound. These metrics include the equivalent sound level ( $L_{eq}$ ); the minimum and maximum sound levels ( $L_{min}$  and  $L_{max}$ ); the day-night sound level ( $L_{dn}$ ); and the community noise equivalent level (CNEL). Below are brief definitions of these metrics and other terminology used in this section:

- **Sound.** A vibratory disturbance created by a vibrating object which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Maximum Sound Level ( $L_{max}$ ).** The maximum sound level measured during the measurement period.
- **Minimum Sound Level ( $L_{min}$ ).** The minimum sound level measured during the measurement period.
- **Equivalent Sound Level ( $L_{eq}$ ).** The equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy.
- **Day-Night Level ( $L_{dn}$ ).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 PM to 7:00 AM.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 PM to 10:00 PM and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 PM to 7:00 AM.

$L_{dn}$  and CNEL values differ by less than 1 dB. As a matter of practice,  $L_{dn}$  and CNEL values are considered to be equivalent and are treated as such in this analysis.

### 3.11.1.2 Regulatory Setting

Federal and state laws have led to the establishment of noise guidelines for the protection of the population from adverse effects of environmental noise. Local noise compatibility guidelines are often

based on the broader guidelines of state and federal agencies. Many local noise goals are implemented as planning guidelines and by enforceable noise ordinances.

### Federal

The Noise Control Act of 1972 directed the U.S. Environmental Protection Agency (U.S. EPA) to develop noise level guidelines that would protect the population from the adverse effects of environmental noise. The U.S. EPA published a guideline (U.S. EPA 1974) containing recommendations of 55 dBA  $L_{dn}$  outdoors and 45 dBA  $L_{dn}$  indoors as a goal for residential land uses. The agency is careful to stress that the recommendations contain a factor of safety and do not consider technical or economic feasibility issues, and therefore should not be construed as standards or regulations.

The Department of Housing and Urban Development (HUD) standards define  $L_{dn}$  levels below 65 dBA outdoors as acceptable for residential use. Outdoor levels up to 75 dBA  $L_{dn}$  may be made acceptable through the use of insulation in buildings.

### State

The pertinent California regulations are contained in the California Code of Regulations (CCR). Title 24 “Noise Insulation Standards” establish the acceptable interior environmental noise level (45 dBA  $L_{dn}$ ) for multi-family dwellings, which may be extended by local legislative action to include single-family dwellings. Under CCR Section 65302(f), the Noise Element is a mandatory component of the General Plan. It may include general community noise guidelines developed by the California Department of Health Services and specific planning guidelines for noise/land-use compatibility developed by the local jurisdiction (California Governor’s Office of Planning and Research [OPR] 2003). The state guidelines also recommend that the local jurisdiction consider adopting a nuisance noise control ordinance. The State noise/land-use compatibility guidelines include:

- CNEL below 60 dBA—normally acceptable for low-density residential use.
- CNEL of 55 to 70 dBA—conditionally acceptable for low-density residential use.
- CNEL below 65 dBA—normally acceptable for high-density residential use.
- CNEL of 60 to 70 dBA—conditionally acceptable for high-density residential, transient lodging, churches, and educational and medical facilities.
- CNEL below 70 dBA—normally acceptable for playgrounds and neighborhood parks.

“Normally acceptable” noise levels are defined as levels satisfactory for the specified land use, assuming that conventional construction is used in buildings. “Conditionally acceptable” noise levels may require some additional noise attenuation or special study. Note that under most of these land-use categories, the ranges of acceptable and unacceptable noise overlap, leaving some ambiguity in areas where noise levels fall within the overlapping range.

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Local

CLRDP

The CLRDP is the applicable land-use plan for the MSC. The CLRDP includes two implementation measures that regulate operational noise on the MSC. Implementation Measure 3.4.3 requires that the Younger Lagoon Reserve (YLR) shall not be exposed to noise generated by human activity on the terrace portion of the MSC in excess of 60 dBA CNEL, as measured at the boundary of the YLR.<sup>1</sup> Implementation Measure 3.4.2 requires that development shall be sited and designed so that noise sources are no closer than 100 feet from designated Resource Protection areas located in the terrace portion of the MSC.<sup>2</sup> Implementation Measure 3.4.2 is taken into account in the CLRDP land-use plan, which establishes 100-foot development buffers around Resource Protection areas.

City of Santa Cruz

The University is not subject to local land-use regulatory controls. However, because of the proximity of off-campus residential receptors, this analysis takes into account the construction noise standards set forth in the City of Santa Cruz Municipal Code. The code does not provide construction noise limits, but prohibits construction activities between 10:00 PM and 8:00 AM within “one hundred feet of any building or place regularly used for sleeping purposes,” and activity that “disturbs, or would tend to disturb, any person within hearing distance” (City of Santa Cruz Municipal Code §9.36.010). Construction activity may occur during nighttime hours with express written permission of the chief building official, public works director, planning and community development director or water department director, if such activity is deemed necessary.

The City of Santa Cruz has adopted planning guidelines for noise and land-use compatibility that are consistent with the recommendations published by the State of California’s Office of Planning and Research, which are summarized above.

### 3.11.1.3 Noise-Sensitive Land Uses in the Project Area

For purposes of this analysis, noise-sensitive receptors include residences, daycare centers, schools, hospitals, and parks. The De Anza Santa Cruz residential community east of the project site, the residences along Shaffer Road north of the railroad tracks, and the caretaker units in the southern portion of the project site, are considered sensitive receptors for noise. The nearest schools to the project site are Ark Alternative School (public elementary), located at 313 Swift Street approximately ¾ mile east of the site, and Natural Bridges Elementary, located at 225 Swift Street approximately 1 mile east of the site.

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<sup>1</sup> As described in Chapter 2 of this EIR, this requirement is intended to apply to the original YLR, and not to the terrace lands that have been incorporated into the YLR since the CLRDP was approved.

<sup>2</sup> Development, such as paths, that include minimal noise sources may be located within 100 feet of these areas if where measures are taken so that noise potentially audible from within these areas is minimized to the maximum extent feasible.

### 3.11.1.4 Existing Noise Environment

#### Existing Noise Sources

The noise environment in the project area is influenced by car traffic, delivery trucks, occasional trains passing on the railroad tracks along the campus' northern boundary, neighboring agricultural activities, planes flying overhead, and natural noise sources such as wind and ocean surf. Ambient noise levels on and around the project site are primarily influenced by vehicle travel on local roadways (e.g., McAllister Way and Delaware Avenue). Train activity along the railroad tracks is minimal; about four trains pass by each week (Santa Cruz County Regional Transportation Commission 2011). The campus is also potentially affected by mobile noise sources associated with the existing agricultural uses at the Younger Ranch west of the site. Newer tractors of all types generate noise levels in the range of 90 dBA or more next to the tractor (Bean 2008). The "beeping" noise of delivery trucks originating from the delivery lots of light industrial facilities located immediately north of the railroad tracks can be heard on the campus.

#### Ambient Noise Levels in the Project Area

To determine the existing noise levels within and near the project site, 24-hour noise monitoring was conducted at two locations on the MSC. The first location ("Location 1" in Table 3.11-1, below) was conducted at the campus entrance, on the south side of the intersection of Shaffer Road and Delaware Avenue Extension. The second location ("Location 2") was at the eastern boundary of the YLR near the existing temporary greenhouse buildings. Table 3.11-1, Noise Monitoring Results, reports the 24-hour CNEL noise measurements and the peak hour  $L_{eq}$  noise measurements for each monitored location. Details of the monitoring procedures, locations of the noise monitors, and results of the monitoring, are presented in Appendix G.

The CLRDP EIR estimated the weekday afternoon peak hour traffic noise levels along road segments near the MSC (CLRDP EIR p. 4.11-13). The nearest roadway segments analyzed were on Delaware Avenue east and west of Shaffer Road. Other nearby roadway segments include Shaffer Road north of Delaware Avenue; Natural Bridges Drive north of Delaware Avenue; Delaware Avenue east and west of Natural Bridges Drive; Swanton Boulevard south of Delaware Avenue; and Delaware Avenue east and west of Swanton Boulevard. A summary of the estimated noise along these roadway segments from the CLRDP EIR is provided in Table 3.11-2, Existing Roadway Noise Near the Project Site.

**Table 3.11-1  
Noise Monitoring Results**

Site ID	Location Description	Measurement Period		Measurement Results (dBA)		
		Date	Duration (hours)	Peak-Hour $L_{eq}$	24-Hour $L_{eq}$	CNEL
1	Intersection of Shaffer Road and (south of) Delaware Avenue Extension	Oct. 6-7, 2010	24	54.4	53.6	59.4
2	Younger Lagoon Reserve adjacent to existing Temporary Greenhouses	Oct. 6-7, 2010	24	45.2	42.0	47.5

Source: Impact Sciences, Inc., 2011.

**Table 3.11-2  
Existing Roadway Noise Near the Project Site**

Segment	Roadway Segment	Peak-Hour Sound Level, $L_{eq}$ (dBA)
		Existing
1	Shaffer Road north of Delaware Avenue	47.9
2	Delaware Avenue east of Shaffer Road	53.1
3	Delaware Avenue west of Shaffer Road	50.4
4	Natural Bridges Drive north of Delaware Avenue	59.2
5	Delaware Avenue east of Natural Bridges Drive	60.5
6	Delaware Avenue west of Natural Bridges Drive	57.9
7	Swanton Boulevard south of Delaware Avenue	58.1
8	Delaware Avenue east of Swanton Boulevard	61.1
9	Delaware Avenue west of Swanton Boulevard	61.1

Source: CLRDP EIR, p. 4.11-13.

### 3.11.2 Relevant Project Characteristics

The proposed Coastal Biology Building (CBB) Project includes development of a new 40,000-gsf lab building, two new parking lots, a Greenhouse Complex, and associated utilities and storm water system. The proposed Marine Science Campus Infrastructure (MSCI) Project consists of campus utility and circulation improvements to serve both the CBB Project and future campus development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage, and outdoor exhibits. Under the proposed SRP 1B Project, the Campus would implement wetland restoration and habitat improvements mandated by the CLRDP. Proposed CLRDP Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the projects described above, to clarify CLRDP language, to address minor changes to CLRDP language during the Coastal Commission approval process, and to respond to the evolution of the

CLRDP Resource Management Plan under the guidance of the Scientific Advisory Committee that was established to guide YLR restoration efforts, as required by the CLRDP. None of the proposed CLRDP revisions included in Amendment #1 has implications for noise impacts.

The two exhaust fans on the roof of the CBB lab building, an air-cooled chiller at the lab building loading dock, exhaust fans and evaporative coolers at the new Greenhouse Complex, and emergency and standby generators would generate operational noise. The 40 kW emergency generator, which would be located in Subarea 6 near the new Greenhouse Complex and two 200kW standby generators located in the Subarea 2 Utility Yard would be sources of intermittent noise. Vehicles operating in the new parking lots and vehicles traveling along local roadways would also generate noise. CBB Project operations would generate an estimated 505 daily vehicle trips to and from the campus. Visitor use of NEF Project Parking Lot A would generate about 40 daily motor vehicle trips to the campus.

Construction for the CBB, MSCI, and NEF projects would overlap, and would require a total of approximately 21 months. Most of the MSCI and NEF project work would be completed in the first seven months; this would include removal of the existing road, trenching, installation of utilities, and compaction and paving of the new roadway and sidewalk. The new trails and the associated landscaping would be installed over a period of four months during this seven-month period.

Demolition of the existing greenhouses and rough grading for the CBB lab building and Greenhouse Complex, and drilling for the lab building foundation piers, would coincide with the first three months of MSCI Project construction. Building construction would begin in approximately the fourth month and would take about 13 months. The final phase of construction, consisting of landscaping, parking lot grading and paving, grading and planting of the storm water swales, and site work finishes such as lighting and benches, would take about five months.

SRP Phase 1B Project is a program of habitat restoration that covers the initial seven years of the anticipated 20-year program described in the CLRDP. For this reason, the work described for this project likely would be spread over at least several years. Most project elements would be carried out by hand or with hand-held equipment by a small crew of laborers and minimal equipment support. For SRP Phase 1B, only the work to reconnect wetlands W1 and W2 would entail grading. This work would require a small grader/excavator for a maximum of about two weeks at a time. The wetland work likely would be iterative, with fine adjustments made in grading as the success of the reconnection strategy is evaluated over a several year period.

### 3.11.3 Applicable CLRDP EIR Mitigation Measures

The following CLRDP EIR mitigation measure related to noise is applicable to the proposed Projects:

- General Mitigation 4.11-4—Construction noise mitigation.

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### 3.11.4 Impacts and Mitigation Measures

#### 3.11.4.1 Standards of Significance

The standards of significance used in this analysis are based on guidance provided by Appendix G of the CEQA Guidelines.

##### Construction Noise

The CLRDP EIR evaluates construction noise impacts based on the following significance thresholds (CLRDP EIR p. 4.11-4):

- 80 dBA  $L_{eq}$  (8-hour) during daytime and evening; and
- 70 dBA  $L_{eq}$  (8-hour) during nighttime.

This EIR utilizes the significance thresholds for construction noise impacts that are used in the CLRDP EIR.

##### Operational Noise

The CLRDP EIR evaluates operational noise based on the land-use compatibility guidelines published by the State of California Governor's Office of Planning and Research (2003). The State guidelines list 60 dBA as normally acceptable for low-density residential; 70 dBA as acceptable for educational facilities; and 70 dBA as normally acceptable for offices. The CLRDP sets a standard of 60 dBA CNEL for the original YLR. A noise increase of 3 decibels is a perceptible increase and has been used as a standard in this EIR to evaluate impacts in areas where the ambient or background noise levels without the Projects are close to or exceed the OPR noise/land use compatibility standard for affected land uses. Increases of 5 and 10 decibels have been used as a standard in areas where the ambient or background noise levels without the Projects are low or moderate. The use of this "sliding scale" is appropriate because where ambient/background levels are low, an increase over 3 decibels would be perceptible but would not cause annoyance or activity interference. In contrast, if the ambient/background noise levels are high (above 65 dBA in multi-family residential areas), any perceptible increase could cause an increase in annoyance.

For purposes of evaluating the significance of operational noise impacts, the following numeric thresholds are used in this EIR:

- An increase in noise which causes the significance thresholds (60 dBA CNEL for low-density residential and 70 dBA CNEL for educational facilities) to be exceeded and the project results in an increase in noise of 3.0 dBA or more;
- An increase of 5.0 dBA, where the noise levels without the project are 50 to 55 dBA CNEL for high-density residential uses and 60 to 65 dBA CNEL for educational facilities and the increase in noise from the project does not cause the significance thresholds to be exceeded; or
- An increase of 10.0 dBA, where noise levels without the project are less than 50 dBA CNEL for high-density residential uses and less than 60 dBA CNEL for educational facilities and the increase in noise from the project does not cause the significance thresholds to be exceeded.

- An increase in noise that causes the significance thresholds (60 dBA CNEL for the Younger Lagoon Reserve) to be exceeded at the boundary of the Reserve.

Note that all impacts were estimated and evaluated not at the source of noise but at the site where the nearest noise-sensitive receptor is located.

#### 3.11.4.2 CEQA Checklist Items

The following checklist items under Appendix G of the CEQA Guidelines related to noise are not discussed in the following analysis because they are not relevant to the proposed Projects for the reasons discussed below.

- For a project located within an airport land-use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

The MSC is not located within an airport land-use plan or within 2 miles of a public airport or public use airport. No impact would occur and no additional analysis is needed.

- For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

The MSC is not located within 2 miles of a private airstrip. There would be no impact and no additional analysis is needed.

#### 3.11.4.3 Analytical Method

The noise impact technical report is presented in Appendix G of this EIR.

##### Construction Noise

Construction noise impacts were estimated using data from the U.S. Environmental Protection Agency (EPA) and the Federal Transit Administration (FTA). The U.S. EPA and the FTA have compiled data on the noise-generating characteristics of specific types of construction equipment (U.S. EPA 1971; FTA 1995). Without noise controls, noise levels generated by heavy equipment can range from approximately 70 dBA to noise levels in excess of 100 dBA when measured at a distance of 50 feet from the noise source. The noise levels diminish with distance, at a rate of approximately 6.0 to 7.5 dBA per doubling of distance for acoustically hard and soft sites, respectively. An example of an acoustically hard site would be a parking lot while an acoustically soft site would be a park. Assuming an acoustically hard site, a noise level of 75 dBA measured at 50 feet from the noise source would be reduced to 69 dBA at 100 feet and to 63 dBA at 200 feet. Construction noise levels at sensitive receptors would tend to vary based on the location of construction activity and the number of equipment in operation.

This analysis modeled the maximum construction noise impacts using eleven different scenarios, each scenario representing a likely combination of overlapping activity and equipment mix as each of the projects is constructed.

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### Operational Noise

Operational noise impacts were analyzed using a computer-based sound model called SoundPLAN. The SoundPLAN noise modeling software provides a computer simulation of noise situations. SoundPLAN is a three-dimensional noise propagation model that is used to visualize the effects of noise in the environment. It is capable of modeling noise from a variety of sources including, but not limited to, stationary commercial and industrial equipment. The model can account for source and receptor heights, terrain elevations, barriers, building and surface reflections, noise frequency, time histograms, and more.

The following parameters were used in the SoundPLAN noise model:

- **Ambient Noise:** The SoundPLAN model requires defined area sources to represent the background (i.e., ambient) noise levels. Two area sources were defined, each representing the existing noise levels that were monitored at the intersection of Shaffer Road and Delaware Avenue Extension and at the eastern boundary of the original YLR. One area source was defined for the region east of McAllister Way and was assigned a 24-hour  $L_{eq}$  of 53.6 dBA, which is the noise level measured at the intersection of Shaffer Road and Delaware Avenue Extension. The other area source was defined for the region west of McAllister Way and was assigned a 24-hour  $L_{eq}$  of 42.0 dBA, which was measured at the eastern boundary of the original YLR. These area sources represent the existing ambient noise levels for their respective regions.
- **Sensitive Receptors:** Based on a survey of the project using aerial imagery, 21 homes located to the east of the MSC in the De Anza Santa Cruz residential community were identified as sensitive receptors and were included in the SoundPLAN model. The original YLR, located directly to the west of the project site, was considered a receptor because of the CLRDP requirement that CNEL noise levels in the YLR not exceed 60 dBA. Four receivers were modeled and placed in various locations within the original YLR (Younger Lagoon and the adjacent bluffs) in SoundPLAN to determine the projected noise level increase due to operation of the proposed MSC Projects.
- **Roadways:** The roadway segment that is nearest the identified sensitive receptors is Delaware Avenue between Shaffer Road and Natural Bridges Drive. This roadway segment was included in the SoundPLAN model as a noise source under existing conditions, future plus project conditions, and cumulative plus project conditions. The average daily trips (ADT) for this roadway segment were obtained from the CLRDP EIR for existing conditions and for the year 2020 assuming full buildout of the CLRDP in conjunction with other projected growth in the area.
- **Existing On-Site Buildings:** Nearby existing buildings were included in the SoundPLAN model in order to model the existing noise levels and account for any reflection or attenuating effects after project buildout. The existing buildings south of the CBB Project site, the existing greenhouses to the west of the CBB Project site (two of which would remain after project buildout), and the existing buildings to the north of the proposed Greenhouse Complex were included in the SoundPLAN model.
- **Proposed CBB Building:** The proposed CBB building was included in the SoundPLAN as a potential noise source. Two 7,000 cubic feet per minute (CFM) exhaust fans were modeled as point sources on the rooftop of the CBB Lab building. A 30-ton air-cooled chiller was modeled as a point

source at the northwest corner of the CBB building near the loading dock. Two boilers were modeled as point sources in the CBB building.

- **Proposed Greenhouse Buildings:** The Greenhouse Complex buildings were included in the model as potential noise sources and modeled as individual buildings. The exhaust fans on the rooftops and evaporative coolers were modeled as point sources on the rooftops. A boiler was modeled as a point source and was assumed to operate at full capacity during the daytime.
- **Proposed Parking Lots:** The proposed CBB Project includes two new surface parking lots (Parking Lot C and D). Parking Lot D was included in the SoundPLAN model as a potential noise source. Parking Lot D was estimated to have 67 spaces and was conservatively assumed to be 100 percent occupied between 7:00 AM and 5:00 PM and 10 percent occupied between 5:00 PM and 7:00 AM. Parking Lot C was not included in the SoundPLAN model because its noise generation would be similar to the noise generating from vehicles parking in the existing informal parking spaces along McAllister Way, which has already been captured by the noise monitoring. The proposed NEF Project also includes new Parking Lot A. Parking Lot A was not included in the construction noise model because the roadway noise along Delaware Avenue and Delaware Avenue Extension would drown out its contribution to operational noise.
- **Proposed Utility Yard:** Two stand-by generators were modeled as area sources in the Subarea 2 Utility Yard. Each generator was assigned a noise level 80 dBA measured at 15-feet during normal load conditions based on a 200 kW rated power (Generac Power Systems 2006). Since the amount of time that each generator would be in operation is unknown, it has been assumed that each generator would operate at full capacity during the daytime for about 2.5 hours.<sup>3</sup>
- **Operational Features:** A 40 kW emergency generator was developed as an area source just to the west of the CBB proposed building. This generator was assigned with a noise level of 73.0 dBA measured at 15 feet during normal load conditions based on a 50 kW rated power (Generac Power Systems n.d.). Since the amount of time that an emergency generator would be in operation is unknown, it has been assumed that the generator would operate at full capacity during the daytime for about one hour for testing and maintenance purposes.<sup>4</sup>

#### 3.11.4.4 Project Impacts and Mitigation Measures

##### Construction Noise

<b>MSC Projects Impact NOIS-1</b>	Construction of the proposed MSC Projects could expose nearby sensitive receptors to excessive airborne noise, but not to excessive groundborne vibration or groundborne noise.
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<sup>3</sup> This is a conservative assumption, since MBUAPCD permit conditions limit testing of emergency and standby generators to 60 hours per year.

<sup>4</sup> This is a conservative assumption, since MBUAPCD permit conditions limit testing of emergency and standby generators to 60 hours per year.

<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	General Mitigation Measure 4.11-4
<b>Applicable Projects/ Project Elements</b>	Construction activities for all projects.
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.11-20 to 4.11-23) analyzed potential construction noise impacts at the De Anza Santa Cruz residential community and at the apartment buildings on the east side of Shaffer Road north of the railroad tracks. The CLRDP EIR estimated routine noise levels from conventional construction activities under the CLRDP at 78 to 89 dBA  $L_{eq}$  at a distance of 50 feet. At a distance of 150 feet, construction noise levels would range from 68 to 79 dBA  $L_{eq}$ , which would be below the significance criterion of 80 dBA  $L_{eq}$  for daytime and evening construction noise without the installation of a temporary sound wall. During nighttime hours, noise from construction would be below the significance criterion of 70 dBA  $L_{eq}$  if construction activity occurs at distances of 500 feet or more from the closest sensitive receptor, although the noise would be audible and would temporarily elevate the local ambient noise level to some degree. The CLRDP EIR determined that construction noise impacts at both of the nearby receptors would be less than significant because new development would be located at least 300 feet from these receptors. However, if construction vehicles were to use Swift Street and Delaware Avenue to reach the campus, residences along Swift Street would experience elevated sound levels, which could be a potentially significant impact. Construction vehicles that use Natural Bridges Drive to approach the campus, however, would avoid this impact. General Mitigation Measure 4.11-4 would reduce this potentially significant construction noise impacts to a less than significant level.

**Project Impact.** Construction of the proposed MSC Projects would use conventional construction techniques and equipment. Pile driving, blasting, or other special construction techniques are not anticipated to be used for construction of the proposed Projects. Therefore, excessive ground vibration and groundborne noise would not be generated.

As discussed above, construction noise for the proposed MSC Projects was modeled under eleven different scenarios, each scenario representing a likely combination of overlapping activity and equipment mix. The eleven scenarios are representative of the maximum construction noise over the course of the 21-month construction period. The model did not take into account the noise-reducing effects of the existing wall along the eastern boundary of the MSC. Without feasible noise reduction measures such as those included in CLRDP EIR General Mitigation 4.11-1, residents of the De Anza Santa Cruz residential community could be exposed to temporary noise levels ranging from a low of 70.0 dBA to a high of 86.0 dBA. Specifically, grading of the De Anza trail, as part of the NEF Project, could result in temporary construction noise levels that exceed 80 dBA because of its proximity to the property boundary.

Previously adopted CLRDP EIR General Mitigation 4.11-1, which is applicable to and included in all of the proposed MSC Projects, requires the use of the best available noise control techniques, the use of

hydraulically or electrically powered impact tools wherever feasible, the use of mufflers or external jackets on pneumatically powered tools, and, if feasible, the placement of temporary wooden walls around construction activities that are within 150 feet of sensitive receptors. Only construction of the De Anza trail as part of the NEF Project and the campus entrance improvements included in Phase A of the MSCI Project would be within 150 feet of sensitive receptors. The trail improvements are already separated from the De Anza community by a cinder block wall. The entrance improvements may require use of a temporary wall to reduce construction noise impacts, as specified in CLRDP Mitigation Measure NOIS-1. With the use of these noise reduction measures, and taking into account the existing wall along the eastern boundary of the MSC, the maximum noise at the De Anza Santa Cruz residences associated with construction for the NEF and MSCI projects would be reduced to 75.6 dBA, which is below the significance threshold for daytime and evening construction noise. In addition, CLRDP EIR General Mitigation 4.11-1 prohibits construction activities within 500 feet of sensitive receptors during nighttime hours (10:00 PM to 7:00 AM), which would ensure that the significance threshold of 70 dBA for nighttime construction noise would not be exceeded. The impact would be less than significant.

*Operational Noise*

<b>MSC Projects Impact NOIS-2</b>	Building mechanical equipment, research equipment, and landscape maintenance associated with operation of the proposed CBB Project would generate noise that would result in an increase in ambient noise levels.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	Implementation Measure 3.4.2 - Noise Intrusion into Terrace ESHA Implementation Measure 3.4.3 - Noise Intrusion into YLR
<b>Applicable Projects/ Project Elements</b>	Not applicable <u>CBB</u>
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.11-16 to 4.11-18) analyzed potential impacts of campus operational noise on nearby sensitive receptors, including the De Anza Santa Cruz residential community, and existing caretaker housing on the lower terrace of the MSC. The analysis took into account noise that would be generated by mechanical devices associated with building heating, ventilation, and air conditioning systems in new campus facilities, and activities associated with new development, including use of research equipment and landscape maintenance.

The CLRDP EIR determined that the noise impacts on the De Anza Santa Cruz residential community would be less than significant because the facilities planned for the Middle Terrace Development Zone

would be set back from the east property line by approximately 300 feet. Additional attenuation would be provided by the existing masonry wall on the property line.<sup>5</sup>

**Project Impact.** The results of the SoundPLAN modeling analysis are summarized in Table 3.11-3, Operational Noise Modeling Results. Detailed results are presented in Appendix G of this EIR. The results indicate that none of the proposed MSC Projects would cause a perceptible change in noise levels at the sensitive receptors to the east (De Anza residences), and that noise levels in Younger Lagoon would not exceed the noise level of 60 dBA CNEL set by the CLRDP. Under cumulative plus project conditions, the noise levels would also not result in a perceptible change at the sensitive receptors to the east (De Anza residences). Therefore, project operational noise would not result a significant impact on sensitive receptors.

**Table 3.11-3  
Operational Noise Modeling Results**

Receptor	Existing Noise dBA CNEL	Future Project Noise dBA CNEL	Cumulative Plus Project dBA CNEL
<b>De Anza Santa Cruz (residential)</b>	61.1	61.2	61.2
<b>Original Younger Lagoon Reserve (lagoon and surrounding bluffs)</b>	55.4	55.8	55.8

Source: Impact Sciences, Inc., 2011.

*Roadway Noise*

<b>MSC Projects Impact NOIS-3</b>	Vehicle trips associated with operation of the CBB and NEF Projects would increase noise on roadways in the vicinity of the MSC.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project NEF Project
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance:</b>	Not applicable

<sup>5</sup> The CLRDP EIR also identified a potentially significant impact associated with the construction of marine research and education facilities and a warehouse and laydown area in close proximity to future on-campus housing that was included in earlier drafts of the CLRDP. The on-campus housing was eliminated in the final version of the CLRDP that was certified by the Coastal Commission so that noise impact would no longer occur.

**Previous Analysis.** The CLRDP EIR (4.11-12 to 4.11-13) evaluated the noise impact of increased traffic resulting from MSC operation under the CLRDP using the Federal Highway Administration's (FHWA) noise prediction model and weekday PM peak-hour traffic volume estimates. The model was applied to 22 roadway segments that would experience a doubling of traffic volumes and/or pass by noise-sensitive receptors near the project site. As shown in Table 3.11-4, the model predicts that traffic noise along three of the road segments would increase by more than 3 dBA due to CLRDP-related traffic. However, for the reasons described below, these increases would not result in a significant impact.

Traffic on Roadway Segment 2 (Delaware Avenue just east of Shaffer Road) would increase the roadside noise level by 8.5 dBA to 61.6  $L_{eq}$  at a distance of 50 feet.<sup>6</sup> However, there is a cinder block wall, approximately 5 feet tall, between the roadway and the De Anza Santa Cruz residential community, which is the nearest sensitive receptor. The existing wall would attenuate the traffic noise by a minimum of 6 dBA. Thus, the resultant noise level would be approximately 55.6  $L_{eq}$ , which is less than the land-use compatibility standard of 60 CNEL for high-density housing. Moreover, this level represents an increase that is less than 3 dBA higher than the existing noise level of 53.2 dBA at this location, which would not be noticeable.

The noise level along Roadway Segment 6 (Delaware Avenue west of Natural Bridges Drive) would increase by 4.8 dBA to 62.7  $L_{eq}$ . This noise level would not exceed the relevant land-use compatibility standards for the adjacent industrial and recreational open space land uses (75 dBA CNEL and 70 dBA CNEL, respectively).

The noise level along Roadway Segment 3 (Delaware Avenue Extension just west of Shaffer Road) is estimated to increase by 9.5 dBA to 59.9  $L_{eq}$ ; however, there are currently no sensitive receptors along this road segment that would be affected by this increase.

**Project Impact.** As discussed in Section 3.15, *Transportation and Traffic*, vehicle trips associated with the proposed MSC Projects would constitute part of the trip generation from future CLRDP development that was taken into account in the CLRDP EIR traffic analysis, and these trips therefore are accounted for in the CLRDP analysis of roadway noise impacts. Therefore, for the reasons described in the CLRDP EIR, the traffic noise impacts of the proposed MSC Projects would be less than significant.

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<sup>6</sup> The PM peak-hour  $L_{eq}$  typically is equivalent to the CNEL at locations where the predominant source of noise is from traffic sources (California Department of Transportation (Caltrans) 1998).

**Table 3.11-4**  
**Summary of Estimated Roadway Noise Near the Project Site**

Segment	Roadway Segment	Peak-Hour Sound Level, $L_{eq}$ (dBA)		
		Existing	Existing + CLRDP	CLRDP + 2020 Background
1	Shaffer Rd north of Delaware Ave	47.9	47.9	51.4
2	Delaware Ave east of Shaffer Rd	53.1	61.6	62.0
3	Delaware Ave west of Shaffer Rd	50.4	59.9	60.0
4	Natural Bridges Dr north of Delaware Ave	59.2	60.9	61.6
5	Delaware Ave east of Natural Bridges Dr	60.5	62.9	63.6
6	Delaware Ave west of Natural Bridges Dr	57.9	62.7	63.2
7	Swanton Blvd south of Delaware Ave	58.1	58.1	59.0
8	Delaware Ave east of Swanton Blvd	61.1	63.3	63.9
9	Delaware Ave west of Swanton Blvd	61.1	63.3	63.9

Source: CLRDP EIR, p. 4.11-13.

### 3.11.4.5 Cumulative Impacts and Mitigation Measures

#### Construction Noise

<b>MSC Projects Impact NOIS-4</b>	Construction of the proposed MSC I and portions of the NEF Project concurrently with construction of a desalination plant on the property at the northeast corner of Delaware Avenue and Shaffer Road could result in daytime or evening construction noise levels exceeding the significance threshold of 80 dBA at the De Anza Santa Cruz residential community.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	MSC I (construction activities within 500 feet of the campus entrance) NEF (De Anza Trail)
<b>Significance</b>	Potentially significant

<b>Project Mitigation</b>	<b>MSC Projects Mitigation NOIS-4:</b> If construction of proposed MSC I and NEF project elements in the vicinity of the MSC entrance overlaps with construction of a desalination plant on the property at the northeast corner of Delaware Avenue and Shaffer Road, the University shall evaluate potential cumulative noise impacts at the residences to the east of the MSC. If necessary to reduce noise at these residential receptors to levels below the relevant significance threshold, the University shall construct a temporary wood sound wall between the campus entrance construction and the eastern boundary of the Campus. The University shall also coordinate with the City of Santa Cruz on the scheduling of construction activities in the MSC entrance area to minimize the generation of cumulative construction noise.
<b>Residual Significance</b>	<del>Not applicable</del> <u>Less than Significant</u>

The City of Santa Cruz and the Soquel Creek Water District (SqCWD) are proposing to construct a desalination plant at one of two locations on the lower west side of Santa Cruz. One of these locations is on Shaffer Road across from the MSC Upper Terrace. The City and the SqCWD are currently in the process of preparing an EIR for the desalination project. Under the proposed desalination project schedule, construction of the desalination plant would begin in 2012 and be completed in 2015. Construction of the proposed desalination plant would generate temporary construction noise, which could occur at the same time as construction noise from the proposed Projects. The City's Integrated Water Plan (IWP) Program EIR (pEIR), which analyzed the environmental impacts of the desalination plant project at the program level, determined that construction noise impacts for the desalination plant itself would be less than significant with mitigation (EDAW 2005). IWP pEIR Mitigation Measure 5.6-4c requires that prior to construction of proposed facilities the contractor shall develop and implement a construction noise attenuation plan as needed on a project-by-project basis to reduce noise-related impacts at nearby sensitive receptors to the degree feasible. The IWP pEIR determined that construction in public roads of pipelines associated with the desalination plant could result in a significant and unavoidable noise impact if construction were to take place during the night.

As required by CLRDP EIR General Mitigation 4.11-4, construction on any of the proposed MSC Projects would not take place at night within 500 feet of the De Anza Santa Cruz community; therefore, the proposed Projects would not exacerbate the significant and unavoidable noise impact of construction of the desalination plant pipelines. However, construction activities on portions of the desalination plant site near Delaware Avenue, and construction of pipelines associated with the desalination plant project in Delaware Avenue, could add to the noise levels generated by construction of facilities in the vicinity of the campus entrance, particularly the new campus roadway, utilities, and parking lot. The total cumulative noise level cannot be quantified, as the noise at any given time would depend on the particular construction activities that would be taking place. However, implementation of MSC Projects Mitigation NOIS-1 would reduce the contribution of the proposed MSC Projects to a less than significant level, as would the mitigation measures referenced in the IWP EIR. In addition, as required by MSC Project

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Mitigation NOIS-4, in the event that construction at the two sites overlaps, the Campus would coordinate with the City to schedule construction activities in the campus entrance area to ensure that the noisiest activities do not occur simultaneously at both sites. These measures would reduce the Projects' contribution to the impact to a less-than-significant level.

#### Operational Noise

According to the City's IWP pEIR, operational noise at the desalination plant would primarily consist of noise from the electric transformer, filtration activities, and water pumps. Noise levels generated from the operation of this equipment would be greatest at close distances, within 25 feet. At distances greater than 200 feet from the equipment noise levels would attenuate below 50 dBA (EDAW 2005). Because the final layout of the desalination plant is not known, the IWP pEIR concluded that on-site noise levels could exceed applicable thresholds of the City's Noise Element or noise ordinance at the property line of the De Anza Santa Cruz residential community. The IWP pEIR identified mitigation measures to ensure that noise levels generated by operation of the plant would comply with local regulations. The nearest proposed location of the desalination plant would be over 500 feet from the Subarea 2 Utility Yard, where the new standby generators would be located, and over 800 feet from the proposed CBB facility. The De Anza Santa Cruz residences are over 500 feet from the proposed Utility Yard and, as discussed in the project impact analysis above, the proposed noise from operation of the CBB Project would not noticeably increase noise levels at those receptors. The MSCI, NEF and SRP 1B projects would not create any operational noise. Therefore, the operational noise associated with the MSC Projects would not contribute to a significant cumulative impact.

#### Roadway Noise

The CLRDP EIR analysis of traffic noise impacts summarized in the discussion of project traffic noise impacts, above, included an evaluation of the increase in roadway noise that would result from the cumulative traffic that would result from all projected population and employment growth in the study area through 2020. The results of that cumulative analysis are included in Table 3.11-4, above. With the addition of background growth in traffic in 2020 as analyzed in the CLRDP EIR, the increase in traffic noise along Roadway Segments 2, 3, and 6 would be slightly greater than with CLRDP-related traffic alone. However, the resulting noise levels would still be below the land-use compatibility standards for the adjacent land uses. In addition, traffic noise along Roadway Segment 1, Shaffer Road north of Delaware Avenue, would increase by 3.5 dBA to 51.4  $L_{eq}$ . However, there are currently no sensitive receptors adjacent to that roadway segment, and the noise level would still be below the land-use compatibility standard of 60 dBA for low-density residential uses. Traffic noise along Roadway Segment 5, Delaware Avenue east of Natural Bridges Drive, would increase by 3.1 dBA to 63.6 dBA, which would be below the relevant land-use compatibility standards for the adjacent industrial and recreational open space land uses (75 dBA CNEL and 70 dBA CNEL, respectively). Therefore, the cumulative increase in traffic would not result in a significant noise impact (CLRDP EIR, pp. 4.11-28 to 4.11-29). Traffic generated by the proposed Projects would be within the total trip generation projected by the CLRDP EIR. Therefore, the cumulative noise impact would be less than significant.

### 3.11.5 References

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**3.12 POPULATION AND HOUSING**

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Table 3.12-1 Historical Distribution of UC Santa Cruz Populations

## **3.12 POPULATION AND HOUSING**

The section updates regional population, employment, and housing data that were provided in the CLRDP EIR, as pertinent to the proposed MSC Projects. It then assesses population, employment, and housing demand associated with the proposed Projects and evaluates potential changes to the physical environment that could be associated with project-associated population growth. This section supplements and augments the analysis provided in Section 4.13 of the CLRDP EIR, pursuant to CEQA Guidelines Section 15152.

No comments regarding population and housing topics were received during the scoping process for this EIR.

### **3.12.1 Environmental Setting**

#### **3.12.1.1 Study Area**

For purposes of evaluating impacts of project-related population growth and development on population and housing, the study area for the proposed Projects is defined to include the Marine Science Campus (MSC); the UC Santa Cruz Main Campus; and Santa Cruz County, in particular, the City of Santa Cruz.

#### **3.12.1.2 Regional Population, Employment and Housing**

The CLRDP EIR provided regional population and housing data for the year 2000, the most current published statistical data at the time of the Draft EIR publication. This section provides updated population and housing data for the study area as of January 1, 2010, based on the most recent Population and Housing Estimates issued by the California Department of Finance (DOF) (published in May 2010). This section also provides updates for the Association of Monterey Bay Areas Governments (AMBAG) housing and population projections used in the CLRDP EIR analysis, with data published in 2008. Data on existing and projected housing from the City of Santa Cruz General Plan Draft Housing Element (for the years 2007–2014) also are reported here.

Note that “population” as reported in statistics provided by the DOF refers to persons who reside in a given locality. In contrast, the discussion in this section of “UC Santa Cruz population”, “MSC population” and “project population” refers to individuals who work or study at the campus, but do not necessarily reside there. Discussion of campus and project populations, below, distinguishes between UC Santa Cruz employment and enrollment, and UC Santa Cruz students, employees, and affiliates who reside in the study region, including those who reside on the Main Campus. Historical statistics indicate that about 6 percent of UC Santa Cruz students and about 13 percent of UC Santa Cruz employees reside outside of Santa Cruz County.

It is projected that the proposed CBB facility will be fully occupied and the work proposed under the MSC Phase A and B Projects and the NEF Projects would be complete by 2014. However, the SRP Phase 1B project proposes work that would be completed over a period of several years, and that may not

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be complete by 2014. Depending on funding, some elements of the NEF and MSCI projects also might not be complete by 2014. However, only the CBB project entails employment or accommodates enrollment growth. The cumulative analysis provided later in this section considers reasonably foreseeable projects through 2016, based on projects identified in UC Santa Cruz' 2010-11 to 2019-20 10-year capital plan (UC Santa Cruz 2010a) and on data on approved and planned projects provided by the City of Santa Cruz. Population, jobs, and housing numbers provided in this section are therefore extrapolated to 2016 where data projections are available.

### ***Existing and Projected Populations***

**City and County of Santa Cruz Employment and Resident Population.** As of January 1, 2010, the resident population of the City of Santa Cruz was estimated at 59,684 (DOF May 2010). Based on historical DOF data, the City's resident population increased at an average annual growth rate of 0.9 percent between 1990 and 2010. As of January 1, 2010, DOF estimated a total population of 272,201 for Santa Cruz County as a whole (California DOF, May 2010). In 2010, the City of Santa Cruz accounted for about 22 percent of the total County population; this proportion has varied only slightly over the past two decades.

AMBAG reports data for existing population, employment, and housing units in Santa Cruz County, for each of its incorporated cities, and for unincorporated areas in the County for 2005. AMBAG also projects statistics at five-year intervals through 2035 (AMBAG 2008). AMBAG reported that there were 260,092 residents in Santa Cruz County in 2005 and projected an increase in resident population to 268,041 by 2010 (thus, about 4,000 persons less than the DOF estimate for 2010). AMBAG (2008) reported 116,320 jobs in the County in 2005 and projected that these would decline to 115,070 jobs by 2010. For the City of Santa Cruz, AMBAG reported 56,421 residents in 2005 and projected an increase in resident population to 58,919 by 2010, an increase of about 2,500 persons. Note that this is 765 fewer persons than estimated by the DOF in 2010. AMBAG data indicate that jobs in the City of Santa Cruz account for 30 percent of jobs in the County.

AMBAG projects that by 2015 the population of Santa Cruz County will have grown to 273,983, a growth by 5,942 persons over AMBAG's projected 2010 County population. By 2020, according to AMBAG projections, the County's population will have increased by another 6,510 persons over the 2015 level, to 280,493. This represents a projected average annual growth of about 1,302 persons between 2015 and 2020. Extrapolating from this growth rate, the County population in 2016 will be about 281,795 persons. AMBAG projects that jobs in the City will increase to 35,527 by 2015 and to 37,411 by 2020. Interpolating from the annual growth rate of about 377 jobs per year between 2015 and 2020, this would equate with about 37,788 jobs in the City of Santa Cruz by 2016.

For the City of Santa Cruz, AMBAG (2008) projects a population of about 62,480 in 2015, a growth by 3,561 persons over AMBAG's projected population for the City in 2010, or about 712 persons per year. However, by 2020, according to AMBAG projections, the City's population will have increased by only 785 persons over the 2015 level, to 63,265. This represents a projected average annual growth of only about 157 persons between 2015 and 2020. Interpolating from this growth rate, City population in 2016 will be about 63,422 persons.

**UC Santa Cruz Enrollment and Employment**<sup>1</sup>. In the academic year 2009–2010, the most recent full year for which data are available, UC Santa Cruz had a full-time-equivalent (FTE) enrollment of 16,632 students, including 14,888 undergraduates and 1,444 graduate students (UC Santa Cruz 2010a). Of these, 269 were enrolled in off-campus programs (such as Study Abroad and the Washington, D.C. internship program, UCDC); thus, on-campus enrollment totaled 16,063. As of March 2011, UC Santa Cruz employed 3,466 full-time equivalent faculty and staff (UC Santa Cruz Office of Planning and Budget 2011). About 19 percent of these employees were faculty and about 81 percent were staff. As a result of budget cuts, neither enrollment nor staffing has grown at the rates projected in the 2005 LRDP, although these are still the basis for the Campus’ long range planning projections.

At present, faculty and graduate students who conduct research at the MSC may be assigned to office space either at the MSC or at the UC Santa Cruz Main Campus, or both. About 140 UC Santa Cruz employees currently work in UC Santa Cruz facilities at the MSC. In addition, about 70 persons, some of whom are UC Santa Cruz employees under contract to NOAA, work at the NOAA facility, and about 14 persons, some of whom are UC Santa Cruz employees, work at the CDFG facility at MSC. The MSC does not have a student population separate and independent from the main UC Santa Cruz campus.

In the Main Campus LRDP, UC Santa Cruz projected an enrollment of up to 19,500 students by academic year 2020–21, a projected growth of 5,450 students between 2003–04 and 2020–21. The University currently projects that enrollment will remain essentially stable at the existing levels through 2015-16 (UC Santa Cruz Office of Planning and Budget 2011). However, under the 2008 Comprehensive Settlement Agreement, the Campus projected total enrollment growth to about 17,615 in 2015–16. The actual enrollment will depend to some extent on economic and other conditions affecting enrollment.

The LRDP EIR reported that there were 3,734 UC Santa Cruz employees in 2003–04 and projected that the campus would have 5,074 employees by 2020–21, for a projected growth of 1,340 employees between 2003–04 and 2020–21. This would equate with an average annual increase in employee population by about 79 employees per year based on straightline projections, or 395 new employees in the five years between 2010-11 and 2015–16. This hypothetical projection would equate with a total of 3,940 Campus employees in 2015–16. However, based on subsequent adjustments in projections and in accounting of employees the Campus now projects that UC Santa Cruz will have about 4,846 employees by 2020-21 (UC Santa Cruz Office of Planning and Budget 2011). At a straightline rate of growth, this would result in a projection of about 4,156 campus employees in 2015-16. As discussed in the 2005 LRDP EIR, historically about 68 percent of new employees have already been resident in Santa Cruz County when hired. Based on this historical pattern, only about 32 percent of new employees would constitute new regional population. However, the analysis of new population in the 2005 LRDP EIR also considered a worst case scenario, under which all new employees would be new to the region and would add to the regional population.

As detailed below, the proposed CBB Project would result in an increase of six new persons in the MSC employee population. The other proposed Projects would not entail employee growth. The CLRDP EIR reported that 156 UC Santa Cruz employees worked in UC Santa Cruz MSC facilities in 2002–03 (the

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<sup>1</sup> Resident population on the campus is discussed under “UCSC Housing,” below.

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baseline date for the CLRDP EIR), along with an additional 70 employees at the NOAA and CDFG facilities on the MSC, many of whom also were UC Santa Cruz employees working under contract to other agencies. The CLRDP projected a net increase of 535 employees at the MSC in association with the CLRDP program of development, which was then envisioned as extending through about 2020. Based on a straightline projection of these numbers, CLRDP employee population would increase by about 30 persons annually between 2002–03 and 2020–21. However, growth of the MSC has proceeded much more slowly than anticipated, and as of 2009–10 the MSC employee population was essentially the same as in 2002–03 (Davenport 2011). Within the development horizon for the current Projects (through 2016), only two additional development projects are envisioned at the MSC that could result in employment growth: the Ocean Health Building Expansion and a potential auditorium center. It is estimated that the total new campus employment associated with these two future projects and the proposed CBB Project (the only one of the MSC projects considered here that has associated employment) is projected to be about 100 persons. These employees are included within the total UC Santa Cruz employee estimates.

### ***Existing and Projected Housing***

**Housing in the City of Santa Cruz and Santa Cruz County.** The DOF estimates that in January 2010 there were 105,059 housing units in Santa Cruz County. This estimate included 23,661 housing units in the City of Santa Cruz and 5,462 estimated bedspaces in group quarters. Average household size in the City of Santa Cruz as of January 2010 was reported as slightly greater than 2.4 persons.

AMBAG (2008) reported a total of 102,872 housing units in the County in 2005, and estimated that there would be 105,509 units by 2010 (or about 450 more units than estimated by DOF for 2010). AMBAG projected that there would be 107,496 housing units in the County by 2015 and 110,143 by 2020. Based on straightline extrapolation between the 2015 and 2020 projections (which yield about 529 new housing units per year), in 2016 housing units in the County would total about 108,025.

For the City of Santa Cruz, AMBAG projected a total of 23,633 housing units in 2010, a slightly lower number than reported by DOF for the same year. AMBAG projected the development of an additional 500 units by 2015, for a total of 24,133 units, and another 661 units between 2015 and 2020, for a total of 24,794 units in 2020.

The California Department of Housing and Community Development (HCD) determined in 2007 that 15,130 new housing units would be required to address the Monterey Bay Area region's housing needs resulting from population and employment growth between 2007 and 2014. Based on this regional housing needs assessment provided by HCD, AMBAG allocates the region's housing need—the number of housing needs projected to be needed—among the region's communities based on planning factors in the Government Code, and publishes these allocations in a Regional Housing Needs Assessment (RHNA) about every four years. In the most current RHNA, AMBAG allocated 4.4 percent of the regional housing needs allocation—672 units—to the City of Santa Cruz. The City of Santa Cruz, in its 2007–2014 Draft Housing Element (City of Santa Cruz 2009: Table 4.2), reported that between 2007 and 2009 1,045 housing units were built or approved in the City. To meet the City's share of the RHNA, however, 170 additional units were needed to meet the need for extremely low, low, and moderate income housing. The Draft Housing Element indicates that the City of Santa Cruz has identified sites that are appropriately zoned and have adequate capacity and to meet and exceed the RHNA for Santa Cruz.

**UC Santa Cruz Housing.** At the UC Santa Cruz Main Campus, virtually all of the existing housing (with the exception of small portions of the student housing at Cowell College and Colleges 9/10, which house about 380 persons and are within the unincorporated part of Santa Cruz County) lies within the City of Santa Cruz. Most of the resident population and housing units on the Main Campus therefore are part of the City’s population and housing<sup>2</sup>. However, UCSC’s resident student population (reported above) may not be fully captured in DOF annual population estimates. These estimates, which are based on census records, may not fully account for UC Santa Cruz’ student population, which fluctuates during the year based on academic schedule, and changes from quarter to quarter through new enrollments and graduations.

The great majority of student housing provided by UC Santa Cruz on the campus is classified as “group quarters.” “Group quarters” housing includes a variety of shared institutional housing, including college dormitories, hospitals, and group homes of various kinds. Housing of this type is considered in terms of “bedspaces”, rather than housing units, because the housing consists primarily of shared rooms or apartments used by multiple students, rather than traditional households. This housing is not fully captured within DOF annual estimate of housing units for 2010 (State of California, Department of Finance, 2010), which estimates only 5,462 group quarters units (bedspaces) in the City of Santa Cruz and a total of 9,877 bedspaces in Santa Cruz County overall. UC Santa Cruz housing data (UC Santa Cruz 2010c) indicates that there were 7,419 student bedspaces on the UC Santa Cruz Main Campus in academic year 2009-10, in dormitories and various kinds of student-housing apartments. More than 7,000 of these group quarters bedspaces on the UC Santa Cruz campus are within the boundaries of the City of Santa Cruz, but are not subject to or included in City of Santa Cruz planning. UC Santa Cruz campus student housing stock in 2010 also included 196 family student housing apartments. UC Santa Cruz also provided 239 employee housing units on or adjacent to the Main Campus. Thirty-nine additional employee housing units have been approved but not yet constructed. Housing stock at the MSC during 2009–10 consisted of two caretaker’s units.

No additional housing is proposed or projected for the MSC during the development horizon. At the UC Santa Cruz Main Campus, as reported in the City of Santa Cruz Draft Housing Element, 898 beds and 84 employee housing units were built or approved between 2007 and 2009. Subject to certain conditions, the Campus has committed to provide additional on-campus housing for 67 percent of student enrollment in excess of 15,000 students (that is, up to 10,125 campus beds at the time that enrollment reaches 19,500). The 2005 LRDP includes goals to provide on-campus housing for 25 percent of faculty and 3 percent of staff. To meet this goal, the 2005 LRDP envisioned that 125 additional employee housing units would be developed during the term of the 2005 LRDP. These units would be available to the faculty and staff who work at the MSC as well as to those at the Main Campus.

### **Residential Distribution of UC Santa Cruz Population**

As reported in the UC Santa Cruz Main Campus 2005 LRDP EIR, approximately 41 percent of students enrolled at UC Santa Cruz and about 4 percent of employees reside in campus housing. Off-campus

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<sup>2</sup> Note that housing units on the campus, however, are not subject to the City of Santa Cruz zoning and planning process. While housing and population on the campus are taken into account in AMBAG’s population, housing, and employment projections, the campus is not included in AMBAG’s RHNA.

student households average about three persons (that is, it is assumed that student housing demand equates with about one housing unit per three students). On-campus employee household size is about 2.75 persons per household. Both on campus and off campus, there are about 1.1 employees per employee household, as many households include more than one UC Santa Cruz employee.

In academic year 2009–10, 6,747 students resided on the Main Campus (based on a three-quarter academic year average), along with 289 affiliated adults and dependent children. In that year, 218 students lived in UCSC-leased buildings in the City of Santa Cruz. In addition, 274 faculty members, 127 staff members, and 481 employee affiliates or dependents lived in faculty housing on the campus or in UC Santa Cruz employee rental housing adjacent to the campus housing. Thus, a total population of 7,802 persons resided in UC Santa Cruz housing on the Main Campus in 2009–10 (UC Santa Cruz 2010c).

Two UC Santa Cruz employees were the only resident population on the MSC in 2009–10. The UC Santa Cruz MSC is located entirely within the City of Santa Cruz. It can be assumed that its negligible resident population is taken into account in DOF statistics for the City of Santa Cruz.

Historical distribution of UC Santa Cruz populations, based on Table 4.11-4 of the UC Santa Cruz 2005 LRDP EIR, is summarized below. These distributions are based on residence data from the period between 1998 and 2004.

**Table 3.12-1**  
**Historical Distribution of UC Santa Cruz Populations**

	Students (%)	Faculty & Staff (%)
<b>Distribution by Percentage of Total Population</b>		
On-campus resident	41	4
Off-campus resident	59	96
Out-of-county commuters	6	13
In-county commuters	53	83
<b>Distribution of Off-Campus Residents Among Santa Cruz County Communities*</b>		
Santa Cruz	39.8	49.1
Felton	0.7	2.0
Scotts Valley	0.9	3.1
Capitola	1.4	2.5
Live Oak	4.9	7.5
Soquel	1.0	2.9
Aptos	1.2	5.4
Watsonville	0.8	6.4

\***Note:** Percentages do not total 100%. In addition to the communities listed above, less than 2% of UCSC student or employee population resides in the following communities: Davenport, Ben Lomond, Boulder Creek, Mt. Hermon, Brookdale, and Freedom

**Source:** UCSC Place of Residence Surveys provided by UCSC Transportation and Parking Services, April 2005.

Note that because the zip code for Bonny Doon is the same as a portion of the City of Santa Cruz, Bonny Doon residents are included in the City of Santa Cruz totals. Also half of students and employees in zip code 95062 were assigned to Live Oak and the other half to the City of Santa Cruz. Totals used to develop the percentages reported in this table do not include students enrolled in distance learning programs.

### **3.12.2 Relevant Project Characteristics**

The proposed MSC Projects do not include development of any new housing and would not result in any increase in resident population at the campus. Use of the CBB lab building and greenhouse complex would contribute an average daily employee population of 96 persons (including graduate student researchers). On the average, about 311 students per day would attend classes at the CBB facility. The other proposed MSC Projects would not increase campus building space or employee or student populations. However, it is anticipated that visitors to the MSC would increase over time, in part in response to the provision of new visitor parking and interpretive amenities under the proposed Projects.

Of the employees who would work at the CBB facilities, 44 would be relocated from other existing facilities on the MSC; 46 would be reassigned to the MSC from the Main Campus. Only six of the employees are assumed to be new hires for UC Santa Cruz. These persons potentially could be new to the study region.

The undergraduate students who would attend classes at the CBB facility would be enrolled at the Main Campus. Classes offered at the CBB would consist primarily or wholly of upper-division undergraduate seminars and laboratory classes of the Ecology and Evolutionary Biology (EEB) Department, who are taken into account in Main Campus enrollments. The majority of attendees would be EEB majors. The following statistical data are drawn from the UC Santa Cruz Office of Planning and Budget Institutional Research and Policy Studies web page (UC Santa Cruz 2010c). In fall 2008 (the most recent year for which these statistics are available), 399 new freshmen students at UC Santa Cruz enrolled as prospective EEB majors, about 9.5 percent of all new freshman enrollees in that year. The same quarter, 61 of 860 new transfer students (or 7 percent) enrolled as EEB majors. In 2009–2010, about 6 percent of enrolled undergraduates overall proposed to declare or had declared EEB majors. The LRDP EIR considered student enrollment growth of about 4,500 students between 2005 and 2020, or an average enrollment increase of about 300 students per year. These UC Santa Cruz enrollment data broken down by departmental major suggest that, by a conservatively high estimate, the students attending classes at the proposed CBB facility represent 6 percent of UCSC's projected annual enrollment increase, or about 18 new students per year, on average. On this basis, about 36 new EEB majors (18 in their junior year and 18 more continuing into their senior year) could be assigned to the CBB project. Thus, 36 students and six new faculty members—42 persons overall—associated with the MSC Projects might be considered as the Projects' contribution to regional population growth. As noted above, however, these students are taken into account in Main Campus projections of enrollment growth, as already analyzed in the 2005 LRDP EIR. The other proposed MSC Projects – the MSC I, NEF, and SRP Phase 1B project and the proposed CLRDP amendment – would not contribute any population growth to the region.

### **3.12.3 Applicable CLRDP EIR Mitigations**

The CLRDP EIR did not identify any mitigation measures related to population and housing.

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## **3.12.4 Impacts and Mitigation Measures**

### **3.12.4.1 Standards of Significance**

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, population and housing impacts are considered significant if the proposed project would:

- Induce substantial population growth or concentration of population in an area, either directly (for example, by proposing new housing and/or businesses) or indirectly (for example, through extension of roads or other infrastructure).
- Displace substantial numbers of existing housing necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

### **3.12.4.2 Analytical Method**

This analysis evaluates the potential for the CBB Project—the only MSC Project that would result in population growth-- to result in adverse environmental impacts by inducing substantial population growth in the City of Santa Cruz or the region.

### **3.12.4.3 Project Impacts and Mitigation Measures**

#### ***Potential to Displace Substantial Numbers of Housing Units or People***

**Previous Analysis.** As analyzed in the CLRDP EIR (p. 4.12-27), full development of the CLRDP building program would replace two existing caretaker units with two comparable caretaker housing units. The CLRDP also calls for the removal of temporary trailers and greenhouses that, in 2004, provided workspaces for 33 employees. The CLRDP envisioned that the employees displaced by removal of the trailers would be relocated to new MSC facilities. Thus, the CLRDP would not displace substantial numbers of housing units or people, such that their relocation would result in demand for housing at other locations. Therefore, the impact of the full development of the CLRDP program with respect to housing or population displacement that would result in a demand for housing at other locations was determined to be less than significant.

**Project Impact.** The proposed MSC Projects would not entail removal of any housing. Several existing greenhouses and possibly one existing temporary trailer would be demolished at the CBB greenhouse complex site as part of the CBB Project. However, these facilities have been vacant and have not provided employee work space for some time. Therefore, the proposed Projects would result in no impact with respect to displacement of housing or people that would require replacement housing.

***Potential to Directly or Indirectly Induce Substantial Population Growth***

<b>MSC Projects Impact POP-1</b>	The CBB Project would include six new employees and would accommodate UC Santa Cruz student population, but the population increase associated with the MSC would be small and the project would not directly or indirectly induce substantial population growth.
<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	None
<b>Applicable Projects/Project Elements</b>	CBB Project MSCI Project
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	No mitigation required
<b>Residual Significance</b>	Not applicable

The proposed CBB Project would construct new buildings and introduce six additional new UC Santa Cruz employees to the project site, which would increase campus and regional population. In addition, the CBB Project would accommodate projected Main Campus UC Santa Cruz students at the project site. The proposed MSCI Project also includes infrastructure improvements to support the CBB facility, some of which also would accommodate the future development growth of the MSC that was analyzed in the CLRDP.

**Previous Analysis.** The CLRDP EIR very conservatively assumed that all new employee positions provided at facilities developed under the CLRDP would be filled by people new to the area. On this basis, the Projects' contribution of new persons residing in the City of Santa Cruz would be 605 persons for a total of 728 persons the County of Santa Cruz overall (based on new employees plus 1.37 dependent per employee). These numbers would represent 1.6 percent of City of Santa Cruz residents and less than 0.3 percent of County residents in 2000. The 2004 CLRDP EIR concluded (p. 4.12-26 et sequim) (as reiterated in Addendum 1 to the CLRDP EIR) that while full development of the CLRDP building program would directly induce population growth (the new employees and their dependents), the growth would not be substantial; nor would the project result in a substantial concentration of population.

The CLRDP also envisioned development of infrastructure to support the CLRDP program of development. While this new infrastructure—roadways and utilities—would provide the capacity to accommodate new growth on the MSC, all of the new infrastructure would be within the existing MSC. Therefore, the CLRDP would not indirectly induce substantial population growth or concentration through the provision of roads and infrastructure, beyond the direct population growth already considered above. The CLRDP EIR therefore concluded that the impact would be less than significant. The potential for growth in indirect or induced population<sup>3</sup> associated with the CLRDP is addressed in Section 5.0, *Other CEQA Considerations*.

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<sup>3</sup> Indirect population consists of population and employment associated with provision of goods and services required to operate the CLRDP facilities and programs at the MSC. Induced population consists of population and employment related to provision of goods and services to the employees and students directly associated with CLRDP development

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**Project Impact.** The proposed CBB Project population is within the projected population growth analyzed in the CLRDP EIR. Furthermore, under the University’s proposed program for the CBB facility (as described in Section 2.0, *Project Description*), of the 96 faculty, staff, and graduate student employees who would be assigned to the facility, only six are expected to be new University hires. Most employees assigned to the CBB would move into the facility either from existing buildings on the MSC or from existing offices and labs on the Main Campus. This growth of six persons in the employee population associated with the proposed CBB Project is negligible and does not represent substantial population growth or concentration.

The proposed CBB Project would provide new laboratory facilities for UC Santa Cruz students who would attend some or most of their classes at the Main Campus. Population growth associated with UC Santa Cruz enrollment growth over time has been taken into account in the 2005 LRDP EIR (UC Santa Cruz 2006), and population growth for the MSC was analyzed in CLRDP EIR. The CBB student population would not represent an increase in projected UC Santa Cruz student enrollment, but would be a small part of the total UC Santa Cruz enrollment, whether considered as a portion of the enrollment included in UC Santa Cruz’ 2005 Long Range Development Plan and analyzed in the previously approved LRDP EIR, or as a portion of the population considered in UCSC’s previously approved CLRDP and analyzed in the CLRDP EIR. As described above under *Relevant Project Characteristics*, about 36 new EBB Department students potentially would be associated with CBB facility programs, and the CBB facility would employ about six new employees. This amount of population growth is well within the increase of 5,450 students and 1,340 employees (between 2003-04 and 2020-21) considered in the LRDP EIR, and considerably less than the population increase analyzed in the CLRDP EIR for either the “near-term” projects (projects then anticipated to be developed by 2010, but which have not yet been proposed), or for the envisioned full development of the CLRDP. The proposed Projects therefore would not result in substantial population growth or concentration. The impact with respect to population growth or concentration would be less than significant.

The potential environmental impacts of students and employees traveling to the MSC and between the Main Campus and the MSC are addressed in Section 3.15, *Transportation and Traffic*, and Section 3.3, *Air Quality*). The contribution of new population to demand for public services is addressed in Section 3.13, *Public Services*. Potential population effects related to the demand for parks and other recreational facilities are evaluated in Section 3.14, *Recreation*; and effects related to water demand are evaluated in Section 3.16, *Utilities and Service Systems*. Cumulative analyses in each of the other sections above addresses the environmental impacts of cumulative development during the project development horizon, based on the cumulative development of the projects identified in Table 3.0-1 and associated population growth. The proposed Projects’ contribution to directly and indirectly induced population associated with the CLRDP is addressed in Section 5.0, *Other CEQA Considerations*.

### 3.12.4.4 Cumulative Impacts and Mitigation Measures

#### ***Direct and Indirect Environmental Effects related to Cumulative Population Growth***

<b>MSC Projects Impact POP-2</b>	Population growth related to the proposed CBB Project, in conjunction with other reasonably foreseeable population growth in the region between 2010 and 2016 would not induce growth or development in excess of regional planning for population, employment and housing, and the MSC Project's contribution to the environmental effects of cumulative growth and development are reduced to less-than-significant levels by mitigation measures provided in this EIR.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	No mitigation required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR analyzed the potential cumulative impacts of CLRDP development in the cumulative context of then-projected enrollment growth at the UC Santa Cruz Main Campus through 2020 under a future LRDP, in the context of the then-current 1997 AMBAG projections for population, housing, and employment in Santa Cruz County and its jurisdictions. The CLRDP EIR defined the geographic area for cumulative assessment as the County of Santa Cruz and its communities, based on historical residence patterns of UC Santa Cruz employees and students, which indicate that about 87 percent of these persons typically have resided in the County.

The 1997 AMBAG projections account for UC Santa Cruz enrollment growth to 15,000 students based on the 1988 Long Range Development Plan, the then-current planning document for the UC Santa Cruz Main Campus. The CLRDP EIR analysis projected that UC Santa Cruz enrollment could reach approximately 19,000 students by 2020–2021, or about 4,000 additional students beyond those already accounted for in the 1997 AMBAG projections. The CLRDP EIR estimated that about 1,105 new employees and about 1,520 dependents also would be associated with the projected enrollment increase, for a total new UC Santa Cruz-related population in the cumulative study area of about 6,625 persons by about 2020. Because this population increase was not fully accounted for in AMBAG growth projections, the CLRDP EIR analyzed the potential that the CLRDP could result in population growth in excess of regional planning.

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However, the CLRDP EIR noted that not all of the incremental population associated with UC Santa Cruz Main Campus would be “new” to the area, as some of the employees and students would already be living in the City and other Santa Cruz County communities. Further, about 13 percent of the incremental population would reside outside of the County, based on historical residence patterns. On this basis, of the incremental population, about 5,764 persons would reside within the County.

The CLRDP EIR analysis reported that regional population at both the County and the City levels in recent years had not grown as predicted by the AMBAG 1997 projections. AMBAG projections for County population in 2000 exceeded the 2000 U.S. Census count by about 2,100 persons, and AMBAG’s 2003 projections for the County exceeded the Department of Finance estimates by about 5,330 persons. Therefore it appears that at the County level, practically all of the incremental population growth projected for the UC Santa Cruz Main Campus that was not accounted for in the 1997 projections could be accommodated within the growth projected by AMBAG that had not actually occurred.

Based on AMBAG 1997 projections, other regional development including the growth of the UC Santa Cruz Main Campus would cause the population in Santa Cruz County to grow by about 4.8 percent. Growth at the MSC under the CLRDP would add about 728 persons (new employees and their families, at the rate of 1.37 dependent per employee) to the County’s total population by 2020. The CLRDP EIR concluded that this additional population is within the margin of error of any population predictions that forecast 15 to 20 years of growth and, over a 15 year period, would not be considered substantial.

The CLRDP EIR also assessed whether cumulative population growth would be substantial in the City of Santa Cruz and determined that such an analysis would not be meaningful because at a local level, population growth tends to be determined by available residential capacity. It was anticipated that housing supply within the City would likely be constrained in future years, such that persons associated with UC Santa Cruz would tend to reside in other communities that have housing to offer. In summary, the CLRDP EIR concluded that cumulative development, including the proposed CLRDP, would not induce substantial population growth in the County or City. For the same reasons presented above, none of the near-term projects identified in the CLRDP EIR (which would entail only a small portion of the total population increase identified in the CLRDP) would result in a substantial increase in the population of Santa Cruz County. The cumulative impact with respect to population growth and associated effects therefore would be less than significant (CLRDP EIR, p 4.12-28).

**Project Contribution to Regional Growth.** Based on the current schedule, the proposed MSC Projects would be fully developed, and the CBB facility occupied, by 2014. For the current analysis, the cumulative development horizon is considered to be 2016, based on projects included in the Campus’ current 10-year capital plan about which there is enough information that they are considered reasonably foreseeable; this includes campus development and enrollment projected through about 2016. Also taken into account in the cumulative analysis for the proposed MSC Projects is development identified by the City of Santa Cruz as approved, planned, or under construction (see Table 3.0-1, Pending, Approved, or Reasonably Foreseeable Projects, in Section 3.0, *Environmental Setting, Impacts, and Mitigations*). The timing of the full program of growth and development envisioned in the CLRDP for the MSC and the 2005 LRDP for the Main Campus is uncertain and, as such, the full programs of growth and development

under these plans are not considered to be reasonably foreseeable within the cumulative horizon for the currently proposed MSC Projects.

Although both the CLRDP for the MSC and the 2005 LRDP for the Main Campus have been approved, both are long-term planning documents rather than specific development proposals. Development at both campuses has occurred at a slower rate than anticipated envisioned in these documents. For example, none of the projects considered in the CLRDP as “near-term” (envisioned to be developed by 2010) has been proposed or planned as of this time; two of the “near-term” projects analyzed in the CLRDP are no longer under consideration; and the on-campus housing development analyzed in the CLRDP EIR was dropped from the CLRDP in response to proceedings before the Coastal Commission approval process. However, growth of enrollment and employee populations at the Main Campus since about 2006 has occurred at about the levels projected in the previously approved 2005 LRDP.

The population, housing, and employment projections provided in the CLRDP are updated in the background sections, above, with UC Santa Cruz’ planned and projected enrollment and employment growth under the previously approved 2005 LRDP, AMBAG’s 2008 population, employment, and housing projections, and the City of Santa Cruz’ 2007–2014 Draft Housing Element. Cumulative population growth is extrapolated for the 2016 cumulative horizon for the proposed MSC Projects.

UC Santa Cruz consulted with AMBAG during the development of the 2008 Population, Housing, and Employment Forecast (AMBAG 2008) to ensure that UCSC’s projected enrollment growth and housing supply and demand growth were taken into account in AMBAG’s 2008 projections. On this basis, UCSC’s enrollment and employment growth through 2016 is consistent with regional planning. AMBAG’s population projections for 2010 are sufficient to accommodate UC Santa Cruz growth that has occurred as of 2010 in the context of other regional development, and slightly exceed DOF population estimates for 2010. Based on these data, the project impact would be less than significant,

On the basis of UC Santa Cruz’ existing and projected populations as reported above, as many as about 1,552 students, 690 employees, and about 945 dependents (based on 1.37 dependent per employee, as assessed in the 2005 LRDP EIR) would be added to the UC Santa Cruz population associated with the Main Campus and the MSC, for a total increase of as many as 3,187 UC Santa Cruz-affiliates, between 2009–2010 and 2015–16. These numbers include the small population increases associated with the proposed CBB Project and other projected development through 2016 at the MSC. The total growth projection is conservatively high, for purposes of worst-case analysis, based on 2005 LRDP-projected enrollment growth rates. However, based on current projections, UC Santa Cruz enrollment is expected to remain at close to current levels in the next five years and thus is likely to be less than these projections: recent State budget cuts are constraining and likely will continue to constrain employment growth during the next five years.

The maximum growth projections for UC Santa Cruz above also do not reflect the fact that, historically, about 68 percent of new UC Santa Cruz employees are already resident in the region when hired by UC Santa Cruz, and therefore would not be considered as new population in AMBAG projections. The new UC Santa Cruz employee population (and associated dependents, based on a dependent multiplier of 1.37 persons) related to UC Santa Cruz growth between 2010 and 2016 could range between 524 persons (that is, 68 percent of new employees and their dependents) and 1,635 persons (100 percent of employees and

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their dependents). However, as reported in the 2005 LRDP EIR and synopsis in Table 3.12-1, above, about 13 percent of employees and their dependents historically have resided outside the county. Taking this reduction into account, new UC Santa Cruz employee and dependent population residing in the county would range between 458 and 1,422. If enrollment remains “flat” through 2016, as currently projected, total population growth thus could be as small as 458 persons. The new enrollment of up to 1,550 by 2016 similarly would be reduced based on historical statistics that indicate that 6 percent of new students continue to reside outside the region; thus, in the worst case, new UC Santa Cruz student population living in the county would total about 1,460 persons. Based on these calculations, using the maximum projections of employee and student growth, regional population growth of UC Santa Cruz affiliates could total about 3,100 persons. A small portion of these individuals would be associated with the MSC.

Based on AMBAG projections, Santa Cruz County population would grow by about 7,800 persons between 2009-10 and 2020-21. UC Santa Cruz’ potential population growth between 2010 and 2016 therefore could represent a low of about 6 percent and (very conservatively high) almost 40 percent of AMBAG’s projected population growth for the County between 2010 and 2016, depending on residence of new UC Santa Cruz employees when hired and the actual rate of enrollment growth at UC Santa Cruz. However, this total growth would represent only about 0.16 percent to 1.1 percent of the total projected population of the County in 2016. Although the contribution that UC Santa Cruz-related growth would make to cumulative growth in the City and County between 2010 and 2016 therefore is substantial, this new population would not comprise a substantial part of the total population of the County in 2016. Further, UC Santa Cruz’ projected growth has been taken into account in AMBAG’s growth projections and housing needs assessments, and therefore is consistent with regional planning for population, employment and housing supply and demand, and would not result in a significant cumulative impact with respect to substantial population growth.

Students attending classes at the CBB and employees hired to staff the facility are taken into account in the Main Campus enrollment and employment projections in the 2005 LRDP. As detailed above, the net contribution of the CBB Project to regional population therefore would be no more than 42 persons. This small contribution to County population and to cumulative population growth would not be cumulatively considerable and the impact would be less than significant.

**Indirect effects of cumulative population growth.** As analyzed above, projected UC Santa Cruz enrollment and employment growth in the region is within and has been taken into account in AMBAG’s population, housing and development projections for cumulative growth in the region. UC Santa Cruz-related population, including the small new employee and student population associated with the CBB Project, would contribute to the environmental effects of the development of housing, businesses, and public facilities that might be needed to support this cumulative projected growth. The physical environmental effects of cumulative development are considered in the cumulative analyses provided in other sections of this EIR. The only significant environmental effect identified in these analyses was water shortages in drought year (see Section 3.16, *Utilities*). UC Santa Cruz growth between 2010 and 2016 would contribute to this impact, but would not exceed the impact identified, and the contribution of the proposed CBB Project to this impact would be small, and would not result in a more severe or cumulatively considerable impact. The CLRDP EIR identifies Mitigation Measures 4.16-1a and -1b,

which require that projects developed under the CLRDP include high-efficiency water fixtures, drought-tolerant landscaping, and participate in drought water conservation actions. The current EIR identifies MSC Projects Mitigation Measure UTIL-3, which requires that the Campus conduct a water use efficiency study of existing MSC facilities, prioritize water conservation measures, and implement top priority measures within five years. These measures will further reduce the Project's less-than-significant contribution to cumulative water demand. The Projects' contributions to the indirect environmental effects of cumulative population growth, including the demand for housing and other facilities to support the new population, therefore would not be cumulatively considerable and would be less than significant.

### 3.12.5 References

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[http://planning.ucsc.edu/irps/majors/2009/Historical\\_3QtrAve\\_UndergraduateDeclaredandProposedMajors%28HC%29.pdf](http://planning.ucsc.edu/irps/majors/2009/Historical_3QtrAve_UndergraduateDeclaredandProposedMajors%28HC%29.pdf);
  - History of UCSC New Fall Transfer Students by Major (Third Week Major Count\*)  
[http://planning.ucsc.edu/irps/majors/2008/Historical\\_NewFall\\_TransferStudentsbyProposedMajor\(MC\).pdf](http://planning.ucsc.edu/irps/majors/2008/Historical_NewFall_TransferStudentsbyProposedMajor(MC).pdf);
  - History of UCSC New Fall Freshmen by Major (Third Week Student ID Count\*)  
[http://planning.ucsc.edu/irps/majors/2008/Historical\\_NewFall\\_FreshmenbyProposedMajor%28MC%29.pdf](http://planning.ucsc.edu/irps/majors/2008/Historical_NewFall_FreshmenbyProposedMajor%28MC%29.pdf);
  - 1996–97 to 2009–10 Historical Undergraduate Declared and Proposed Majors (Three-Quarter Average—Third Week Equivalent Headcount)

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[http://planning.ucsc.edu/irps/majors/2009/Historical\\_3QtrAve\\_UndergraduateDeclaredandProposedMajors%28HC%29.pdf](http://planning.ucsc.edu/irps/majors/2009/Historical_3QtrAve_UndergraduateDeclaredandProposedMajors%28HC%29.pdf)

UC Santa Cruz Office of Planning and Budget. 2011. Campus population for LRDP updated through 2010-2011. On file, UC Santa Cruz Physical Planning and Construction. March.

**3.13 PUBLIC SERVICES**

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## 3.13 PUBLIC SERVICES

This section describes the existing public services that serve the UC Santa Cruz Marine Science Campus (MSC), including police, fire protection, and emergency services; schools; and libraries. It also evaluates potential changes to the physical environment that may result from the construction of new or expanded public service facilities needed to serve the proposed project. This section provides project-level analysis and additional detail regarding public services and supplements and augments, pursuant to CEQA Guidelines Section 15152, the analysis provided in Section 4.13 of the CLRDP EIR.

During the scoping process for this EIR, no comments were received regarding the public services topics discussed herein.

### 3.13.1 Environmental Setting

#### 3.13.1.1 Study Area

For purposes of evaluating impacts of project-related population growth and development on public services, the study area is defined to include the MSC; the US Santa Cruz Main Campus; 2300 Delaware Avenue; the cities of Santa Cruz, Capitola, and Scotts Valley; and unincorporated Santa Cruz County.

#### 3.13.1.2 Law Enforcement

##### ***UC Santa Cruz Police Department***

The UC Santa Cruz Police Department (UCPD) is the sole provider of police protection services on the main UC Santa Cruz campus and at UCSC facilities on the west side of the city of Santa Cruz (including the MSC) except when specific calls for assistance are made to other law enforcement agencies based on a mutual aid memorandum. The UCPD has one station, which is located at the recently completed Emergency Response Center on the Main Campus.

##### ***City of Santa Cruz Police Department***

The Santa Cruz Police Department (SCPD), located at the City Hall complex on Center Street, provides police protection services to all areas within the city limits, with the exception of UC Santa Cruz properties, as noted above. A mutual aid agreement between UCPD and SCPD, adopted in February 1971, stipulates that the UCPD will provide assistance to the SCPD when called upon. In the event of an emergency on University property, 911 calls are transferred to the UCPD. Depending on the nature of the emergency, the UCPD may request assistance from the SCPD. There is only one station for the City of Santa Cruz, at 155 Center Street in the City's downtown area. All calls to the SCPD regarding the MSC are handled from this station.

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### **3.13.1.3 Fire Protection**

The UC Santa Cruz Fire Department (UCFD) is responsible for providing first response for emergencies on University-owned property. However, because of the distance between the UC Santa Cruz Main Campus and the MSC, primary fire services are provided by the City of Santa Cruz Fire Department (SCFD). The UCFD provides fire protection engineering and fire prevention services for off-campus facilities, including the MSC.

#### ***UC Santa Cruz Fire Department***

The UC Santa Cruz Fire Department headquarters (Fire Station) is located on the central part of the Main Campus, off Chiquapin Road. As of July 1, 2010, the UC Santa Cruz Fire Department employs 17 sworn employees and one Business Continuity Planner. A minimum of four firefighters is on duty at all times.<sup>1</sup>

#### ***City of Santa Cruz Fire Protection and Emergency Services***

The Santa Cruz Fire Department (SCFD) is responsible for providing fire protection services to all areas within the city limits, including the MSC. The SCFD also provides fire-engine-based paramedic services. Medical emergency calls are dispatched simultaneously to both fire and ambulance by a countywide 911-dispatch center.

The SCFD operates three fire stations: the Downtown Station, located at 711 Center Street; the Eastside Station, located at 1103 Soquel Avenue; and the Westside Station, located at 335 Younglove Avenue near Mission Street. The Westside Station provides primary service for the MSC. The Westside Station is staffed with a three-person engine company.

### **3.13.1.4 Schools**

#### ***Santa Cruz City Schools District***

The Santa Cruz City Schools District (SCSD) is composed of two separate districts: the Elementary District (K-6) and the High School District (7-12). The two districts are governed by a common board and administration, and administer a total of 14 public schools, including an adult school, between them.

Total district school enrollment for the 2004-05 school year was 7,765 students. Total enrollment for the 2008-09 school year was 6,924 students (Ed-Data web site). This, district-wide enrollment has dropped since the CLRDP EIR was certified in 2004.

### **3.13.1.5 Libraries**

#### ***UC Santa Cruz University Library***

UC Santa Cruz has two University Library facilities: McHenry Library and the Science & Engineering Library. The University Library primarily serves UC Santa Cruz students, faculty, and staff; however, its collections are also made available to the general public through the Friends of the Library program. In

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<sup>1</sup> Information provided by Rick Rodewald, UC Santa Cruz Assistant Fire Chief.

addition to the University Library, four of the campus's residential colleges have their own smaller libraries that serve affiliates of those colleges.

The McHenry Library is a 114,000-sf facility that houses the Arts, Humanities, and Social Sciences collections. The McHenry Library project, which is currently under construction, will add approximately 81,600 asf to the original building. When completed, the space will be able to accommodate a growing print collection, state-of-the-art electronic collections, and an upgraded infrastructure that will provide students with access to the latest technology. The Science & Engineering Library is a 55,160-asf (76,800-gsf) facility that houses the Campus's natural sciences and engineering collections.

### ***Santa Cruz Public Library System***

Library service in Santa Cruz County is provided primarily by the Santa Cruz Public Libraries system and the Watsonville Public Library. In addition, county residents are served by the UC Santa Cruz Library, Cabrillo College Library in Aptos, Ben Lomond Library in Ben Lomond, and Porter Memorial Library in Soquel. The Santa Cruz Public Libraries system consists of 10 libraries in three different service areas, comprising about 92,000 sf. The public libraries closest to the MSC and to the UC Santa Cruz Main Campus are the Central Branch Library at 224 Church Street and the Garfield Park Branch Library at 705 Woodrow Avenue. Between February 2003 and February 2005, 1,854 UC Santa Cruz students were registered as borrowers from the Santa Cruz Public Libraries.

The Santa Cruz City County Libraries Facilities Master Plan for FY 2008–09 through FY 2012–2013 includes the following projects: expansion of the Aptos Branch parking lot; building a replacement branch in Felton; expansion of the Aptos branch; and assisting the cities of Capitola and Scotts Valley with the construction of new facilities in those communities (Santa Cruz Public Libraries 2011).

## **3.13.2 Relevant Project Characteristics**

The proposed CBB Project includes development of a new, 40,000-gsf lab building, two new parking lots, a greenhouse complex, and associated utilities and storm water system. The proposed MSC Project consists of campus utility and circulation improvements to serve both the CBB Project and future campus development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage, and outdoor exhibits. Under the proposed SRP 1B Project, CLRDP-mandated wetland restoration and habitat improvements would be implemented. CLRDP Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the projects described above, to clarify CLRDP language, to address minor changes to CLRDP language made during the Coastal Commission approval process, and to respond to the evolution of the CLRDP Resource Management Plan under the guidance of the Scientific Advisory Committee that was established to guide YLR restoration efforts (as required by the CLRDP).

Use of the CBB lab building and Greenhouse Complex would contribute an average daily population of 96 employees (including graduate student researchers) and 311 students to the MSC. Six of the employees are assumed to be new hires for UC Santa Cruz; 44 would move from other facilities on the

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MSC; the remainder of the employees would transfer from the Main Campus. The UCPD would provide police protection services, and the SCFD would provide first response for fires at the site. Emergency vehicles would access the new facilities via the new campus road and McAllister Way. Fire lanes along the north and south sides of the CBB lab building would provide access for fire trucks.

The proposed NEF Project parking lot would accommodate an estimated 40 visitors per day to the MSC. The MSC I and SRP 1B Projects would not increase campus population or building space, and therefore do not have implications for public services. None of the proposed CLRDP revisions included in Amendment #1 has implications for public services.

### **3.13.3 Applicable CLRDP EIR Mitigations**

There are no CLRDP EIR mitigations related to public services that are applicable to the proposed Projects.

### **3.13.4 Impacts and Mitigation Measures**

#### **3.13.4.1 Standards of Significance**

The following standard of significance is based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, public services impacts are considered significant if the proposed project would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services (police, fire, schools, and libraries).

Effects associated with parks and other recreational facilities are evaluated in Section 3.14, *Recreation*, and effects associated with the capacity of the MSC' water system to provide adequate fire protection is evaluated in Section 3.16, *Utilities and Service Systems*.

#### **3.13.4.2 Analytical Method**

This analysis evaluates the potential for adverse physical impacts to occur as a result of the provision of new or altered public service facilities to serve the proposed new buildings, including facilities or facility expansions needed to accommodate increases in demand for services and service personnel, or to enable service providers to maintain level-of-service standards. The increased workload or hiring of additional staff is an economic impact, but is not a physical effect on the environment, and thus is not within the purview of this EIR.

The new building space constructed by the CBB Project would result in increased demand for fire protection. The additional MSC population associated with development of the proposed MSC Projects would increase demand for police services on campus. Of this new population, approximately six of the employees are assumed to be new hires for UC Santa Cruz, and 36 students would constitute new

enrollment accommodated by the CBB Project. In addition to this on-campus demand, this new MSC population would contribute to the demand for off-campus in the city of Santa Cruz and the surrounding communities. The effects of the project-related off-campus population on services are analyzed as part of the cumulative impacts discussion in this section.

### 3.13.4.3 Project Impacts and Mitigation Measures

#### ***Police Services***

<b>MSC Projects Impact PUB-1</b>	The proposed CBB and NEF Projects would construct new facilities and introduce additional employees, students and visitors to the MSC, which would increase the need for police protection services.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB (lab, greenhouses, parking lots) NEF (trails and parking lot)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR analyzed the potential that the additional demand for police protection services that would result from development under the CLRDP would create a need for new or physically altered police facilities that could result in significant environmental impacts. Based on information provided by the Chief of the UCPD, the CLRDP determined that it was highly unlikely that implementation of the CLRDP would create such a need and that the impact therefore would be less than significant. The SCPD and the County Sheriff’s Office do not provide regular service to the MSC, so these agencies would not be affected by the campus’s projected growth under the CLRDP (CLRDP EIR, p. 4.13-6).

**Project Impact.** The MSC I and SRP 1B projects would not increase campus population or develop new building space, and therefore would not create demand for police services. The proposed CBB Project building space and the increase in population associated with the proposed CBB and NEF projects are within the development program analyzed in the CLRDP EIR. Furthermore, since the CLRDP EIR was certified, UC Santa Cruz has constructed an Emergency Response Center (in 2007) on the Main Campus, which will accommodate any additional UCPD staff that may be needed through 2020. Therefore, the proposed CBB Project would not create a need for new or physically altered police facilities that could result in significant environmental impacts, and the impact would be less than significant.

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**Fire Protection**

<b>MSC Projects Impact PUB-2</b>	The proposed CBB Project would construct new facilities, which would increase the need for fire services.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB (lab, greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR analyzed the potential that development under the CLRDP would entail the construction of new buildings and would introduce student and staff populations to the MSC that would create a need for new or physically altered fire facilities, the construction of which could result in significant environmental impacts. The SCFD Fire Marshal indicated that the SCFD could serve the new development. Therefore, the CLRDP EIR determined that implementation of the CLRDP would neither cause significant impacts to SCFD’s service delivery capabilities, nor would it require the construction of a new fire station, which could have adverse environmental effects (CLRDP EIR, p. 4.13-5).

**Project Impact.** The MSC I and SRP 1B projects would not increase campus population or develop new building space, and the NEF Project would include only a parking lot and trails, and these projects therefore would not create demand for fire services. The building space and population associated with the proposed CBB Project are within the development program analyzed in the CLRDP EIR. Therefore, for the reasons discussed in the CLRDP EIR and summarized above, the MSC Projects impact would be less than significant.

**Schools**

<b>MSC Projects Impact PUB-3</b>	The proposed CBB Project would contribute to population growth in the city of Santa Cruz, which would increase demand for schools.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB (lab, greenhouses)
<b>Significance</b>	Less than significant

<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR analyzed the potential that development under the CLRDP would result in an increase in the residential population of the area, which would create a need for the construction of new schools that could result in significant environmental impacts. The building program analyzed in the CLRDP EIR included 80 units of housing that would accommodate staff and their family members, for a total of about 90 people. The CLRDP EIR determined that, based on current enrollment statistics and macro-level trends in Santa Cruz, these students could be readily absorbed by the local school district, and population increases associated with the CLRDP’s full development program would not result in the need to construct or alter school facilities. The impact related to schools is therefore considered less than significant (CLRDP EIR, pp. 4.13-6 to 4.13-7).

**Project Impact.** The MSCI and SRP 1B Projects would not increase campus population, and the visitor population associated with the NEF project would be expected to be drawn from among existing regional residents; these projects therefore would not create demand for schools. Some of the employee population associated with the CBB Project could be new to the Santa Cruz area and could bring children who would attend schools in the area (although new employee housing would not be constructed under the CLRDP as described in the CLRDP EIR). The population associated with the proposed CBB and NEF projects is within the development program analyzed in the CLRDP EIR. Furthermore, as explained above, the enrollment in the Santa Cruz City Schools District has declined since the CLRDP EIR was certified. Therefore, the addition of any new students associated with the proposed CBB Project would not result in the need to construct new school facilities, and the impact related to schools is considered less than significant.

***Library Facilities***

<b>MSC Projects Impact PUB-4</b>	The proposed CBB Project would contribute to population growth in the city of Santa Cruz, which would increase demand for library facilities.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Project/ Project Elements</b>	CBB (lab, greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

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**Previous Analysis.** The CLRDP EIR did not analyze potential impacts associated with demand for library services. The proposed CBB Project would increase the population at the MSC by approximately 96 employees and 311 students. All but six of the employees are assumed to be existing employees of UC Santa Cruz, at either the MSC or the Main Campus. The student population associated with the CBB Project was included in the Main Campus enrollment growth that was analyzed in the UC Santa Cruz 2005-2020 Long Range Development Plan (2005 LRDP) EIR. The 2005 LRDP EIR analyzed the potential for the construction of new library facilities to meet the demand associated with on-campus population growth under the 2005 LRDP and concluded that the impact would be less than significant because the LRDP designates adequate land for the expansion of the campus libraries as infill development. Physical environmental effects of construction activities related to the expansion of on-campus library facilities are addressed in the following sections of the 2005 LRDP EIR: 4.1 (*Aesthetics*), 4.2 (*Agricultural Resources*), 4.3 (*Air Quality*), 4.4 (*Biological Resources*), 4.5 (*Cultural Resources*), 4.6 (*Geology and Soils*), 4.7 (*Hazards and Hazardous Materials*), 4.8 (*Hydrology and Water Quality*), 4.10 (*Noise*), 4.13 (*Recreation*), and 4.15 (*Utilities and Service Systems*).

As discussed in the 2005 LRDP EIR (Section 4.12, Volume II), although a small portion of the increased UC Santa Cruz population also would become cardholders in the Santa Cruz Public Libraries system, the majority of increased library use would still occur on campus. Therefore, although regional population growth may result in the need for new or expanded libraries in the city or the county of Santa Cruz, growth associated with the 2005 LRDP would not contribute to the need for these library facilities. Therefore, the 2005 LRDP concluded that, to the extent that there are adverse environmental impacts from the construction of new or expanded library facilities, campus growth under the 2005 LRDP would not contribute to such impacts.

**Project Impact.** The MSCI and SRP 1B projects would not increase campus population, and therefore would not create demand for libraries. The student population associated with the proposed CBB Project is accounted for in the 2005 LRDP EIR analysis of potential environmental impacts associated with demand for library services. The six employees that would be new UC Santa Cruz hires and could therefore be new to the region, would have access to the libraries on the Main Campus, but may also use the Santa Cruz Public Library System. This small number of employees would be too small to increase demand to the extent that new or expanded library facilities would be required. The visitor population associated with the NEF Project would not be new residents in the region and would not contribute to increased demand for library services. The impact would be less than significant.

### **3.13.4.4 Cumulative Impacts and Mitigation Measures**

#### ***Police and Fire Services***

<p><b>MSC Projects Impact PUB-5</b></p>	<p>The proposed CBB Project would construct new facilities and introduce additional employees and students to the MSC, which, in conjunction with other development in the region, would increase the need for police and fire protection services.</p>
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<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB (lab, greenhouses, parking lots)
<b>Significance:</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** During the preparation of the CLRDP EIR, City of Santa Cruz staff indicated that both the SCFD and the SCPD would be able to provide fire and police protection services both for the new development under the CLRDP as well as for other development anticipated in the vicinity without the need to construct new or altered facilities. Because fire and police protection services would be anticipated to keep pace with growth, and no need for new or altered government facilities has been identified, implementation of the CLRDP in conjunction with cumulative development would not cause an adverse cumulative effect associated with the construction of new or altered police or fire facilities (CLRDP EIR, p. 4.13-8).

**Project Impact.** The new building space and population associated with the proposed MSC Projects is within the development program analyzed in the CLRDP EIR. Therefore, for the reasons discussed in the CLRDP EIR and summarized above, the CBB Project would not contribute to a significant cumulative impact.

***Schools***

<b>MSC Projects Impact PUB-6</b>	The proposed CBB Project would introduce additional employees and students to the project site, which, in conjunction with other development in the region, would increase demand for schools.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB (lab, greenhouses, parking lots)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.13-8 to 4.13-9) projected that the contribution of CLRDP development to new students to project-area schools would be relatively small and, to the extent that this population would reside off-campus, the new employees would contribute funds for the development of additional school capacity through the payment of property taxes and, potentially, school development

impact fees. Moreover, district-wide enrollment was projected to decrease at least through the year 2010. Therefore, the CLRDP EIR determined that implementation of the CLRDP in conjunction with cumulative development would not cause an adverse cumulative effect associated with the construction of new or expanded school facilities.

**Project Impact.** The new UC Santa Cruz employees associated with the proposed CBB Project could contribute to demand for school services in the region, but the contribution would be very small. This new population is within the development program analyzed in the CLRDP EIR. Furthermore, as anticipated by the CLRDP EIR, school enrollment in the City of Santa Cruz has decreased since 2004. Therefore, the CBB Project would not contribute to a cumulative impact associated with construction of new or expanded school facilities.

***Library Facilities***

<b>MSC Projects Impact PUB-7</b>	The proposed CBB Project would introduce additional employees and students to the MSC, which, in conjunction with other development in the region, would increase demand for library facilities.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB (lab, greenhouses, parking lots)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR did not analyze cumulative impacts associated with demand for library services. The 2005 LRDP EIR (Section 4.12, Volume II) analyzed potential impacts of regional population growth, including the 2005 LRDP-related population growth, on the Santa Cruz Public Libraries System, a City-County system that includes libraries throughout Santa Cruz County. The 2005 LRDP EIR concluded that, although regional population growth may result in the need for new or expanded libraries in the City or the County of Santa Cruz, growth associated with the 2005 LRDP would not contribute to the need for these library facilities because most of the LRDP-related population would rely primarily on the UC Santa Cruz libraries. To the extent that there are adverse environmental impacts from the construction of new or expanded public library facilities, the MSC Projects would not contribute to such impacts.

**Project Impact.** The student population associated with the proposed CBB Project was included in the enrollment growth analyzed in the 2005 LRDP EIR. The small number of employees who may be new to the area (six) would not make a cumulatively considerable contribution to library demand in the region.

### **3.13.5 References**

Ed-Data. Website, <http://www.ed-data.k12.ca.us/>, accessed January 15, 2008.

Santa Cruz Public Libraries. Facilities Master Plan, FY 2008-09—FY 2012-13  
<http://www.santacruzpl.org/aboutscpl/planning/3/>, accessed February 25, 2011.

UC Santa Cruz Fire Department. Website, [http://www2.ucsc.edu/fire\\_dept/](http://www2.ucsc.edu/fire_dept/), accessed October 10, 2008.

**3.14 RECREATION**

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This section of the EIR describes current recreational resources on the Marine Science Campus (MSC) and in the surrounding area and evaluates whether the proposed MSC Projects could lead to physical deterioration of existing recreation facilities or to the construction or expansion of recreation facilities that might have an adverse physical effect on the environment. This section provides project-level analysis and additional detail regarding recreation, and supplements and augments, pursuant to CEQA Guidelines Section 15152, the analysis provided in Section 4.14 of the CLRDP EIR.

### 3.14.1 Environmental Setting

#### 3.14.1.1 Campus Recreation Facilities

Existing recreational facilities on the MSC include the Seymour Marine Discovery Center, which offers exhibits and guided tours, and informal trails and overlooks that are available for public use.

The Seymour Marine Discovery Center is a public educational facility located in the Lower Terrace portion of the MSC. The center is open to the public Tuesday through Sunday and is staffed by University staff and volunteer docents. The center provides interpretive exhibits as well as guided tours of onsite research facilities (including the marine mammal pools) and the overlooks to Younger Lagoon and the Pacific Ocean. Docents also provide tours of the lagoon and beach area of the Younger Lagoon Reserve (YLR).

There are no formal trails on the MSC, but an *ad hoc* gravel and compacted earth trail is used by the public on an informal basis. The trail runs from the intersection of Delaware Avenue at Shaffer Road south along the site's eastern boundary to the coastal bluff, then west to the Seymour Marine Discovery Center.

Three existing viewing platforms on the MSC overlook Younger Lagoon and the ocean. These are accessible from existing informal trails. One of the overlooks (Overlook B) is located along the bluff top at the end of McAllister Way and provides views of the Monterey Bay and the coastline. The overlook is open during the hours that the Seymour Marine Discovery Center is open. The second overlook (Overlook C) is located atop an earthen berm at the western edge of the Lower Terrace. This overlook provides views into an adjacent marine mammal research area, toward the ocean, and to Younger Lagoon. It is accessible to the public by tours through the Seymour Marine Discovery Center and features interpretive panels on dolphin research. The third overlook (Overlook D) is located north of the Ocean Health Building. Access to this overlook is provided by docent-led tours originating at the Seymour Marine Discovery Center and affords a view of the lower part of Younger Lagoon and for the monitoring of fauna in the YLR, especially birds.

In February 2011, the UC Santa Cruz Chancellor approved the Public Coastal Access Overlook and Overlook Improvements Project ("Overlooks Project"), which will construct three new public access overlooks, designated in the CLRDP as overlooks A, E and F, and make improvements to two the existing overlooks C and D.

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Public access to Younger Lagoon and the beach is restricted to allow wetland research and study in a controlled setting. Currently, the public has access to the lagoon and beach area on docent-led tours.

### 3.14.1.2 Off-Campus Recreation Facilities

The Santa Cruz area offers a large variety of both public and privately managed recreational facilities, including neighborhood parks, community parks, and community gardens; regional parks with overnight camping facilities, trails, and picnic facilities; natural areas such as redwood forests, beaches, ocean cliffs, rolling foothills; and other waterfront facilities such as the Santa Cruz Beach Boardwalk, the Santa Cruz Municipal Wharf, and the Santa Cruz Yacht Harbor. Santa Cruz County has almost 44,000 acres of State Park lands—over 15 percent of all lands in the county—and over 4,500 acres of County and City parks (including land held in partnership with other agencies). In 2004, approximately 55 acres of open space lands per 1,000 residents were preserved as parks and land trusts. These facilities are used by both locals and by the numerous visitors to Santa Cruz.

The City of Santa Cruz Parks and Recreation Department manages 29 neighborhood and community parks, five regional parks, municipal beaches, two City museums, two community centers, a civic auditorium, and a golf course. Several natural areas in the city are also available for formal and informal recreation. These areas include Antonelli Pond and Lighthouse Field on the lower west side of the city; the Pogonip City Park, which borders the eastern edge of the main UC Santa Cruz campus; and the Moore Creek Preserve, a 246-acre greenbelt on the west side of the city. Due to the limited availability of suitable land for new recreational development, the City anticipates that existing park facilities will see increasing intensity of use over time.

The Santa Cruz County Department of Parks, Open Space and Cultural Services maintains more than 30 parks and other recreational facilities throughout the county. None of the County owned and operated recreation facilities is within 1 mile of the MSC. The Santa Cruz district of the California State Park System manages almost 44,000 acres of state parks and beaches located in Santa Cruz County. Those in the vicinity of the MSC include Wilder Ranch State Park, Natural Bridges State Beach, and Lighthouse Field.

The UC Santa Cruz Main Campus (totaling over 2,000 acres) also provides recreational facilities, including undeveloped meadows and forests. These are available to Campus affiliates and the public during daylight hours. The Main Campus also provides 88 acres of land for physical education and recreation facilities, including a swimming pool, ball courts, ball fields, and weight-training facilities. These facilities are available to students, faculty, staff, alumni, and members of the public.

### 3.14.2 Relevant Project Characteristics

Use of the CBB facility would contribute an average of 96 employees (including graduate student researchers) and 311 students to the daily population of the MSC. Six of the employees are assumed to be new hires for UC Santa Cruz; the remainder of the employees would transfer from the Main Campus or other locations on the MSC. As explained in Section 3.12.2, *Population and Housing*, the 311 students would be enrolled at the Main Campus; of these 311 students, 275 are part of the existing UC Santa Cruz

student population. The remaining 36 would be considered new to the regional population and would create new demand for recreational resources.

Under the MSC Project, the abandoned section of Delaware Avenue Extension would be converted to a pedestrian path. A new pedestrian path would be constructed along the new entry road and would connect with a new sidewalk along McAllister Way.

The NEF Project would formalize or improve existing public access facilities and would construct new public trails and overlooks and a 15-space dedicated public access parking lot at the MSC entrance (Parking Lot A). The NEF Project would construct 1.2 miles of pedestrian and pedestrian/bicycle multi-use trails from the MSC's upland terraces to the coastal bluff (Figure 2-3a). The new trails would form a loop from the MSC entrance to the coastal bluff, along the bluff, and back across the terraces. The trails would provide views and educational interpretation of coastal features, grasslands, wetlands, and the Campus' habitat restoration and sustainable stormwater system projects. The trails would also connect the existing and proposed overlooks. A new major trail, the Central Campus Trail, would curve southwest from the MSC entrance and would serve as the primary bicycle access as well as a pedestrian path. Benches, trash cans, bicycle parking, interpretive signage, and similar amenities would be placed at viewing locations along trails, such as near each terrace wetland and along the coastal trail. The NEF Project includes one new overlook, Overlook G, and would add a covered interpretive shelter at Overlook A. Overlook A will be constructed as part of the approved Overlooks Project (Figure 2-3a). Overlook G, on the south side of the Main Entry Trail, would provide a view to the south toward wetland W5 for bicyclists and pedestrians. The improvements at Overlook A would consist of a small covered shelter with interpretive signage/exhibits to provide an outdoor learning space for larger groups (for both self-guided and guided exploration). The NEF Project also would install or replace wayfinding signage throughout the MSC to facilitate public access to overlooks, interpretive and education exhibits, the Seymour Marine Discovery Center, and other visitor amenities.

Action 6 of CLRDP Amendment #1 would revise MSC trail routes as envisioned in the CLRDP, eliminating some of the previously envisioned east-west trails in the eastern half of the Middle Terrace and adding a new pedestrian/bicycle trail from the MSC entry to McAllister Way south of the NOAA facility (Appendix A, Figures 5.6 and 9.1). It also would amend the timing of trail construction, such that all of the Lower and Middle Terrace trails would be constructed concurrently with the first development under the CLRDP. The impacts of this amendment action on recreational resources are analyzed in this section.

### 3.14.3 Applicable CLRDP EIR Mitigation Measures

No CLRDP EIR mitigation measures related to recreation are applicable to the proposed projects.

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### 3.14.4 Impacts and Mitigation Measures

#### 3.14.4.1 Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, an impact on recreational facilities would be considered significant if the proposed project would:

- Increase the use of existing neighborhood and regional parks or other recreation facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Propose the construction of recreation facilities or require the expansion of recreation facilities that might have an adverse physical effect on the environment.

#### 3.14.4.2 Analytical Method

The analysis in this section focuses on: (1) the potential for increased intensity of use of existing recreational facilities (as a result of increased population associated with the proposed project) to lead to the deterioration of such facilities both on and off the MSC; (2) the need for new recreational facilities as a result of the increase in campus population; and (3) the potential environmental impacts of the construction of new recreation facilities included in the proposed project.

#### 3.14.4.3 Project Impacts and Mitigation Measures

##### *Demand for Existing Recreation Facilities*

<b>MSC Projects Impact REC-1</b>	The proposed CBB Project would increase the numbers of employees and students at the MSC, which could increase demand for and use of existing recreation facilities in the service area.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab, greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (p. 4.14-7) analyzed the potential that population associated with development under the CLRDP (an additional average occupancy of 888 people, for a total net new average daily population of approximately 1,313 people) could increase the use of existing neighborhood and regional parks or other recreational resources such that substantial physical deterioration of those facilities would occur or be accelerated. The CLRDP EIR also analyzed the potential that the demand for

recreation facilities associated with the increase in population at the MSC could result in the need for new or expanded off-site recreation facilities. The CLRDP EIR determined that the demand generated for recreational facilities attributable to the increase in on-site population would be offset by new recreation facilities that would be constructed under the CLRDP, including new sports courts and trail improvements. In addition, future MSC students and faculty would have access to recreation and sports facilities on the UC Santa Cruz Main Campus. Therefore, development under the CLRDP would not result in or accelerate the physical deterioration of existing off-site recreation facilities or result in the need for new or expanded facilities.

**Project Impact.** The proposed CBB, greenhouses, and research support space would support a daily population of about 96 full time employees (including graduate students), and 311 students. As explained in Section 3.12, *Population and Housing*, of this population, approximately 42 (including six employee positions and 36 students) are assumed to be new to the region. The NEF Project Parking Lot A is expected to accommodate 40 visitors per day; however these would be expected to be existing residents of the region. The MSC I and SRP Phase IB projects would not directly result in an increase in the number of employees, students, or visitors at the MSC and therefore would not result in an increase in demand for recreational facilities.

The increase in daily population at the MSC could result in increased use of the informal recreation facilities on the MSC and off-site recreation facilities in the immediate vicinity (Antonelli Pond and Natural Bridges State Beach). The new daily population associated with the proposed CBB Project is within the average daily population analyzed in the CLRDP EIR. The proposed Projects would construct trail improvements on the Lower, Middle, and Upper Terrace. The overlook improvements identified in the CLRDP will be constructed as a separate project, which has been approved and will be completed before construction of the proposed project would begin. Most of the 311 students associated with the CBB Project, including the increment of 36 that would be new to UC Santa Cruz would be on the MSC part time and would also take classes on the Main Campus, where they would have access to formal and informal recreation facilities. Therefore, the demand for recreation facilities associated with the project-related population would not result in deterioration of existing recreation facilities or the need for construction of new facilities. The impact would be less than significant.

Action 6 of CLRDP Amendment #1 would eliminate some of the east-west trails in the eastern half of the Middle Terrace and would add a new pedestrian/bicycle trail from the MSC entry to McAllister Way south of the NOAA facility. This elimination of the previously planned east-west trails was proposed by the YLR manager and the Scientific Advisory Committee to avoid fragmentation and potential human intrusion into MSC wildlife habitat. These changes would not reduce public viewing access to wetlands on the terraces, which would be provided by two public-access overlooks and also by the new Central Campus Trail proposed as part of the current MSC I Project (Figure 2-3a). This action would not destroy any existing trails and would provide the same level of recreational benefit as the trail system envisioned in the CLRDP as analyzed in the CLRDP EIR.

The MSC I and SRP Phase 1B Projects and CLRDP Amendment #1 are not expected to result in a direct increase in campus employee, student, or visitor population, and therefore would not affect demand for recreational facilities.

Construction of New Recreation Facilities

<b>MSC Projects Impact REC-2</b>	Construction of new public trails and public coastal access parking could result in impacts to biological resources, undiscovered cultural resources, and (with respect to construction), air emissions and storm water quality.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	NEF Project
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

The proposed CBB Project and SRP Phase 1B would not include construction of new recreational facilities and therefore would have no impact. The proposed NEF project would improve the existing network of public trails on the MSC, and would construct new, dedicated public coastal access parking spaces. The NEF Project would also provide new interpretive panels and wayfinding signs that would enhance the experience of visitors to the MSC. Vegetation clearing, grading, and construction of new recreational facilities could result in impacts to biological resources, undiscovered cultural resources, and storm water quality and in emissions of air pollutants. The environmental impacts of constructing the recreational facilities are addressed in other sections of this EIR. The Campus would implement the mitigation measures identified in Section 3.4, *Biological Resources*, and Section 3.6, *Cultural Resources*, to mitigate potential impacts to biological and cultural resources from construction of the new recreational facilities to a less-than-significant level. Potential impacts to air quality and water quality from construction activities related to new recreational facilities would be mitigated to less-than-significant levels by implementing mitigation measures presented in Section 3.3, *Air Quality* and Section 3.9, *Hydrology and Water Quality*. Therefore, the adverse environmental impacts associated with construction of the new recreational facilities included in the proposed project MSC and NEF projects would be less than significant. The CBB and SRP 1B Projects would not construct new recreational facilities and therefore would have no impact.

### 3.14.4.4 Cumulative Impacts and Mitigation Measures

Demand for Existing Recreation Facilities

<b>MSC Projects Impact REC-3</b>	The new MSC population associated with the proposed CBB Project, in conjunction with other regional population growth, would increase demand for existing recreation facilities, which could result in or accelerate substantial physical deterioration of these facilities.
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<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project
<b>Significance</b>	Less than significant.
<b>Project Mitigation</b>	None required.
<b>Residual Significance</b>	Not applicable

The MSCI and SRP Phase 1B Projects are not expected to result in a direct increase in MSC employee, student, or visitor population, and therefore would not contribute to cumulative demand for recreational facilities. The NEF Project parking lot A would accommodate 40 visitors per day but these are assumed to be existing regional residents or visitors to the area. As analyzed above, the demand for off-campus recreation facilities associated with the CBB Project-related population would not result in a significant impact on recreational facilities because the demand would be offset by the new recreation facilities that would be constructed under the CLRDP, including the Overlook Project (expected to be completed in 2011) and the trail, overlook, and educational exhibit improvements to be constructed under the MSCI and NEF projects. The trail and overlook improvements are required elements of the CLRDP. In addition, most of the project-related population, 311 students, would only be on the MSC part time. They would be affiliated with and would take classes on the Main Campus, where they would have access to formal and informal recreation facilities. The new recreational facilities on the MSC would also serve residents of the Santa Cruz west side neighborhoods as well as visitors to the area, and therefore would offset some of the demand for new recreational facilities in the region. The impact would be less than significant

#### Construction of New Recreation Facilities

As analyzed above, the CBB Project and SRP Phase 1B would not construct any new recreational facilities, and the potential environmental impacts of the construction and operation of the recreational facilities that would be constructed by the MSCI and NEF projects would be less than significant with mitigation included in the project, as described in other sections of this EIR. The potential adverse environmental effects would be primarily limited to the construction phase; they would not include impacts, such as loss of habitat, which could cumulate with the impacts of construction of recreational facilities at other off-site locations. Therefore, the construction of new recreational facilities under the MSCI and NEF projects would not contribute to any significant cumulative impacts associated with construction of recreational facilities.

**3.15 TRANSPORTATION AND TRAFFIC**

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T A B L E S

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Table 3.15-2 Level of Service Definitions for Unsignalized Intersections

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Table 3.15-6 Existing Intersection Levels of Service

Table 3.15-7 Summary of Existing and Existing Plus Project Intersection Levels of Service

Table 3.15-8 Summary of Cumulative and Cumulative Plus Project Intersection Levels of Service

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- Figure 3.15-1 Project Area Circulation Network and Study Intersections
- Figure 3.15-2 Study Area Transit Routes
- Figure 3.15-3 Project Trip Distribution
- Figure 3.15-4 Study Intersection with Project Trip Assignment
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- Figure 3.15-8 Study Intersections with 2016 Cumulative Conditions Peak Hour Traffic Volumes without Project
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This section of the EIR evaluates potential traffic, circulation, and parking demand effects from development of the proposed MSC Projects.

The CLRDP EIR evaluated the effects on traffic and transportation of the full program of CLRDP development, through about 2020, and of five near-term projects, then envisioned to be developed by about 2010. Traffic effects from development of the near-term projects and of the entire CLRDP program (through 2020) were analyzed both separately and in the context of cumulative local and regional development through 2010 and through 2020. The CLRDP EIR traffic studies were based on data collected and analyzed in 2003.

This section provides project-level analysis and additional detail on the campus and regional roadway, transit, bicycle, and pedestrian systems, to supplement and augment Section 4.15 of the CLRDP EIR (UC Santa Cruz 2004), pursuant to CEQA guidelines 15152. The analysis below updates background traffic modeling with AMBAG's most current regional projections (AMBAG 2008) and with local intersection data and UC Santa Cruz trip generation data collected in fall 2010. The analysis presented below evaluates the effects of projected increases in traffic associated with the construction and occupation of the proposed MSC Projects, and the cumulative effects of project traffic in combination with traffic associated with other projected campus growth and with other anticipated development elsewhere in the City of Santa Cruz through 2016, the cumulative horizon year for the proposed Projects.

Traffic modeling for the analysis took into account potential travel by employees, students, and visitors to and from the MSC, and also between the Main Campus and the MSC. Traffic level-of-service analysis was conducted for 11 signalized and unsignalized intersections in the City of Santa Cruz, using the 2000 Highway Capacity Manual operations method.<sup>1</sup> No on-campus intersections on the UC Santa Cruz Main Campus or the MSC are included in the present analysis. The off-campus analysis forecasts traffic volumes on streets in the neighborhoods that surround the campus, and considers the temporary effects of traffic associated with project construction.

This section also evaluates project effects relating to campus circulation, and anticipated project effects on bicycle, pedestrian, and transit systems on campus and in the immediate vicinity of the campus. As identified in the Project Description, the CBB Project may result in demand for parking in excess to the amount that can be accommodated in existing and proposed parking lots on campus. Although provision of adequate parking is no longer considered as a significance threshold under CEQA Appendix G, potential off-campus parking demand associated with the CBB Project is considered relative to the potential generation of motor vehicle trips and related parking demand that would be inconsistent with transportation demand management (TDM) goals, and the potential for motor vehicle/ pedestrian/ bicycle conflicts near the MSC entrance. Section 3.10 of this EIR (Land Use) assesses the potential for project-related parking demand to impede public parking and coastal access, which would be inconsistent with the applicable land use plan because the protection of coastal access is required by the Coastal Act and by CLRDP policies and Implementation Measures (IMs).

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<sup>1</sup> 2000 Highway Capacity Manual, Special Report 209, Transportation Research Board (Chapter 10).

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Data used in traffic modeling and data output from traffic modeling and signal warrant analysis are provided in Appendix H of this EIR.

The following comments relevant to traffic and transportation were received in response to the Notice of Preparation for this project and are addressed in this section of the Draft EIR:

- Caltrans requested that a full traffic impact study be prepared by a licensed traffic engineer to study the project’s impact on the State highway facility and transportation system, which should include information on existing traffic volume data less than two years old. It was recommended that the traffic impact study be prepared in accordance with Caltrans “Guide for the Preparation of Traffic Impact Studies” or technically comparable guidance.
- Caltrans suggested that Caltrans Level of Service (LOS) standards should be used to determine the significance of any impacts on State highways, with the target LOS being the transition between LOS C and D for all State highways (e.g. SR 1 in Santa Cruz). Caltrans states that if a State facility is already operating at an unacceptable LOS, any additional trips should be considered a significant cumulative impact and should be mitigated accordingly.
- The Monterey Bay Area Unified Air Pollution Control District (MBUAPCD) commented that if project or cumulative traffic would cause LOS to decline from D or better to E or F, dispersion modeling should be undertaken to determine if carbon monoxide concentrations would violate ambient air quality standards at sensitive receptor locations. The potential for impacts related to carbon monoxide concentrations is addressed in Section 3.3, *Air Quality*.

### 3.15.1 Environmental Setting

The MSC Projects study area for traffic and transportation analysis includes the roadways between the UC Santa Cruz Main Campus and the MSC in the west side of the City of Santa Cruz, and the City of Santa Cruz generally.

Intersections for the project-specific Traffic Impact Study (Fehr and Peers 2011) were selected in consultation with the City of Santa Cruz transportation planners and were based on the projected number and distribution of trips associated with the proposed Projects. The results of analysis of intersection operations are presented in Section 3.15.5 (Impacts and Mitigations Measures), below.

Figure 3.15-1, Project Area Circulation Network and Study Intersections, shows the existing circulation network within the study area and identifies the intersections analyzed in the study.

#### 3.15.1.1 Roadway System

##### *Marine Science Campus*

The Marine Science Campus (MSC) is located just inside the western boundary of the City of Santa Cruz, with its southern edge at Monterey Bay and its northern edge bounded by the Union Pacific Railroad (UPRR) tracks. State Route (SR) 1 parallels the railroad tracks and is located a few blocks north of the MSC. The single entrance to the MSC is located at the intersection of Delaware Avenue and Shaffer

Road. Shaffer Road intersects State Highway 1, but is closed at the railroad alignment and is not an access route to the campus. From SR 1, the campus may be accessed via Western Drive, Natural Bridges Drive and Delaware Avenue.

At the MSC entrance, Delaware Avenue continues into the campus as the campus main entry road, Delaware Avenue Extension. Delaware Avenue Extension crosses the campus in a westerly direction. The road then turns to the south and becomes McAllister Way, which terminates near the coastal edge of the campus, between the Seymour Marine Discovery Center and the Long Marine Lab. Both roadway segments are 20-foot-wide, two-lane, all-weather roads with oiled-gravel paving, which carry one lane of traffic in each direction and do not include sidewalks or bikeways. Delaware Avenue Extension and McAllister Way provide access to the MSC's gravel-surfaced service roads, service yards, and paved parking areas at campus facilities. All of the MSC's existing facilities, including the CDFG facility and the NOAA Fisheries Lab, are located along McAllister Way.

### Regional Access

State Route (SR) 1 is a two- to six-lane, major north-south highway that connects the city of Santa Cruz to the cities of Half Moon Bay and San Francisco in the north and to the city of Monterey in the south. Within the city of Santa Cruz and in the study area, SR 1 has an east-to-west alignment parallel to the coastline of Monterey Bay. Between Western Drive, near the western edge of the city, and River Street in central Santa Cruz, SR 1 operates as a four-lane arterial with signalized intersections. Between Shaffer Road, at the western edge of the city, and Swift Street, SR 1 is formally designated as Coast Road. Mission Street Extension runs parallel to and south of this segment of SR 1/Coast Road. At Swift Street, Mission Street Extension converges with SR 1. The highway is designated as Mission Street from this point eastward to the intersection with Chestnut Street, at the western edge of downtown Santa Cruz. At Chestnut Street, Mission Street diverges from SR 1 and becomes Water Street as it continues into downtown Santa Cruz, while SR 1 continues northeast and eastward, intersecting with SR 9 in central Santa Cruz and then with SR 17. At the SR 17 intersection, SR 1 continues southward as a six-lane freeway.

SR 9 is a north-south road with one lane of travel in each direction, which begins in the City of Santa Cruz where River Street intersects with SR 1 and extends to SR 17 in Los Gatos. SR 9 provides access between Santa Cruz and the Santa Cruz mountain communities of Felton, Ben Lomond and Boulder Creek.

SR 17 is a four- to six-lane, north-south highway that connects the Monterey Bay area to Santa Clara County, Interstates 101, 280, and 880, and City of San Jose. SR 17 provides access from Santa Cruz to the residential community of Scotts Valley.

### Local Access

Principal access routes to the MSC from the west side of Santa Cruz include Delaware Avenue, which extends from Bay Street to the MSC entrance, or Mission Street/SR 1. SR 1 is the most direct through route to the MSC for traffic from more distant part of Santa Cruz, with access to Delaware Avenue via several side streets including Bay Street, Almar Drive, Swift Street, and Western Drive/Natural Bridges

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Drive (Figure 3.15-1). Each of these streets that connect Mission Street and Delaware Avenue crosses the UPRR tracks.

Mission Street is an east-west arterial roadway extending between Shaffer Road and Pacific Avenue in central Santa Cruz. The section of Mission Street between Swift Street and Chestnut Street, which functions as SR 1, is a four-lane roadway with traffic signals at major intersections. West of Swift Street, and parallel to and south of SR 1, Mission Street becomes Mission Street Extension, a two-lane roadway controlled with stop signs at intersections. When Mission Street is congested, some traffic diverts to parallel facilities (e.g., King Street and California Street) via Walnut Avenue and Bay Street. Mission Street/SR 1 is a designated truck route.

Western Drive is a north-south collector roadway with one lane of travel in each direction, which meets SR 1 at a signalized intersection. It connects the UC Santa Cruz Main Campus with the west side of Santa Cruz, and provides the most direct route between the Main Campus and the MSC.

Delaware Avenue is a two-lane, east-west roadway between Laguna Street and Shaffer Road that parallels SR 1 and the Monterey Bay coastline. Delaware Avenue provides primary access to the MSC and is designated as an arterial roadway in the City's General Plan Circulation Element. When Mission Street is congested, some traffic uses Delaware Avenue to reach destinations west of downtown.

Natural Bridges Drive is a two-lane, north-south arterial roadway that provides a connection between Delaware Avenue and Mission Street/SR 1. Natural Bridges Drive crosses the UPRR tracks at an at-grade crossing. The crossing includes signal arms, warning lights and bells, and pedestrian sidewalks.

There are two principal routes between the Main Campus and the MSC. The first uses Bay Street, Mission Street, and one of several side streets to Delaware Avenue. The second uses High Street/Empire Grade Road, Western Drive, and Natural Bridges Drive to Delaware Avenue (Figure 3.15-1). The proposed project would not affect internal traffic or circulation on the Main Campus, and traffic on roads internal to the Main Campus therefore are not considered in the following analysis.

The Main Campus is served by two roadway entrances: the main entrance at the Bay and High Street intersection and the west entrance at Empire Grade Road and Heller Drive. High Street becomes Empire Grade Road a short distance west of the Main Campus main entrance. Western Drive runs south to Mission Street from a point along Empire Grade Road a few blocks west of the main entrance. Bay Street also connects from High Street to Mission Street and, further south, to Delaware Avenue.

Local access to the Main Campus is provided on two primary routes: Mission Street to Bay Street and Mission Street to Highland Avenue to High Street to Bay Street. Bay Drive crosses High Street and becomes Glenn Coolidge Drive at the campus' main entrance. High Street continues west past Bay Drive and becomes Empire Grade Road at the City/County boundary, which provides access to the campus west entrance at Heller Drive. Mission Street is accessible by many of the regional access routes described above. High Street also is accessed from Mission Street via King Street and Storey Street. Secondary access routes to the Main Campus include Western Drive and Empire Grade Road.

Bay Street is a north-south arterial roadway with two to four travel lanes that extends between High Street on the north and West Cliff Drive on the south. It provides access between the Main Campus of UC Santa

Cruz and SR 1/Mission Street, and then continues down to the coast. Bay Street is signalized where it intersects with major cross streets.

High Street is a local two-lane roadway that extends from Mission Street near the Chestnut Street intersection northwestward to where it becomes Empire Grade Road, just west of the UC Santa Cruz main entrance. High Street is a primary access route to the Main Campus from SR 1 and the downtown Santa Cruz area.

Empire Grade is a two-lane local roadway that is a continuation of High Street. This County road extends from the City boundary just west of the Main Campus entrance at Coolidge Drive/High Street to and beyond the communities of Cave Gulch and Bonny Doon in northern Santa Cruz County.

King Street is a two-lane, east-west local roadway that is fronted primarily by residential uses. It runs just north of and roughly parallel to Mission Street.

### 3.15.1.2 Project Study Intersections

Study intersections were chosen for analysis in this section in consultation with the City of Santa Cruz based on the traffic generation and trip distribution projected for the proposed project (as described below), and taking into account intersections where significant impacts were identified in the CLRDP EIR and the 2005 LRDP EIR. Study intersections were selected based on anticipated travel routes of UC Santa Cruz affiliates to and from the MSC and between the MSC and the Main Campus. Existing intersection lane configurations, and traffic volumes based on traffic counts collected in October 2010, were used in the analysis, below. Trip generation by the proposed Projects and the distribution of these trips to travel routes and assignments to intersections also are detailed, below. Operations of freeway on- and off-ramps for SR 1 and SR 17 southward from Santa Cruz are not considered in this analysis because the proposed Projects would generate fewer than 30 AM and PM peak hour trips on either of these facilities, which would be well within the expected hourly and daily variability for SR 1 and SR 17 operations. The traffic analysis reported here focuses on the following study intersections in the City of Santa Cruz.

- Western Drive/High Street
- Western Drive/State Route 1
- Natural Bridges Drive/Delaware Avenue
- Swift Street/Delaware Avenue
- Swift Street/State Route 1
- Mission Street/Almar Avenue/Younglove Avenue
- Mission Street/Bay Street
- Mission Street/Laurel Street
- Mission Street/King Street/ Union Street

- 
- State Route 1/Mission Street/ Chestnut St.
  - State Route 1/River Street (State Route 9)

### 3.15.1.3 Bicycle and Pedestrian Facilities

Both the City of Santa Cruz and UC Santa Cruz promote bicycle and pedestrian use. A recent survey conducted by the UC Santa Cruz TAPS concluded that about 24 percent of current students attending classes at the site bicycle to the MSC, and about 3 percent of students walk (Pageler 2010a). A similar proportion of employees also bicycle to work (Davenport 2010). According to the 2008 University of California, Santa Cruz Bicycle Transportation Plan, approximately 1,000 persons commute each day to UC Santa Cruz by bicycle (Pageler 2010a).

#### *Existing and Planned Bicycle Facilities*

Caltrans designates bikeway facilities along state highways. In addition, the Santa Cruz County Regional Transportation Commission Bicycle Resource identifies Alternative Routes (routes that are favorable to cyclists but are not striped and not necessarily signed) in the study area.

There presently are no formal designated pedestrian and bicycle circulation facilities on the MSC. Bicycles share the campus roadways with cars, and there is a network of informal, unpaved pedestrian paths around the campus, including some along sections of the McAllister Way road margin. As described below, the proposed MSC Project would develop a new dedicated bikeway/ pedestrian route from the MSC entry to the Seymour Marine Discovery Center. The CLRDP requires that projects that would increase project population to provide bike shelters and secure bicycle parking adequate to accommodate campus demand, up to the total number of campus employees, as demand warrants. The CLRDP also requires provision of showers and lockers in proportion to campus population, to encourage bicycle commuting as an alternative transportation mode.

Bicycle facilities in the vicinity of the MSC include bike lanes on Delaware Avenue, Natural Bridges Drive, and Swift Street. A multiuse/bicycle path follows the shoreline along West Cliff Drive. The “Pacific Coast Bicycle Route” follows SR 1 to Western Drive, the Mission Street Extension, Natural Bridges Drive, Delaware Avenue, Swanton Boulevard, and West Cliff Drive, passing within about two blocks of the MSC entrance.

According to the 2008 City of Santa Cruz Bicycle Transportation Plan, a bike lane is proposed along the Mission Street Extension from Burkett Street to Swift Street; this route runs within a few blocks of the project site. Bike lanes are also proposed in the vicinity of the project site along Western Drive from Mission Street Extension to SR 1, Western Drive from SR 1 to High Street, and Delaware Avenue from Swift Street to Almar Avenue.

#### *Existing Pedestrian Facilities*

Pedestrian facilities include sidewalks, trails/pathways, crosswalks, and pedestrian signals. A sidewalk along the north side of Delaware Avenue extends westward from a transit stop at the intersection with Natural Bridges Drive to within about 900 feet of the entrance to the MSC but does not connect to the

campus entrance. There also are sidewalks on both sides of Natural Bridges Drive and on the south side of Delaware Avenue between Swanton Boulevard and Swift Street and on both sides of the Mission Street Extension (see Figure 3.15-7). Another short section of sidewalk is provided on the west side of Shaffer Road next to a developed parcel north of the railroad tracks. With these exceptions, pedestrians must share the roadway with vehicles and bicyclists on Shaffer Road, Delaware Avenue, and the Mission Street Extension. Sidewalks, crosswalks, and pedestrian push buttons are provided at most of the signalized intersections in the study area. Several unsignalized intersections on the Mission Street Extension are marked with pedestrian crosswalks.

Pedestrian access into and through the MSC is via the unpaved shoulders of Delaware Avenue Extension and McAllister Way, as well as a network of informal pedestrian pathways, some of which have decomposed granite surfaces. An ad-hoc trail along the southern and eastern edge of the site also is used by pedestrians. Pedestrians entering the campus use these off-road trails, or, particularly during inclement weather when the trails are muddy, share Delaware Avenue Extension with vehicles and bicyclists. The CLRDP requires specified improvements to pedestrian circulation and public coastal access in conjunction with campus development.

#### 3.15.1.4 Transit Service

The Santa Cruz Metropolitan Transit District (METRO) provides bus service within the City and County of Santa Cruz and partners with other transit districts to provide regional access to the county from the Santa Clara County and the Monterey Peninsula. UC Santa Cruz Transportation and Parking Services (TAPS) also provides free shuttles around the UC Santa Cruz Main Campus. Existing transit operations and facilities are described below and illustrated on Figure 3.15-2.

The Main Campus is serviced by seven METRO bus routes that loop around the campus on Hagar Drive, McLaughlin Drive, Heller Drive, and Empire Grade. The bus routes terminate at the METRO Center located between Front Street and Pacific Avenue at Elm Street. The MSC is serviced by two METRO bus routes (3, 20), with stops on Mission Street Extension, Natural Bridges Drive, and Delaware Avenue, including one stop at the campus entrance and another within less than ¼ mile.

TAPS provides free bicycle shuttles for bicyclers, from downtown Santa Cruz and the west side of Santa Cruz to the Main Campus on weekdays between 7 AM and 1 PM. TAPS formerly ran a shuttle between the Main Campus and the MSC, but this was discontinued in 2009 due to lack of ridership.

CLRDP Policy 5.7 requires that adequate University and other public transit shall be provided to meet the 40 percent travel-mode split goal of the CLRDP (see below). Implementation measures under this policy call upon UC Santa Cruz to work with SCMTD to increase the frequency of transit service to points near the MSC as demand warrants and to encourage SCMTD to extend its service to the MSC. UC Santa Cruz also is to provide shuttle service between the Main Campus and the MSC as demand warrants, and class schedules are to be developed in coordination with TAPS to minimize operational demands. In addition, paved areas for bus turnarounds and covered transit stops for bus and shuttle riders are to be developed at logical locations throughout the MSC concurrent with the construction of new roadways, sidewalks, and related circulation improvements.

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### 3.15.1.5 Transportation Demand Management

CLRDP Policy 5.2 mandates a goal of 40 percent alternative transportation for all person-trips to the MSC, to reduce traffic congestion and parking demand, and to minimize air pollutant emissions related to implementation of the CLRDP. The CLRDP identifies specific policies and measures to be used by UC Santa Cruz to encourage use of alternatives to the single-occupant automobile. Further, for each development project, the Campus is required to clearly identify the methods to be used to encourage non-single-occupancy vehicle trips for that development in order to meet these requirements.

TAPS has developed and implements a robust TDM program for UC Santa Cruz. TDM emphasizes the movement of people and goods rather than motor vehicles, and gives priority to public transit, ridesharing, and non-motorized travel, particularly under congested traffic conditions. TAPS' TDM strategies have a variety of goals, from improving the reliability of transportation options to changing travel times, routes or modes, to increasing vehicle occupancy and reducing parking demand. Each TDM strategy may change travel patterns of only a small number of people; however, on a larger scale, the effects on traffic congestion, avoidance of greenhouse gas emissions and other air emissions, and other benefits can be significant.

Both the City of Santa Cruz and UC Santa Cruz have identified TDM as an important strategy to change travel behavior and sustain the City's and the Campus's transportation system over the long term. An important measure of the effectiveness of TDM programs is the proportion of trips to the campus that are made using transportation modes other than single-occupant vehicles. UC Santa Cruz' TDM program has been effective in reducing vehicle trips even as campus population has grown in the past decade: in 2010, more than 60 percent of trips entering and exiting the Main Campus consisted of alternative travel modes, including transit, multi-occupant vehicles, walking, and biking (Pageler 2010a) At the Main Campus, TDM strategies include the use of parking policies, permits, and fees that manage parking on campus, provide incentives for the use of carpools and vanpools, emphasize the use of remote lots on campus, and strictly limit parking close to new campus facilities; programs that encourage the use of bicycles on campus, including bicycle shuttles to the campus, bicycle parking, and showers; student-fee-funded public transit passes and a free on-campus shuttle bus system; a car-sharing program (ZipCar), which makes cars available to students and employees on a paid, hourly basis to help alleviate the need for individuals to bring cars to campus; and a recently-initiated ride-matching program (ZimRide) to help campus affiliates share occasional and commute trips.

Because the existing UC Santa Cruz employee population associated with the MSC is small (currently about 140 persons), and student attendance at the campus also relatively minor, the emphasis on TDM programs at this site has been less formalized. The MSC provides bicycle parking facilities at each building, as well as showers and lockers available to bicycle commuters. The transit fare reductions and carpool/van pool programs described above for the Main Campus are available for employees at the MSC and students accessing the site. However, there currently is no internal transit service or shuttle on the site.

### 3.15.1.6 Existing UC Santa Cruz-Related Traffic

#### Trip Generation

TAPS conducts periodic traffic counts on Main Campus roadways, at the main and west gates of the Main Campus and at the entrance to the MSC. Two weeks of traffic counts were collected at the two entrances to the Main Campus during fall 2009 and again during spring 2010. In academic year 2009-10, Main Campus gate counting recorded 22,138 vehicle trips traveling into and out of the campus on an average weekday (Pageler 2011). This represents a decrease of more than 2,600 average daily trips to the campus since the 2005 LRDP baseline reporting year of 2003-04, despite an increase in the Main Campus population of more than 2,100 persons.

At the MSC, it is difficult to directly associate gate counts with UC Santa Cruz employee and student populations, as school trips to Seymour Marine Discovery Center and other campus visitors generate a substantial proportion of the trips to the campus. The Seymour Marine Discovery Center currently receives some 60,000 visitors per year, but daily attendance is highly variable and many trips occur on the weekend and most probably outside of peak hours. In addition, non-UC Santa Cruz facilities on the campus—NOAA and CDFG—generate about 30 percent of total trips through the MSC gates. Gate count data in several successive years have recorded between 950 and 1,000 average daily trips on weekdays through the MSC entrance (Pageler 2010b).

#### Travel Mode Share

Mode share refers to the proportion of trips through the campus gates made using each transportation mode, including single occupant vehicles, carpools, motorcycles, bicycles, pedestrians, regional buses, and construction/service vehicles. Mode counts in spring 2010 of persons accessing the Main Campus at the main and west entrances by mode (Pageler 2010b) indicate that single occupant vehicle travel accounted for about 35 percent of all passenger trips to and from the campus. Carpools comprised 24 percent; transit buses comprised 29 percent; UC Santa Cruz-operated programs, such as commuter vanpools and the bike shuttle accounted for about 5 percent; bicycles and pedestrians, about 4 percent; and motorcycles, and service/construction vehicles comprise the remaining 3 percent of trips accessing the campus. On this basis, Campus TDM programs appear to be highly effective at the Main Campus. The effectiveness of TDM at the Main Campus is relevant to the proposed Projects because, as shown on Figure 3.15-3 (Project Trip Distribution), about 40 percent of trips associated with the proposed Project are anticipated to begin and/or end at the Main Campus. A recent survey of students attending classes at the MSC indicated that about 30 percent of students had traveled to the MSC from the Main Campus and about an equal number planned to travel to the Main Campus after their MSC class(es).

A survey of students attending classes at the MSC in winter 2011 (Davenport and Pageler 2011) indicated that about 24 percent of students bicycled to the campus; 20 percent of students carpooled to the campus, and 54 percent drove alone. About 3 percent of students walked to the campus and about 3 percent rode transit. There are no vehicle data on MSC employee mode split at present, but an informal survey revealed that about 22 percent of employees biked to campus. At present, no parking restrictions or fees are in place at the MSC. However, as described below, TAPS has proposed a parking management and tracking system at the MSC under which parking permits would be required for campus employees and

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visitors, and undergraduate student would not be eligible for campus parking permits. The implementation of this program will be subject to Coastal Commission approval; however, it is anticipated that a parking management program will be in place prior to occupancy of the proposed CBB Project.

### Parking

TAPS presently monitors a total of 175 parking spaces in paved and unpaved lots on the MSC. A parking utilization survey at the MSC over a several-day period in spring 2010 indicated an average utilization rate of about 75 percent for UC Santa Cruz parking at the MSC (UC Santa Cruz TAPS 2010). Fifty-two additional spaces located on the National Marine Fisheries Service (NMFS) parcel are managed by the National Oceanic and Atmospheric Administration (NOAA) and are not available for general use, but may be used by UC Santa Cruz employees working under contract to NOAA.

As of spring 2011, parking at the MSC is free, is not assigned, and does not require a permit. TAPS has proposed a permit parking program at the MSC, consistent with CLRDP policy and IMs, to ensure that spaces are available for high-priority users such as visitors seeking coastal access and campus faculty and staff.

The CLRDP envisions the need for 604 additional parking spaces on the MSC at full CLRDP development. This projection assumes that, under the aggressive TDM goals set by the CLRDP, 40 percent of the trips to the campus will rely on alternatives to single-occupant vehicles and that the envisioned future parking therefore will be adequate to accommodate future demand. CLRDP Policy 5.3 and its implementation measures require that 40 parking spaces at the Seymour Marine Discovery Center be designated exclusively for dual-use coastal access/Seymour Marine Discovery Center visitor access and another 10 in proximity to the coast be designated exclusively for public coastal access. As additional parking is developed, a minimum of 30 additional spaces are to be designated exclusively for visitor parking for public coastal access.

CLRDP Implementation Measure 5.3.7 requires that new development shall include adequate and enforceable measures to ensure that all parking demand is satisfied on campus. The intent of this measure is to ensure that MSC-related parking on streets adjacent to the campus does not impede public parking for coastal access. In particular, this measure addresses potential public parking by persons who wish to visit Natural Bridges State Beach, one margin of which abuts Delaware Avenue near the MSC entrance. Although there is a parking lot within the State Beach site, some members of the public park on the Delaware Avenue side of the park and walk into the park. During weekdays (when MSC classes are in session and parking demand associated with the campus generally is highest), there is very little parking demand along this stretch of Delaware Avenue. Use of Delaware Avenue parking tends to be most intensive on weekend days, although there is some increase of use in the late afternoons on weekdays, when people may visit the beach after work hours. Shaffer Avenue is not typically used for beach-access parking, but a few cars park there each day, probably for access to the adjacent Homeless Garden Project.

The CLRDP (Section 9.2) requires that unpaved parking areas on the MSC, west of McAllister Way, which currently provide a total of about 48 parking spaces, be removed and restored to a natural state to provide improved buffering for the Younger Lagoon Reserve and Wetland 5. Removal of this parking is

included in the proposed MSC Phase A Project; however, it is anticipated that this project element, which is a CLRDP requirement, would be implemented by 2014 irrespective of whether the MSC Project overall begins construction at this time. The proposed Projects also include construction of three new parking lots with total capacity of 110 general and 20 visitor spaces.

Existing parking capacity and MSC Projects-related parking demand are described in detail in Section 3.15.5.2, Tables 3.15-4 and 3.15-5.

### 3.15.1.7 Transportation Planning and Regulatory Setting

#### Americans with Disabilities (ADA) Act of 1990

The ADA is a federal law that prohibits discrimination on the basis of disability in “places of public accommodation” (businesses and non-profit agencies that serve the public) and “commercial facilities” (other businesses). The regulation includes Appendix A to Part 36 (Standards for Accessible Design), which establishes minimum standards for ensuring accessibility when designing and constructing a new facility or altering an existing facility.

Examples of key guidelines include detectable warnings for pedestrians entering traffic where there is no curb, a clear zone of 48 inches for the pedestrian travel way, and a vibration-free zone for pedestrians.

#### Association of Monterey Bay Area Governments

Association of Monterey Bay Area Governments (AMBAG) is an organization composed of city governments in Monterey, San Benito, and Santa Cruz Counties. This organization addresses regional transportation and air quality issues. AMBAG facilitates and coordinates the programming and budgeting of all regional transportation planning and projects. In addition, AMBAG develops and maintains a travel demand model for use in Santa Cruz and the surrounding region that projects and accounts for future growth and travel patterns. AMBAG is the Metropolitan Planning Organization (MPO) for the Monterey Bay region, including Santa Cruz. AMBAG responsibilities with respect to greenhouse gas reduction planning are described in a subsequent section.

#### California Coastal Commission

The CLRDP includes a land-use plan and an extensive suite of policies and implementation measures with which all new development at the campus must comply. For each proposed development, a Notice of Impending Development (NOID) must be filed with the Coastal Commission, demonstrating consistency with the policies established by the CLRDP and affirming the inclusion of relevant CLRDP implementation measures. Development may not proceed until the Coastal Commission has confirmed that the project is consistent with the CLRDP. The CLRDP includes numerous policies and implementation measures relevant to roadways, parking and transportation demand, both for the campus overall, and to be implemented in conjunction with each development. Measures relevant to this project are listed in Section 3.15.2, below. Appendix C of this EIR provides the full text of each applicable measure and indicates how each is implemented by the MSC Projects.

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California Department of Transportation

In the project vicinity, Caltrans sets operations standards and regulates the assessment and mitigation of traffic impacts on state highways, including Highway 1 (Mission Street, in conjunction with the City of Santa Cruz), SR 9, and SR 17.

In 2010, Caltrans' Smart Mobility Framework was adopted. This framework helps to guide and assess how well plans, programs, and projects address and comply with regional transportation planning and TDM goals. It is applicable to various levels of plans, programs, or projects (e.g., Regional Transportation and Blueprint Plans, General Plans, corridor plans, specific development proposals, etc.) in all parts of the state (i.e., urban, suburban, and rural).

Climate Change Planning: AB 32 and SB 375

With the passage of Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, the State of California committed itself to reducing greenhouse gas (GHG) emissions to 1990 levels by 2020. The California Air Resources Board (CARB) is coordinating the response to comply with AB 32.

On December 11, 2008, CARB adopted its Proposed Scoping Plan for AB 32. This scoping plan included the approval of Senate Bill (SB) 375 as the means for achieving regional transportation-related GHG targets. SB 375 provides guidance on how curbing emissions from cars and light trucks can help the state comply with AB 32.

SB 375 requires the CARB to develop regional greenhouse gas emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. CARB adopted targets in September 2010. Using this targets, each of the 18 Metropolitan Planning Organizations (MPOs) in California will prepare a "Sustainable Communities Strategy" (SCS) to reduce the amount of vehicle miles traveled (VMT) in its regions and demonstrate the ability for the region to attain CARB's targets through integrated land use, housing and transportation planning. The first Sustainable Communities Strategy for the Monterey Bay Area will be drafted and integrated into the 2012 Metropolitan Transportation Plan, to be updated every 4 years thereafter. SB 375 also requires that regional housing elements and transportation plans be synchronized on eight-year schedules. In addition, the Regional Housing Needs Assessment (RHNA) allocation numbers developed by AMBAG and other MPOs must conform to the SCS. Finally, MPOs must use transportation and air emissions modeling techniques consistent with California Transportation Commission guidelines.

Monterey Bay Unified Air Pollution Control District

Monterey Bay Unified Air Pollution Control District (MBUAPCD) is responsible for the Air Quality Management Program under the California Clean Air Act. The MBUAPCD monitors air quality including emissions from mobile sources and adopts transportation control measures to reduce air emissions, including greenhouse gas emissions. The measures include expanding TDM programs, improving transit services, traffic-efficient operational improvements (e.g., signal synchronization), park and ride lots, and use of alternative fuels.

### Santa Cruz Area Transportation Management Association

Santa Cruz Area Transportation Management Association (SCATMA) is composed of businesses and government agencies working to address transportation problems in the northern part of Santa Cruz County. One SCATMA goal is to encourage more efficient use of the transportation system.

### Santa Cruz County Regional Transportation Commission

Santa Cruz County Regional Transportation Commission (SCCRTC) sets priorities for major capital improvements, allocates funding for the transportation system, adopts policies and plans future projects to improve mobility, access, and air quality, and encourages the use of alternative transportation. This agency is responsible for preparing the County's Regional Transportation Plan (SCCRTC 2010a), which identifies desirable or necessary motor vehicle, bicycle, transit and pedestrian circulation improvements, and the Regional Transportation Improvement Program, which prioritizes regional projects for state and federal funding share in a five-year funding cycle (SCCRTC 2010b). These documents, the most recent versions of which were published in 2010 (SCCRTC 2010a and 2010b) are updated every four to five years. SCCRTC also manages the Commute Solutions Program, which provides ridesharing and commute alternatives information for commuters traveling to, from, or within Santa Cruz County. The Commute Solutions program helps commuters find carpool partners, form vanpools, ride transit and bicycles, and telecommute, with the goal of reducing the number of motor vehicles traveling on regional roadways. SCCRTC was the region's congestion management agency prior to 2000, but the region subsequently opted out of the state's Congestion Management Program.

The 2010 Regional Transportation Plan (SCCRTC 2010a) identifies a number of future improvement projects in the study area. Identified projects at Project study intersections include improvement to the SR 1/SR 9 (River Street) intersection; design modifications at SR 1/ Mission/ Chestnut/ King/ Union; a sidewalk along Western Drive between SR 1 and High Street; a signal or roundabout at Swift / Delaware; a multiuse path and railroad crossing on Shaffer Road (which currently does not cross the railroad tracks); and improvements on the Bay Street corridor, including widening at Bay/Mission (SR 1), signals at Bay/Escalona and Bay/California, and changes in the geometry of the Bay/ High Street intersection. The 2010 Regional Transportation Improvement Program (RTIPP) does not identify any projects in the current Project study area for funding share within the 2010-11 to 2014-15 study period.

SCCRTC's Regional Transportation Improvement Program (SCCRTC 2010b: Appendix A) sets forth measures of performance for its prioritization of transportation improvement spending, some of which may be relevant to qualitative evaluation of the proposed Project, particularly with respect to campus planning efforts to enhance MSC transportation demand management. These include: average vehicle occupancy on Highway 1 and 17 (currently 1.4 during AM peak and 1.2 during PM peak hour); vehicle hours of delay and average commute times; transit ridership and jobs and housing served by (within ¼ mile of) transit; and number of regional miles of bikeways and pedestrian facilities. The SCCRTC's goals include increases in motor vehicle occupancy; reductions in vehicle delays (and associated air emissions and traffic congestion); increased transit ridership and development patterns that facilitate and encourage transit use; and improvements to and extensions of bicycle and pedestrian facilities, to encourage increased use of these alternative transportation modes.

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*Santa Cruz Metropolitan Transit District*

SCMTD provides the public transit (METRO bus) system for Santa Cruz County. In addition, it is responsible for developing the Short Range Transit Plan for the area.

*UC Santa Cruz Transportation and Parking Services*

TAPS is responsible for transportation services for UC Santa Cruz students, faculty, and staff for both the Main Campus and the MSC. TAPS oversees transit services and parking permits, facilitates and implements TDM measures, and manages the campus bicycle, pedestrian, and vehicle circulation systems and sources.

*City of Santa Cruz and City/UC Santa Cruz Joint Initiatives*

The City of Santa Cruz Department of Public Works manages City-owned public parking and is responsible for engineering and maintenance of City streets. Under UC Santa Cruz' 2008 Comprehensive Settlement Agreement with the City of Santa Cruz and other parties, UC Santa Cruz has contributed its share of the funding of a previously completed Mission Street widening project and of street repairs and repaving on Bay Street/Drive.

*City of Santa Cruz Traffic Impact Fee Program*

The City of Santa Cruz has collected Traffic Impact Fees (TIF) from new development within the city since 2006. The City assesses a one-time fee for each proposed new development at the time of project approval based on the projected number of daily trips. The amount of the fee per trip, which is adjusted annually, is based on the cost of specific identified transportation improvements in the City of Santa Cruz, which have been prioritized to maximize traffic and transit benefits, and are scheduled for implementation in the City's current 10-year capital improvement plan.

Under the 2008 Comprehensive Settlement Agreement, UC Santa Cruz agreed to make payments to the City equivalent to the City's TIF, based on the citywide TIF fee schedule in effect at the time new development receives all required approvals. This agreement is applicable to the proposed CBB and NEF Projects, which would generate operational traffic. In accordance with the University's commitment under the Comprehensive Settlement Agreement, in 2008 UC Santa Cruz contributed the Traffic Impact Fee equivalent for all new vehicle trips projected to be generated by the Main Campus under the 2005 LRDP (3,900 new trips over 2004 levels, or a total of 28,700 average daily trips), as monitored through averaged biannual counts of daily trips through the Main Campus' two entrances. The University also paid an equivalent of the traffic impact fee for the occupancy of buildings A and B at UC Santa Cruz' 2300 Delaware Avenue facility, based on a projected trip generation rate per 1,000 gsf of office space.

### 3.15.2 Applicable CLRDP Implementation Measures

An extensive list of CLRDP policies and IMs related to traffic and transportation are applicable to the proposed Projects. The full text of each applicable measure is provided in Appendix C of this EIR, which also explains how each IM is addressed through the MSC Projects. Most of the relevant IMs apply

primarily to the proposed CBB Project, which is the only proposed project that would result in new operational trip generation for the MSC.

### 3.15.3 Applicable CLRDP EIR Mitigation Measures

The following CLRDP EIR mitigation measures are applicable to and incorporated into the proposed Projects.

- General Mitigation Measure 4.15-1
- General Mitigation Measure 4.15-2
- General Mitigation Measure 4.15-3
- General Mitigation Measure 4.15-4
- General Mitigation Measure 4.15-5
- General Mitigation Measure 4.15-6

### 3.15.4 Relevant Project Characteristics

It is anticipated that the CBB Project, which would include new employees and student seminar space, would generate new trips to the MSC and between the MSC and the Main Campus. The proposed NEF Project includes a new 15-space visitor access parking lot for access to pedestrian and bicycle trails on the MSC, which would generate a small number of new vehicle trips to the MSC. The proposed MSCI Project consists of infrastructure improvements within the campus that would not generate new operational traffic but would contribute to construction traffic. The proposed SRP Phase 1B Project consists of small scale, low intensity habitat restoration activities that also would not generate new traffic either between the campuses or to the MSC.

### 3.15.5 Impacts and Mitigation Measures

#### 3.15.5.1 Standards of Significance

The following standards of significance for assessment of traffic impacts are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, an impact is considered significant if the MSC Projects would:

##### CEQA Thresholds

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, an impact to transportation/traffic would be considered significant if the proposed project would:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including

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mass transit and non-motorized travel and relevant components of the circulation system including but not limited to intersections, streets, highways and freeways, pedestrian and bicycles paths, and mass transit

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Result in inadequate emergency access
- Conflict with applicable policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities

CEQA Thresholds Not Applicable to the Proposed MSC Projects

The following CEQA thresholds are not applicable to the proposed project:

- Result in a change in air traffic patterns including either an increase in traffic levels or a change in location that results in substantial safety risks

The closest airport or airstrip to the MSC is several miles distant and there are no low-flying flight paths in the campus vicinity. Development under the CLRDP has no potential to result in impacts with respect to air traffic levels or patterns.

- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways

The revisions to CEQA Guidelines Appendix G adopted in 2010 increase the emphasis on consistency with public policy regarding public transit and other TDM systems and add a standard referencing consistency with the policies and measures of transportation effectiveness adopted by the regional congestion management agency. Consistent with California Government Code Section 65089, the County of Santa Cruz, acting as the County's Congestion Management Agency (CMA), was responsible for preparing, monitoring, and enforcing the County's Congestion Management Plan (CMP) prior to 2000. In 2000, all jurisdictions in Santa Cruz County were determined to be exempt from the CMP in accordance with Assembly Bill (AB) 2419 (Bowler), Section 65088.3. This standard of significance therefore is not applicable to the proposed Projects. Nonetheless, the analysis that follows discusses the consistency of the proposed Projects with SCCRTC's measures of effectiveness for performance of the circulation system, which are discussed below.

- Result in inadequate parking capacity

A revision of CEQA guidelines in 2010 eliminated parking capacity as an impact significance threshold. While the lack of adequate parking capacity therefore is no longer considered a significant transportation and traffic impact, adequate provision for public coastal access, including preservation of public coastal access parking, is a Coastal Act consideration. As detailed below, the net increase in parking supply associated with implementation of the proposed MSC Projects may not be sufficient to accommodate all MSC parking demand on campus, which would be inconsistent with CLRDP IM 5.3.7, which requires

that all campus parking demand be satisfied on campus. The intent of this IM was to ensure that adequate parking for coastal access is available to the public. Inconsistency with the IM would not be a physical effect upon the environment. Physical effects upon the environment that might result from trip generation and associated parking demand in excess of TDM goals, and from increased circulation on Delaware Avenue that might result from increased demand for off-campus parking, are addressed in Section 3.15.5, below. The consistency of the proposed CBB Project with the Coastal Act and with IM 5.3.7, specifically, is analyzed in Section 3.10, *Land Use*. Note that, as described under Chapter 2, *Project Description*, above, the University has proposed Amendment #1 to the CLRDP. Action 11, under the proposed amendment, would modify IM 5.3.7 to allow for the possibility that some campus-related parking would be accommodated on City streets outside the MSC entrance, providing that parking demand is monitored to ensure that Campus parking demand does not conflict with public demand for parking for coastal access. This amendment is proposed as a Land Use consistency mitigation measure in Section 3.10, above.

#### *Significance Thresholds for Intersection Levels of Service (LOS)*

The following thresholds are used in this section to evaluate whether the project would conflict with established level of service standards and other quantitative measures of effectiveness for the performance of the circulation system, including vehicle delays. The City of Santa Cruz uses the thresholds listed below to determine whether projects within the jurisdiction of the City would result in a significant adverse effect on traffic conditions at an intersection. These thresholds were used in the analysis of the traffic impacts of UC Santa Cruz' MSC CLRDP.

A project causes a substantial increase in traffic (a significant impact) if:

- The peak hour level of service (LOS) (defined in Section 3.15.5.2, below) at a signalized intersection degrades from an acceptable level to an unacceptable level due to the increase in traffic generated by the proposed project and the project increases the traffic volume in that intersection by more than 3 percent, or
- The project increases the traffic volume by more than 3 percent at a signalized intersection that already operates at an unacceptable level without the project, or
- An unsignalized intersection meets the Caltrans peak hour signal warrant for addition of a traffic signal light with the addition of project-generated traffic and the project increases the traffic volume by more than 3 percent.

The CLRDP EIR established a separate threshold for identifying cumulative intersection LOS impacts, under which the project's addition of 1 percent to cumulative traffic levels that would exist without the project would be a cumulatively considerable impact. The Campus has determined that for future projects developed under the CLRDP, the same threshold of 3 percent will be used for identifying cumulatively considerable traffic impacts as for project-level impacts. This cumulative threshold is consistent with that used by the City of Santa Cruz (as detailed above) for both project-level and cumulative assessments, and this single threshold also was used in the Campus' 2005 LRDP EIR for the Main Campus. Further, the Campus has committed, through the mitigation measures in the CLRDP EIR, to pay its fair share of the cost of improvements at the intersections at which cumulative impacts of full CLRDP development were identified. The Campus also has committed, under the 2008 Comprehensive Settlement Agreement, to

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contribute to the City's TIF program based on projected trip generation from new campus development. Therefore, the Campus will mitigate for traffic impacts previously identified, as well as those identified for each subsequent project

**City of Santa Cruz Facilities.** The City of Santa Cruz General Plan considers LOS D to be the minimum acceptable LOS for most City streets and intersections during the PM peak hours. The acceptable level of service for City streets and intersections in the City's Central Core Area from Downtown to the Beach Area during the PM peak hour is LOS E. This area is bordered by Highway 1, Chestnut Street, Ocean Street, and the beach. The City considers that the acceptable level of service for Mission Street, Ocean Street, Riverside Street, Beach Street, Front Street from Soquel Avenue to Beach Street, Soquel Avenue from Ocean Street to Front Street, Barson Street from Ocean Street to Riverside Street, and the intersections on those streets during weekend peak hours is LOS E.

**Caltrans Facilities.** Caltrans District 5 aims to maintain a level of service at the LOS C/D cusp threshold (i.e., LOS C) for State Highway facilities, which includes SR 1, SR 9, and SR 17 in the project vicinity. However, Caltrans has recognized that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the target LOS (e.g., at LOS E or F), the existing measure of effectiveness (MOE) should be maintained. In other words, the existing LOS and delay becomes the new threshold and the goal of mitigation would be to maintain the LOS and delay at existing values, which may be lower than LOS C (Caltrans 2002). The City considers LOS D to be acceptable for Mission Street in the urbanized part of the City. This EIR therefore uses the City threshold of LOS D both for City streets and for State facilities, and identifies impacts at intersections where operations drop below this threshold (as has been the historic practice in University planning documents).

### 3.15.5.2 Analytical Method

#### *Analysis of Intersection Operations*

To determine whether a project would result in significant traffic impacts, a projection is developed of the number of motor vehicle trips likely to be generated by the project on an average day, and during morning and evening peak traffic hours when traffic congestion is likely to be greatest. Trip generation projections are based on the square footage of development and/or project population, and the types of use and operational characteristics of the project (e.g. office building, research and development, classrooms, etc.). Local and regional traffic models are then consulted to determine the likely distribution of vehicle trips arriving at and departing the site. Key intersections along the routes to which the project is likely to contribute traffic are selected for operational analysis, and the projected project trips are assigned proportionally to these intersections based on the trip distribution model. Counts of existing traffic are made or obtained for each study intersection. The traffic analyst then quantifies operations (through level of service analysis, as described below) in each turning movement in each of the selected intersections under existing traffic conditions; under existing conditions with the addition of projected project traffic; and under projected future cumulative conditions with and without the addition of projected project traffic. Unsignalized intersections that would operate under substandard conditions are assessed to

determine whether the intersection meet signal warrants; that is, whether the addition of a traffic signal would improve operational conditions. If levels of service at an intersection would decline significantly or delays increase substantially as a result of the addition of project traffic, or if the project would make a substantial contribution to traffic at an intersection with substandard LOS under future cumulative conditions and, for unsignalized intersection, if addition of a traffic signal would improve operating conditions, then the project's traffic impact would be significant. Each of these steps is detailed further below.

**Level of Service Analysis.** This section summarizes the methodologies used to perform peak hour intersection capacity analysis at signalized and unsignalized intersections, consistent with Caltrans' 2002 guidance on preparing traffic impact studies (Fehr and Peers 2011). Level of service analysis was conducted by Fehr and Peers licensed traffic engineers, based on traffic counts provided by UC Santa Cruz (TDS Bay 2010). SYNCHRO software was for signalized and unsignalized intersections following the operations methodology described in the Transportation Research Board 2000 Highway Capacity Manual (HCM) (Fehr and Peers 2011).

“Level of Service” (LOS) is a measure of congestion that ranges from LOS A (free-flow condition) to LOS F (highly congested condition). LOS is defined in terms of delay at intersections, specifically in terms of average stopped delay per vehicle. LOS quantifies levels of delay and congestion, which are a measure of driver and/or passenger discomfort, frustration, fuel consumption, and lost travel time. Analysis of traffic volumes and delays is adjusted to account for lane width, on-street parking, pedestrians, traffic composition (i.e., percent trucks), and shared lane movements. Table 3.15-1, below, summarizes the relationship between the level of service rating for signalized intersections and the average control delay per vehicle.

**Table 3.15-1**

**Level of Service Definitions for Signalized Intersections**

Level of Service	Average Control Delay Per Vehicle (seconds)	Description
A	≤ 10.0	Operations with very low delay occurring with favorable progression and/or short cycle length.
B	10.1 to 20.0	Operations with low delay occurring with good progression and/or short cycle lengths.
C	20.1 to 35.0	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.
D	35.1 to 55.0	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.
E	55.1 to 80.0	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.
F	> 80.0	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.

Source: Chapter 16, 2000 Highway Capacity Manual, Transportation Research Board (TRB), National Research Council, Washington, D.C. 2000.

**Notes:**

Cycle length refers to the time (in seconds) for traffic signal to complete a cycle of green indications for all movements.

Cycle failure refers to conditions when traffic congestion reaches a level where some vehicles cannot pass through the intersection in one or more cycles.

The methodology for evaluation of unsignalized intersections also relies on the operations method of the 2000 Highway Capacity Manual. This method calculates the average total delay per vehicle based on the availability of adequate gaps in the main street through traffic. A LOS designation is assigned based upon the respective average delay per vehicle. Table 3.15-2, below, summarizes the average delay criteria used to determine the level of service at unsignalized intersections.

**Table 3.15-2**  
**Level of Service Definitions for Unsignalized Intersections**

Level of Service	Average Delay Per Vehicle (seconds)
A	≤ 10
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	> 50.0

**Source:** Fehr & Peers 2011, after Chapter 17, 2000 Highway Capacity Manual, Transportation Research Board (TRB), National Research Council, Washington, D.C. 2000.

**Signal Warrant Analysis.** Signal warrant analysis examines the general correlation between the projected traffic volumes and the need to install new traffic signals. Signal warrant analysis, based on existing peak hour turning movement volumes, was conducted at all unsignalized study intersections using Caltrans’ Manual on Uniform Traffic Control Devices for Streets and Highways (Fehr and Peers 2011), Warrant No. 3, Peak Hour signal warrant. An intersection meets a signal warrant if a traffic signal light would improve safety or operating conditions at the intersection.

*MSC Projects Trip Generation*

Of the proposed Projects, only the CBB Project and the NEF Project would generate operational trips. Trip generation by the additional employees, students, and trail users associated with these proposed projects is described below and detailed on Table 3.15-3, which follows.

**Employees—Research & Development.** The CBB Project would accommodate 96 employees. To estimate the number of trips generated by these CBB employees, trip generation rates from the Institute of Transportation Engineers’ (ITE) Trip Generation Manual, which are based on surveys taken throughout the United States in primarily automotive-dominate areas, were applied for the “Research and Development” (R & D) land-use type.

Of the total ~~49,550 sf~~ of approximately 47,500 gsf of space that would be provided by the proposed CBB Project, about 38,600 sf consists of labs, research support space, offices, and a small conference room that would be considered research and development space. Based on ITE rates for research and development uses (24 daily trips per 1,000 gross square feet, including 2 AM-peak hour trips and 3 PM-peak hour trips), the research and development space at the CBB facility would generate 313 average daily trips; however, based on a recent survey (Davenport 2010), approximately 22 percent of the existing employees at the MSC bike to work. Existing MSC employees also utilize car and van pools, transit, and other

alternative access modes. Similar travel modes are anticipated for the employees who would be accommodated at the CBB, as these individuals will have the same access to bicycle facilities and other TDM incentives and initiatives as the existing employees. Therefore, the gross trip generation estimates for CBB's R&D space were reduced by 25 percent to account for use of alternative modes, resulting in an estimated total trip generation for the CBB R&D space of 235 average daily trips. This number takes into account both employees and other users of the CBB R & D space, including students using the seawater lab and attending classes in the small conference room.

**Student Trip Generation.** The proposed CBB Project is expected to add up to 311 students to the average daily student population based on expected enrollment in the upper division classes likely to be taught at the CBB facility. On an average day, about 260 students would attend classes in CBB's large conference room, the square footage of which is not included in the R & D calculation reported above. This student headcount does not discount for students enrolled in more than one class, although a survey of students attending classes at the MSC in winter 2011 indicated that about 30 percent of these students were attending more than one class at the campus on the day they were present (Davenport and Pageler 2011). Student trip generation may therefore be as much as 30 percent less than indicated by the trip generation analysis that follows.

The following assumptions were used to estimate trip generation associated with students attending classes or labs at the CBB facility:

- A total of 46 of the students (24 accommodated in the seawater lab and 22 in the small conference room) are taken into account in the R&D-based trip generation rate described above. Five student interns would assist in the greenhouses on an average day (with irregular and negligible trip generation).
- An average of 260 students would attend lectures in the seminar room during any given day.
- Maximum occupancy of the seminar room is 125 students.
- Each of the students associated with the seminar room would make up to two daily trips to the site (one to arrive and one to depart). This is a worst-case assumption.
- Peak hour trips to/from the site are assumed for full occupancy of the seminar room.
- All students in the large conference room would arrive during the morning peak hour and depart during the evening peak hour.

The 2004 CLRDP EIR assumed that all of the students attending classes at the MSC would arrive by motor vehicle, with average vehicle occupancy of 1.25 students per car. Utilizing these assumptions, the 260 students attending classes in the large conference room would generate a total of 416 daily trips, including 104 peak hour trips. Trips generated by students attending labs in the seawater lab and small conference room are included in the employee trip generation above, based on ITE trip generation from R&D space, as explained above.

Site access and TDM program factors that may affect vehicle trip generation for this site include:

- 
- Under a program to be implemented in fall 2011 by TAPS, undergraduate students will not be allowed to park on the MSC.
  - On-street parking currently is available near the site.
  - Students receive free SCMTD public transit passes and there are transit stops at the campus entrance and within ¼ mile of the campus entrance.
  - For existing classes at the campus, about 24 percent of students bicycle to the site; additionally, the campus offers bicycle shuttle services from the Mission Street to the Main Campus such that the steep terrain between the MSC and the Main Campus does not impede use of this travel mode.
  - Van pools are available for employees.
  - The campus offers a car-share program.
  - Consistent with CLRDP IM 5.7.2, a shuttle system will be provided between the project site and the Main Campus if demand warrants.

The California Air Pollution Control Officers' Association (CAPCOA) guidelines on trip reductions associated with Best Management Practices for transportation demand management measures indicate that, based on available research, the following reductions would apply for the student uses at the site:

- 20 percent reduction for the parking supply limitations described above
- 10 percent transit reduction for the subsidized transit services described above
- 5 percent reduction for other alternative mode usage at the site (such as bicycles)

The resulting trip reduction estimates would be approximately 35 percent. After the appropriate reductions, the resulting trip generation by students would be 270 daily trips and 65 peak hour trips.

The potential available supply of parking spaces on Delaware Avenue that might be used by persons working or attending classes at MSC was estimated by reviewing the length of the roadway within about one block of the MSC entrance (that is, along Delaware Ave. between the campus entrance and Natural Bridges Drive, and along Shaffer Road between the campus entrance and the railroad tracks), assuming 20 feet per parked car. Using this information, Delaware Avenue between Natural Bridges Drive and Shaffer Road has a theoretical capacity of approximately 150 parking spaces, and Shaffer Road between the campus entrance and the railroad tracks has a total capacity of about 50 cars, for a total parking capacity near the campus entrance of about 200 cars.

**Public Trips for Coastal Access.** The proposed NEF Project would improve access to the public trail system by provided a new coastal access parking lot reserved for the public, just inside the campus entrance. The vehicle trip generation estimates provided in Table 3.15-3 account for trips generated by this improved access and is consistent with the public access trip generation estimates provided in the 2004 CLRDP EIR. The additional trips from increased public trail access are estimated to generate 40 net new daily trips, including 8 new AM peak-hour trips (4 inbound and 4 outbound) and 8 new PM peak-hour trips (4 inbound and 4 outbound).

**Summary.** The proposed CBB and NEF Projects together are estimated to generate 545 average daily trips during the academic year including 108 new AM peak-hour trips (98 inbound and 10 outbound) and 104 new PM peak-hour trips (9 inbound and 95 outbound). Trip generation is detailed in Table 3.15-3, below.

**Table 3.15-3  
MSC Projects Projected Trip Generation**

Method	ITE LU Type	Size	Daily	AM			PM		
				In	Out	Total	In	Out	Total
<b>Employee Trip Generation (A)1</b>									
ITE	R&D (760) (24 trips/ 1,000 gsf)	38.600 KSF	313	39	8	47	6	35	41
Bicycle and other TDM Reduction (25%):			-78	-10	-2	-12	-1	-9	-10
Estimated Vehicle Trip Generation:			235	29	6	35	5	26	31
<b>Student Trip Generation (B)1</b>									
Student Usage and Vehicle Occupancy Estimates from 2004 CLRDP EIR (1.25 students/car)	--	260 Students	416	100	0	100	0	100	100
Students in greenhouses, seawater lab, and small conf. room	Incl in R&D est above	-	-	-	-	-	-	-	-
Travel Demand Reduction (35%):			-146	-35	0	-35	0	-35	-35
Estimated Vehicle Trip Generation:			270	65	0	65	0	65	65
<b>Increased Public Trail Access Trip Generation (C)2</b>									
Visitor trip generation assumptions consistent with 2004 CLRDP EIR (20 visitors/day, 2 trips/visitor)	--	20 Trail Users	40	4	4	8	4	4	8
<b>Total Trip Generation (A+B+C)</b>									
--	--	--	545	98	10	108	9	95	104

Source: Fehr & Peers, 2011.

Note: Rates for visitor trips based on 2004 UCSC Campus Trip Survey. See text for detailed discussion of the estimated trip generation potential for the site.

Project Trip Distribution and Assignment

The distribution of vehicle trips for the proposed Projects was estimated based on existing travel patterns and locations of complementary land uses, primarily residential neighborhoods and nearby commercial services. The major direction of approach and departure for the project site is shown on Figure 3.15-3.

Trips generated by the proposed project were assigned to the roadway system based on the directions of approach and departure discussed above. The trip assignments at each study intersection for both peak hours are shown on Figure 3.15-4.

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*Campus and MSC Projects Parking Supply and Demand*

An analysis of MSC parking supply and potential CBB Project and cumulative MSC demand is provided in this section because the availability of parking is one factor in the effectiveness of the TDM programs included in all MSC projects in compliance with the CLRDP. Limited parking supply is one factor that may encourage the use of alternative transportation. At the same time, demand for limited parking may increase local traffic circulation by drivers seeking parking, and may increase the potential for motor vehicle conflicts with persons using pedestrian and bicycle travel modes. The level of parking demand is closely related to trip generation and to the effectiveness of TDM measures.

The proposed MSC Projects would add three new parking lots at the MSC, with total capacity of 130 vehicles. This would include a 15-space lot just inside the campus entrance (Parking Lot A), designated for public coastal access visitors only; Parking Lot D, a 77-space lot in Development Subarea 4 adjacent to the CBB lab building with five public coastal-access-designated spaces; and Parking Lot C, a 38-space lot in Development Subarea 6. Under the MSC Project Phase A, existing informal parking along the west side of McAllister Way (with a capacity of about 48 spaces) would be removed. Thus, the net total new parking provided by the proposed Projects is 82 spaces on campus, 20 of which would be designated solely for public coastal access visitors.

In 2010, there were 175 parking spaces on the MSC and average utilization was about 75 percent (or 131 spaces daily). CLRDP IM 5.4.1 (Development of New Parking), requires that no new parking space shall be developed at the MSC until existing parking spaces in a parking zone are greater than or equal to 90 percent. While parking utilization in the Middle Terrace area of the campus (the CBB vicinity) had not reached 90 percent as of 2010, it is anticipated that the new lots will be needed to serve the demand generated by commuters associated with the proposed CBB Project and for vehicles displaced by the removal of the two informal lots along McAllister Way. Further, the campus has proposed a parking management program that will designate 50 of the existing campus parking spaces for visitor and coastal access use only. Existing Plus Project parking supply therefore would total 267 spaces, including 197 stalls for general use and 70 stalls for coastal access visitors, as indicated in Table 3.15-4, below.

**Table 3.15-4  
Existing and Projected Parking Supply**

User	General Use	Visitor-Designated	Total
<b>Existing supply</b>	175	0	175
<b>Additions*</b>	10	50	60
<b>Subtractions**</b>	-98		-98
<b>Net existing with implementation of parking management</b>	87	50	137
<b>CBB new supply</b>	110	20	130
<b>Total supply with CBB:</b>	197	70	267
<b>Total supply designated for visitors</b>		70	70
<b>Total supply available to UCSC users</b>	197		197

\*Made available by removal of construction staging, and implementation of new parking management

\*\* Informal parking removed by restoration or re-designated for special use

The CBB Project's new research and development space and greenhouses are expected to accommodate 96 employees on-site. Based on trip generation projections reported in the preceding section, existing campus mode splits are expected also to apply to the CBB Project's new trip generation, which would reduce motor vehicle trip generation and associated parking demand from the CBB Project by about 25 percent. Assuming the remaining 75 percent of trips are by single occupant motor vehicles, the research and development employees would be expected to generate parking demand for 72 spaces.

The CBB small conference room, seawater lab, and greenhouses are expected to accommodate 51 students on an average day (22 in the small conference room, 24 in the seawater lab and 5 in the greenhouses). Thirty-five percent of these students are expected to utilize alternative modes of travel to access the site, based on the mode split surveys previously reported. As reported in the CLRDP EIR, average vehicle occupancy for student vehicles is 1.25 students per car; thus the students who drive would generate a parking demand of 27 spaces. As shown above, the large seminar room has a capacity of 125 persons. It is estimated that, at peak usage, use of the large seminar room would generate demand for 65 parking spaces at any given time. In summary, the employees and students associated with the CBB project could generate demand for 164 parking spaces at any given time, based on building-space-based trip generation.

Alternatively, parking demand from the CBB project could be projected based on actual parking utilization rates by the existing MSC population in spring 2010. Existing average daily population on the campus includes about 140 UC Santa Cruz employees, about 295 students, and a highly variable number of daily visitors. As detailed in Table 3.15-5, below, the campus presently includes 175 parking spaces, all of which are available to employees, students, and visitors. Average daily parking utilization in fall 2010 was about 131 spaces (Pageler 2010). Conservatively assuming that only 20 of these spaces presently are used by visitors at any given time, the UC Santa Cruz population of about 435 persons uses

111 spaces at any given time, a ratio of about 0.26 spaces per person. The CBB project has a projected average daily population of 407 persons. At 0.26 parking spaces per person, total average parking demand from the CBB facility would be about 106 spaces at any one time based on existing parking utilization ratios. Thus, if the CBB Project generated parking demand at the same rate as existing MSC facilities, the project will result in substantially lower demand for parking than estimated based on trip generation from new building space.

Under either scenario, the proposed MSC Projects are anticipated to result in parking demand for about eight new visitor vehicles. Since the MSC Projects would provide 20 new coastal access visitor parking spaces, visitor parking space supply on the campus would be more than adequate to accommodate anticipated visitor parking demand.

Results of the two methods of demand calculation are summarized in Table 3.15-5, below. Based on these calculations, UC Santa Cruz demand for parking associated with the proposed Projects would range from 106 to 164 parking spaces and 8 visitor parking spaces, for a total parking demand (UC Santa Cruz employees and students plus visitors) from the CBB and NEF projects of 114 to 172 parking spaces.

Traffic consultants recommend that parking supply exceed demand by a minimum of 10 percent to accommodate circulation and turnover. As shown on Table 3.15-5, the recommended total supply for existing plus proposed UC Santa Cruz users (setting aside visitors, for whom 70 spaces of designated supply is provided) ranges between 239 and 303.

**Table 3.15-5  
Projected Parking Demand**

User	Parking Demand (building space based)	Parking Demand (based on existing utilization/population ratios)	Recommended Supply (for bldg-space-based demand) (projected demand + 10%)	Recommended Supply (for utilization-based demand) (projected demand + 10%)
<b>Existing Utilization (assumed employees and students)</b>	111	111	122	122
<b>Existing Utilization (assumed visitors)</b>	20	20	22	22
<b>CBB Visitors</b>	8	8	9	9
<b>CBB R &amp; D Employees</b>	72	106	79	117
<b>CBB R &amp; D Students (undergraduates)</b>	27		30	
<b>CBB Seminar Students (undergraduates)</b>	65		72	
<b>Total CBB employee and student demand/recommended supply</b>	164	106	181	117
<b>Total visitor demand/recommended supply</b>	28	28	31	31
<b>Total UCSC employee/student (existing and propose) demand/recommended supply</b>	275	217	303	239
<b>Total</b>	303	245	334	270

With the implementation of the proposed MSC Projects, and with anticipated implementation of parking management on the site, a total of 197 spaces would be available to UC Santa Cruz users and 70 spaces to visitors. As indicated above, existing and proposed visitor parking would more than adequately accommodate existing and projected visitor populations during class times, and there would be abundant additional parking available to visitors during non-class times. However, at the projected rates of demand, parking demand from MSC-affiliates, with implementation of the proposed MSC Projects, would exceed the available parking supply on the MSC. Unmet demand could range between about 42 spaces (based on existing utilization ratios) and 106 spaces (using space-based demand calculations). MSC-affiliate drivers who are not able to find parking on campus would likely seek parking on City streets outside the campus.

The segment of Delaware Avenue between the MSC entrance and Natural Bridges Drive, where the street is wide and parking can be accommodated along both sides, and the east side of (the narrower) Shaffer Road between the MSC entrance and the railroad tracks, provide total parking capacity for about 200 vehicles. Presently, utilization of these areas on a typical weekday totals around 10 to 15 cars and trucks. During special events at Natural Bridges State Beach, utilization of these areas, particularly on Delaware Avenue, might rise to around 30 spaces. However, these special events most often occur on weekends, when MSC-affiliate use of the campus is lightest and MSC-related parking demand also would be expected to be lightest.

Additional discussion of trip generation and related parking demand is presented in Section 3.15.5.3, Project Impacts and Mitigation Measures, below.

#### *Analytical Scenarios for Traffic Operations*

The Traffic Impact Study prepared for the project (Fehr and Peers 2011) projected future traffic volumes, and conducted analyses of intersection levels of service and signal warrants under the following scenarios:

- Existing Conditions—Existing traffic volumes obtained from counts conducted in October and November of 2010 (TDS Bay 2010).
- Existing Plus Project Conditions—Existing volumes plus traffic generated by the proposed CBB and NEF Projects.
- Cumulative without Project Conditions—Existing traffic volumes plus traffic from development within the City of Santa Cruz that is under construction, approved or pending, and UC Santa Cruz development that is planned, funded, proposed or approved based on UC Santa Cruz' ten-year Capital Financial Plan<sup>2</sup>, plus regional background growth based on regional modeling of traffic volumes and traffic distribution.
- Cumulative Plus Project Condition—Traffic estimates based on Cumulative without CBB and NEF Project volumes plus traffic estimates for the proposed CBB and NEF Projects.

<sup>2</sup> Note that UCSC's 2010-11 through 2019-2020 Capital Financial Plan projects future development annually through 2015-16. Projects through this date therefore are considered reasonably foreseeable for purposes of this cumulative analysis. Project timing and scheduling is increasingly uncertain after 2016 and therefore is not considered reasonably foreseeable.

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Each of these scenarios is described in greater detail below. Traffic counts and intersection LOS analysis data used in the MSC Projects traffic impact study, which provide the basis for the analysis of intersection operation impacts in this section, are provided in Appendix H of this EIR. The full traffic technical report for the MSC Projects (Fehr and Peers 2011) is available for review at the offices of Physical Planning and Construction, UC Santa Cruz.

*Existing (Baseline) Conditions*

**Intersection Volumes and Lane Configurations.** Traffic counts conducted in October and November of 2010 at intersections throughout Santa Cruz were used to assess existing conditions at each of the study intersections. All of the baseline counts were conducted when UC Santa Cruz was in session. Fehr and Peers staff also inspected each intersection to verify lane configurations and operational features such as crosswalks and control mechanisms. The existing lane configurations of the study intersections and the existing peak-hour volumes at the study intersections are shown on Figure 3.15-6.

**Existing Levels of Service at Study Intersections.** Peak traffic conditions generally occur on weekday mornings between 7:00 am and 9:00 am and evening from 4:00 pm to 6:00 pm. Study intersections were evaluated for weekday morning (AM) and evening (PM) peak hour traffic conditions based on traffic volumes projected for these times. Intersection operations were evaluated for the one hour during each of these periods with the highest measured traffic volume. Table 3.15-6, below, indicates existing levels of service at the selected study intersections under existing (2010) conditions. Existing intersection lane configurations, signal timings, and peak-hour turning movement volumes are used as inputs for the LOS calculations.

**Table 3.15-6**  
**Existing Intersection Levels of Service**

Intersection	Control	Peak Hour	Delay <sup>1</sup>	LOS <sup>2</sup>
<b>1. Western Drive/ High Street</b>	Side-street Stop	AM	18.7	C
		PM	35.7	<b>E</b>
<b>2. Western Drive/ Highway 1</b>	Signal	AM	13.4	B
		PM	12.7	B
<b>3. Natural Bridges Drive/ Delaware Avenue</b>	All-way Stop	AM	8.3	A
		PM	8.6	A
<b>4. Swift Street/ Delaware Avenue</b>	All-way Stop	AM	13.4	A
		PM	14.8	B
<b>5. Swift Street/ Highway 1</b>	Signal	AM	16.4	B
		PM	17.2	B
<b>6. Mission Street/ Almar &amp; Younglove Avenue</b>	Signal	AM	13.9	B
		PM	31.5	C
<b>7. Mission Street/ Bay Street</b>	Signal	AM	20.4	C
		PM	28.3	C
<b>8. Mission Street/ Laurel Street</b>	Signal	AM	31.6	C
		PM	36.9	D
<b>9. Mission Street/ King &amp; Union Street</b>	Signal	AM	25.0	C
		PM	27.7	C
<b>10. SR 1/ Mission Street/ Chestnut St</b>	Signal	AM	34.6	C
		PM	29.6	C
<b>11. Highway 1/ River Street (Highway 9)</b>	Signal	AM	41.4	D
		PM	67.3	<b>E</b>

Source: Fehr & Peers, February 2011.

**Notes:**

<sup>1</sup> Whole intersection weighted average total delay for signalized and all-way stop-controlled intersections (expressed in seconds per vehicle). For side-street stop controlled intersections, delays for worst movement and average intersection delay are shown: worst movement (intersection average).

<sup>2</sup> LOS calculations performed using the 2000 Highway Capacity Manual - Special Report 209 delay methods for signalized and unsignalized intersections. Where AM and PM peak LOS varies, PM peak LOS is shown in parentheses.

Unacceptable operations are indicated in **bold** type.

*Projected Cumulative Traffic Volumes*

Projection of cumulative conditions begins with current conditions (2010, the baseline year) and adds traffic attributable to reasonably foreseeable growth. This growth has two components: growth attributable to specific reasonably foreseeable projects and background growth. Project construction would be completed by 2014 and it is anticipated that the project would be fully operational during the 2014-2015 academic year. The analysis projects the volume of traffic in 2016 at each study intersection and uses these volumes to calculate Cumulative Conditions (traffic levels without the proposed Projects but with other anticipated growth in the region) and Cumulative Plus Project Conditions. The year 2016

was used as the cumulative horizon for this project, as this is the year through which reasonably foreseeable development is projected in the Campus' current 10-Year Capital Plan.

Estimation of traffic volumes under the 2016 scenario took into account the City of Santa Cruz' projects under construction, approved or planned, and UC Santa Cruz' planned, approved or funded development (see Table 3.0-1 (in Chapter 3, above). To account for projected regional growth, an annual growth factor of 1.2 percent per year for the ten-year period between 2010 to 2016 (representing background growth not associated with the identified projects) was applied to the existing traffic volumes and added to the existing, approved, and pending project volumes to project cumulative traffic volumes for 2016. The 1.2-percent annual growth factor was derived from forecasts from the AMBAG regional travel demand model, which is used to estimate future traffic volumes associated with projected land-use changes in the Santa Cruz and Monterey County area, including projected enrollment, employment, and housing increases at UC Santa Cruz projected as of 2008. Note that on the basis of current UC Santa Cruz projections, UC Santa Cruz enrollment levels are expected to remain close to existing levels (slightly more than 16,000 students) through 2016 (UC Santa Cruz 2010). However, previous projections indicated that UC Santa Cruz enrollment overall could increase to 17,615 by 2016. Therefore, while traffic projections likely are conservatively high, they ensure that no potential impact is understated.

### 3.15.5.3 Project Impacts and Mitigation Measures

#### *Consistency with Transportation Planning for All Transportation Modes*

<b>MSC Projects Impact TRA-1</b>	The CBB Project would increase campus student and employee population. The NEF Project visitor parking lot also would accommodate additional visitor population. If persons accessing the campus elect to use single-occupant vehicles, the MSC Projects could impede achievement of the CLRDP Policy 5.2 goal for minimization of motor vehicle trips and parking, which would be inconsistent with regional and CLRDP planning, and could increase traffic congestion and conflict with regional TDM programs and the achievement of TDM goals.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	Implementation Measure 5.2.2—Alternatives to the Single-Occupant Vehicle  Implementation Measure 5.8.3—TDM Coordination <del>through IC</del>
<b>Applicable Projects/Project Elements</b>	CBB NEF visitor parking
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure TRA-1A:</b> UC Santa Cruz shall widely disseminate transportation information to visitors, staff, faculty, and students at the MSC through the UCSC web page. Printed

	<p>information shall also be made available at central locations on the MSC, and new employees at the site will be informed of transportation options and referred to the online materials. In addition, students registering for classes or internships at the MSC shall be informed of parking restrictions at the MSC and of transportation options including computer-matched carpooling, transit, and bicycle and pedestrian routes to the site. All such TDM and other transportation materials shall include clear description of the available shuttles, SCMTD bus options, and other alternative transportation programs (including schedules, costs, etc.); availability of secured bicycle storage facilities within buildings for employees; availability of lockers and showers; campus maps with appropriate facilities identified; etc.</p>
	<p><b>MSC Projects Mitigation Measure TRA-1B:</b> UC Santa Cruz will conduct a baseline survey of parking utilization on both sides of the segment of Delaware Avenue between Natural Bridges Dr. and the campus entrance in fall 2011 and then will monitor Delaware Ave. and Shaffer Road parking utilization in this area twice annually (fall and spring) during times and days when MSC classes are scheduled. If parking utilization exceeds 80 percent and there is evidence of increasing utilization from year to year, or parking shortages in the 2300 Delaware Avenue lots independent of increased population at that facility, or increased circulation by drivers seeking parking; or if there is qualitative evidence of unmet public coastal access parking demand, such as public complaints, implement TRA-1C.</p>
	<p><b>MSC Projects Mitigation Measure TRA-1C:</b> UC Santa Cruz will implement the following or other equally effective measures in a coordinated program to reduce UCSC contributions to parking on Delaware Ave. such that total parking utilization during weekday class times is 70 percent or less:</p> <ul style="list-style-type: none"> <li>• Work with the City of Santa Cruz to evaluate whether parking regulation is needed and, if so, assist the City in developing and implementing a City-UC Santa Cruz permit program for Delaware Ave. parking to regulate the number of vehicles that may park or parking duration.</li> <li>• Provide off-street parking by permit at UCSC’s 2300 Delaware Ave. facility or other nearby locations. This option would be implemented most effectively in conjunction with parking management on Delaware Ave.</li> <li>• Implement CLRDP IM 5.7.3: UC Santa Cruz shall provide a shuttle service or bike shuttle service between the Main Campus and MSC as demand warrants and as needed to meet the 40 percent travel mode split</li> </ul>

	goal. Shuttles shall be scheduled to correspond with classes, and class schedules will be developed in coordination with TAPS to minimize operational demands.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** Under this topic, the CLRDP EIR assessed the consistency of CLRDP development with transportation demand planning and accommodation of alternative transportation modes relative to the City’s General Plan and concluded that the CLRDP and projects implemented under it would be consistent with planning for these alternative transportation modes because of the numerous policies and implementation measures related to alternative transportation that are included in the CLRDP (listed above), as well as features included in the CLRDP to encourage the use of alternative transportation modes, such as transit stops, bicycle and pedestrian paths, sheltered bicycle parking, and showers and lockers for bicycle commuters (CLRDP EIR Table 4.9-3).

**Project Impact.** The SCCRTC Transportation Improvement Program (TIP) (SCCRTC 2010), Appendix A, includes measures of effectiveness that are used to prioritize and select transportation improvements that are consistent with regional transportation planning for all modes of transportation, including alternative transportation. Among the measures of effectiveness by which a project may be assessed (as relevant, depending on the type of project) are its potential to: increase average vehicle occupancy on Highway 1 and 17; decrease vehicle hours of delay and average commute times; support transit ridership by establishing jobs and housing within ¼ mile of transit service; and improve and extend bikeways and pedestrian facilities and encourage their use for travel.

UC Santa Cruz’ CLRDP is the planning and policy document applicable to the proposed CBB and NEF Projects. It includes an extensive suite of policies and implementation measures (IMs) applicable to transportation planning and improvements for the MSC, as described in *Environmental Setting*, above. These include policies and measures relevant to transportation demand management, auto circulation and parking, transit, public access, and bicycle and pedestrian facilities. These elements are included in the CLRDP to enhance circulation on the campus and, in particular, to encourage the use of alternative transportation modes by providing safe and accessible facilities to serve pedestrian bicycle commuters. The proposed MSC Projects include pedestrian and bikeway improvements including a network of ADA-accessible pedestrian-only trails, sidewalks and crosswalks; a dedicated bicycle-pedestrian path from the campus entry to the Seymour Marine Discovery Center; and a designated transit pull-out and turn-around area, as stipulated by CLRDP IMs. The CBB Project includes bicycle parking, showers, and lockers to encourage commuting by bicycle. Appendix C provides the full text of all of the IMs that are applicable to the MSC Projects and describes the manner in which the Projects comply with each IM.

Under CLRDP Policy 5.2, the University is required to pursue a goal of having at least 40 percent of all person-trips to the MSC made using alternatives to the single-occupant automobile. IM 5.2.1 requires the University to enforce policies and implement measures to encourage alternatives to the single-occupant automobile, and IM 5.2.2 requires that each development project identify methods to be used to encourage alternative access to the facility through alternative transportation modes (that is, by means

other than single occupancy vehicles) and in order to meet CLRDP circulation and parking requirements individually and cumulatively. The proposed MSC Projects would support these goals by improving the campus pedestrian and bicycle network. In addition, TAPS is in the process of establishing a parking management program that will prohibit students from parking at the MSC and may also encourage employees to use alternative transportation modes. TAPS also will consider reinstating a shuttle bus or bicycle shuttle between the MSC and the Main Campus, as demand warrants. The proposed CBB and NEF Projects, the only MSC Projects with the potential to generate regular trips to the campus, comply with IM 5.2.2 by providing pedestrian circulation improvements, bicycle parking, showers, and lockers for bicycle commuters, and also by providing a transit stop adjacent to the building for future transit operations. The CBB and greenhouses would be served by new pedestrian and bicycle trails and are sited within ¼ mile of existing transit stops. Automobile parking would be provided adjacent to the CBB buildings but, as described above, campus-related parking demand could exceed the parking supply that would be available on campus, with implementation of the MSC Projects, particularly if campus-affiliates elect to drive single-occupant vehicles to the campus rather than use alternative transportation modes. Consistent with CLRDP Policies 5.7 and 5.8, UC Santa Cruz actively promotes the use of transit and other alternative transportation modes for access to UC Santa Cruz facilities, as detailed in the description of campus TDM programs, above.

The goals of increasing vehicle occupancy and decreasing vehicle delays and commute times are addressed through the campus' TDM programs, as discussed in the environmental setting sections above, through the roadway improvements such as those identified under the discussion of intersection operations, below, and through the pedestrian and bicycle trails and bicycle commuter facilities described above. For these reasons, the proposed Projects are consistent with regional TIP goals and with CLRDP TDM, bicycle and pedestrian access measures, and the impact of the CBB, NEF and other MSC Projects with respect to planning consistency is less than significant.

Although UC Santa Cruz has a robust TDM program in place, and the MSC Projects include elements designed to support alternative transportation modes, there is some level of uncertainty as to whether this goal will be met with implementation of the proposed Projects. There currently is no transit service onto the campus, and because employee and student parking at the site historically has not required permits, employees and students accessing the MSC have had less incentive to use alternative transportation modes to access the MSC, and TDM measures appear to have been less effective at the MSC than at the Main Campus. Although the MSC population is relatively small, the MSC Projects therefore have the potential to generate motor vehicle trips (and associated parking demand) in excess of TDM goals. (Anticipated CBB and NEF-related trip generation, and parking supply and demand associated with the CBB and with the MSC-affiliate population overall are detailed in subsections of Section 3.15.5.2 [*Trip Generation and Parking Supply and Demand*], above). If excess trip generation occurs, the proposed Projects could at times result in increased localized vehicle circulation and congestion, particularly associated with persons seeking parking near the campus entrance, a potentially significant impact. In compliance with CLRDP Policy 5.8, and to implement CLRDP IM 5.3.8, the campus will implement MSC Projects Mitigation Measure TRA-1A upon occupancy of the CBB facility and continuously thereafter at the campus. Implementation of this measure will ensure that persons accessing the campus are aware of the important of trip reduction to the campus and of the many alternatives to single-occupant

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vehicle travel that are available. This will encourage the use of alternative transportation modes, which would reduce the significance of the impact. In addition, the University would implement MSC Projects Mitigation Measures TRA-1B and -1C. Under these measures, parking along Delaware Avenue and Shaffer Roads near the campus entrance would be monitored periodically, as one means of assessing whether the MSC is generating motor vehicle trips and related parking demand in these areas in excess of TDM goals. If monitoring indicates that traffic circulation and parking demand in these areas is excessive, the campus will implement additional TDM measures, consistent with the requirements of the CLRDP. With the implementation of mitigation measures TRA-1A through -1C, the impact will be less than significant.

*Performance of the Roadway Network*

Intersection Operations under Existing and Existing Plus Project Conditions

<b>MSC Projects Impact TRA-2</b>	Under Existing Plus Project Conditions, the unsignalized intersection of Western Drive/High Street would operate at a substandard LOS during the PM peak hour, and would meet signal warrants, and the proposed CBB Project would increase existing traffic volumes by more than 3 percent.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	General Mitigation Measure 4.15-6
<b>Applicable Projects/ Project Elements</b>	CBB, NEF
<b>Significance</b>	Significant
<b>Project Mitigation</b>	The University made a fair share payment in 2008 for impacts to this intersection under the 2008 Comprehensive Settlement Agreement. The CBB Project will contribute equivalent payments to the City’s Traffic Impact Fee program for the project’s proportionate share contribution to the cost of the improvement consistent with CLRDP General MM 4.15-6, which is included in the project, and based on trips generated by building gsf (or other methodology agreed to by the City to determine trip contribution), as agreed under the 2008 Comprehensive Settlement Agreement. The City has included the required improvement and its cost on its Traffic Improvement Fee study list.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP EIR assessed the effects of development under the CLRDP upon 24 intersections in the City of Santa Cruz using the level of service thresholds discussed above. The CLRDP assessed each study intersection under each of the following scenarios:

- Existing Conditions (2003)

- Existing Conditions (2003) Plus Near-Term CLRDP Development
- Existing Conditions (2003) Plus Near-Term and Long-Term CLRDP Development
- 2010 Baseline Conditions (based on projected background growth plus planned and approved projects)
- 2010 Baseline Conditions Plus Near-Term CLRDP Development
- 2020 Baseline Conditions (based on projected background growth, plus envisioned development of UC Santa Cruz Main Campus)
- 2020 Conditions Plus Near-Term and Long-Term CLRDP Development

Under each of the scenarios, each intersection was assessed to determine whether traffic would result in substandard LOS and, for impacted intersections that are unsignalized, whether the intersection would meet signal warrants. For scenarios that include the addition of CLRDP traffic, the CLRDP EIR assessed whether traffic associated with near-term development and near-term and full implementation of the CLRDP would add more than 3 percent to of the existing/baseline traffic at an impacted intersection. In this analysis, a Project-level CLRDP impact was identified in each case where the traffic associated with near-term development under the CLRDP and/or full CLRDP implementation would add more than 3 percent to the existing/baseline traffic through an impacted intersection.

The CLRDP EIR analysis concluded that under Existing Plus Near-term Development conditions, three intersections (Bay St./Mission St., Mission St./Chestnut St. and Bay St./Escalona Dr.) would operate at LOS E or F. Near-term CLRDP development would add 3.1 percent to the traffic to Bay St./Mission St., a significant impact (CLRDP Impact 4.15-1), but less than 3 percent to the other two intersections. The significance threshold would be reached at Bay St./Mission St. when near-term development generated 143 PM peak hour trips. Under CLRDP EIR Mitigation Measure 4.15-1, listed above, the University committed to pay its fair share of the cost of the improvement if and when the improvement is carried out. However, any improvements to this intersection would need to be approved by Caltrans. Furthermore, the proposed improvement would not be feasible in the existing right-of-way based on the lane widths required by Caltrans minimum design standards. Therefore this impact was considered significant and unavoidable in the CLRDP EIR.

Under Existing Plus Project conditions with the addition of near-term and long-term CLRDP development, the same three intersections, and also the intersection of Western Drive/High St., would operate at a substandard LOS E or F, and traffic associated with full CLRDP development would add more than 3 percent and result in a significant project-level impact at the intersections of Bay St./Mission St. (CLRDP Impact 4.15-3), and Mission/Chestnut (CLRDP Impact 4.15.4) when the CLRDP traffic adds 272 PM peak hour trips. CLRDP EIR Mitigation Measure 4.15-3 and CLRDP Mitigation 4.15-4 commit the University to pay its fair share of the cost of the improvements if and when the improvements are undertaken by the City of Santa Cruz. Nonetheless, as noted above for the Bay/Mission intersection, improvements to the Mission/Chestnut intersection would not be feasible in the available right-of-way based on the lane widths required by Caltrans minimum design standards. Therefore the CLRDP EIR determined that these impacts would be significant and unavoidable. Full CLRDP development also

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would add more than 3 percent to the Bay/ Escalona and Western/ High intersections, but would not trigger a signal warrant, so the impact would be less than significant.

Under projected 2010 baseline conditions, six of the CLRDP study intersections (Mission/Bay, Mission/Chestnut, SR 1/River St., Western Dr./High St, Empire Grade/Heller Dr., Bay/Escalona), were projected to operate at substandard levels E or F without the addition of near-term CLRDP traffic, and traffic signals would be warranted at three of these intersections. However, near-term CLRDP traffic would add less than 1 percent to the traffic at each of the affected intersections relative to 2010 conditions that would exist without the project; therefore, the CLRDP EIR concluded that the impact of near-term traffic on 2010 Plus Project intersection operations would be less than significant. Near term CLRDP development also was not expected to result in a substantial change in the operation of any of the study roadway segments during the peak hour under 2010 conditions and the project's addition of traffic was not expected to be noticeable on only study area streets.

Under projected 2020 baseline conditions without addition of CLRDP traffic, the same six intersections would operate at substandard LOS E or F during one or both peak hours and signals would be warranted at the three (then) unsignalized intersections (Western/High, Bay/Escalona, Empire Grade/Heller). CLRDP traffic would add more than 3 percent to the traffic at Bay Street/Mission Street (SR 1), relative to conditions without CLRDP development, which would be a significant impact (CLRDP Impact 4.15-5). CLRDP EIR Mitigation 4.15-1 requires that the University would pay its fair share toward the necessary improvements at this intersection at the time that the City of Santa Cruz carries out the improvement. Nonetheless, for the reasons stated above, the CLRDP EIR determined that the impact would remain significant and unavoidable. The CLRDP EIR determined that traffic generated by near term development under the CLRDP and by full development of the CLRDP would not result in noticeable changes in roadway capacity or neighborhood traffic relative to existing conditions, 2010 conditions or 2020 cumulative conditions.

**Project Impact.** The analysis of intersection operation for the proposed MSC Projects is based on the projected operational traffic contributions of the CBB and MSC Projects. The analysis considers a subset of 11 of the intersections considered in the CLRDP EIR. This includes all of the intersections for which the CLRDP EIR previously identified significant Project-level impacts or cumulatively considerable contributions to significant cumulative impacts, with the exception of the Heller Drive/ Empire Grade intersection, where a stoplight (the identified mitigation) has been installed and the impact no longer exists. Based on the number of peak hour trips projected to be generated by the proposed Projects, it was concluded that analysis of a more extensive list of intersections or of freeway operations was not warranted for the proposed projects. Operations at each of the study intersections were assessed under existing conditions, and then compared with projected operations under existing conditions with the addition of project traffic ("Existing Plus Project Condition"). Results are shown in Table 3.15-7, below.

Table 3.15-7

## Summary of Existing and Existing Plus Project Intersection Levels of Service

Intersection	Peak Hour	Existing		Existing Plus Project		Project Addition to Existing Volumes	Unsignalized / Meets Signal Warrant?	Signif. Impact? <sup>3</sup>
		Delay <sup>1</sup>	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>	%		
1. Western Dr./ High St.	AM	18.7(3.8)	C (A)	20.5 (4.1)	C (A)	--	--	No
	PM	35.7(6.0)	<b>E (B)</b>	49.9 (9.6)	<b>E (B)</b>	<b>3.8</b>	<b>Yes</b>	<b>Yes</b>
2. Western Dr./ SR 1	AM	13.4	B	14.3	B	--	n/a	No
	PM	12.7	B	14.9	B	--		No
3. Natural Bridges Dr./ Delaware Ave.	AM	8.3	A	8.4	A	--	n/a	No
	PM	8.6	A	8.7	A	--		No
4. Swift St./ Delaware Ave.	AM	13.4	A	14.1	A	--	n/a	No
	PM	14.8	B	15.4	B	--		No
5. Swift St./ SR 1	AM	16.4	B	16.3	B	--	n/a	No
	PM	17.2	B	18.5	B	--		No
6. Mission St./ Almar & Younglove Ave.	AM	13.9	B	13.7	B	--	n/a	No
	PM	31.5	C	32.0	C	--		No
7. Mission St./ Bay St.*	AM	20.4	C	20.6	C	--	n/a	No
	PM	28.3	C	28.6	C	--		No
8. Mission St./ Laurel St.	AM	31.6	C	32.0	C	--	n/a	No
	PM	36.9	D	39.0	D	--		No
9. Mission St./ King & Union St.	AM	25.0	C	25.1	C	--	n/a	No
	PM	27.7	C	27.8	C	--		No
10. SR 1/ Mission St./ Chestnut St.	AM	34.6	C	34.8	C	--	n/a	No
	PM	29.6	C	30.7	C	--		No
11. SR 1/River St. (SR 9)	AM	41.4	D	41.9	D	--	n/a	No
	PM	67.3	<b>E</b>	68.0	<b>E</b>	0.6		No

Source: Fehr & Peers, February 2011.

## Notes:

<sup>1</sup> Whole intersection weighted average total delay for signalized and all-way stop-controlled intersections (expressed in seconds per vehicle). For side-street stop controlled intersections, delays for worst movement and average intersection delay are shown

<sup>2</sup> LOS calculations were performed using the 2000 Highway Capacity Manual - Special Report 209 delay methods for signalized and unsignalized intersections.

<sup>3</sup> A significant project-level impact is identified if the project would add more than 3% to Existing traffic under Existing Plus Project conditions and, for an unsignalized intersection, the intersection would meet a signal warrant.

Unacceptable operations are indicated in bold type.

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As shown in the table, two of the study intersections operate at substandard LOS E during the PM peak hour under existing conditions, and would continue to operate at LOS E under Existing Plus Project conditions.

The CBB and NEF Projects would add more than 3 percent of the traffic to the Western Drive/High Street intersection under Existing Plus Project conditions and this intersection would meet signal warrants. Therefore the project-level impact would be significant under Existing Plus Project Conditions. A traffic signal has been indicated as the necessary improvement for this intersection. The installation of a traffic signal would improve intersection operations to an acceptable LOS, such that the impact would be mitigated to a less-than-significant level. The CLRDP EIR determined that implementation of the improvement would improve operations at the intersection to an acceptable level, and the Projects includes CLRDP EIR General Mitigation Measure 4.15-6, which requires UC Santa Cruz to contribute funding equal to its proportionate share of the cost of the intersection improvement. The CLRDP EIR determined that while the City can and should carry out the improvement, UC Santa Cruz could not guarantee that the improvement will be implemented; therefore the CLRDP EIR concluded that the impact would remain significant and unavoidable.

However, as discussed above, the 2008 Comprehensive Settlement Agreement commits the University to contributing funds to the City's traffic impact fee program, consistent with its commitment under 2005 LRDP Mitigation Measure TRA- 2A, to pay for 3,900 new trips above the 2005 baseline trip count at the Main Campus west and main entrances. Project trips through the Western Dr./High St. intersection can be assumed primarily to be trips between the Main Campus and the MSC, since this intersection, which is close to both entrances of the Main Campus, is on the direct route between the campuses. These trips therefore would be captured in the Main Campus' annual gate counts of average daily trips. These counts are the basis for determining whether the campus has generated new trips in excess of traffic impact fee program payments. Project trips through this intersection are well within the total number of trips through the Main Campus gates for which the University has paid, as the campus currently generates about 22,000 average daily trips but has paid the City for up to 28,700 average daily trips; therefore, the campus has paid in advance for its fair share of the cost of the improvement. Furthermore, the University also has committed, under the Comprehensive Settlement Agreement, to contribute funding to the City's TIF program for trips generated by each new development on the MSC at a per-trip fee rate at the time that all project approvals are received. The improvement for the Western Dr./High St. intersection and its cost are identified on the City's Traffic Impact Fee Study list for future implementation and it can be assumed that the improvement has been taken into account in improvement planning and will be implemented. Therefore, this impact will be mitigated to a less-than-significant level.

The intersection of SR 1 and River Street is projected to operate at LOS E during the PM peak hours with or without the project. However, the project does not increase volumes by 3 percent or more; thus, the project-level impact is considered less-than-significant. All other study intersections operated at acceptable LOS under existing conditions and are projected to operate at acceptable levels under Existing Plus Project conditions. As noted under Previous Analysis above, the CLRDP EIR projected that near-term project impacts would occur at several intersections when CLRDP development had generated 143 new AM or PM peak hour trips. As discussed above, the MSC Projects are projected to generate 108 new

AM and 104 new PM peak hours trips, and is thus ~~below~~ will not meet or exceed the previously identified threshold. The current analysis indicates that the MSC Projects would result in an LOS impact only at Western Dr./High St. and not at the other intersections identified in the CLRDP EIR.

*Performance and Safety of Public Transit, Bicycle and Pedestrian Facilities*

<b>MSC Projects Impact TRA-3</b>	The CBB Project would increase campus motor vehicle trip generation, associated vehicle circulation outside the campus entrance, and pedestrian traffic associated with off-campus transit and off-campus parking, which could increase potential for conflicts between pedestrian, bicycles, and motor vehicles, impede public coastal access, and impair the performance and safety of bicycle and pedestrian facilities.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	General Mitigation Measure 4.15-2 Implementation Measure 5.3.7 - Parking Demand Satisfied on Campus
<b>Applicable Projects/Project Elements</b>	CBB
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure TRA-3A:</b> UC Santa Cruz will implement MSC Projects Mitigation Measure TRA-1A to reduce campus-related motor vehicle trip generation and related parking demand.
	<b>MSC Projects Mitigation Measure TRA-3B:</b> UC Santa Cruz will implement CLRDP General Mitigation Measure 4.15-2, to contribute toward sidewalk improvements for increased pedestrian safety and ease of access.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP EIR assessed the effects of CLRDP development with respect to the performance and safety of all transportation modes, including potential bicycle and pedestrian issues and concluded that the CLRDP and projects implemented under it would be consistent with planning for these alternative transportation modes because of the numerous policies and implementation measures related to alternative transportation that are included in the CLRDP (listed above), as well as features included in the CLRDP land-use plan to encourage the use of alternative transportation modes, such as transit stops, bicycle and pedestrian paths, sheltered bicycle parking, and showers and lockers for bicycle commuters (CLRDP EIR Table 4.9-3). However, the CLRDP EIR (p 4.15-37) also identified that the CLRDP development would generate increased pedestrian traffic and that, due to a gap in the Delaware Avenue sidewalk between Antonelli Pond and the campus entrance, development under the CLRDP could result in potential conflicts between pedestrians, bicycles, and motor vehicles (CLRDP EIR Impact 4.15-2).

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Because Delaware Avenue is wide in this area, with adequate shoulder to accommodate pedestrians, the impact was determined to be less than significant. CLRDP General Mitigation Measure 4.15-2 nonetheless was identified to further reduce the significance of the impact. Under this measure, the Campus committed to pay its fair share of the cost of a sidewalk in this area when the City of Santa Cruz carries out the improvement.

**Project Impact.** The CBB project would add to the regular commute population of the campus, and also would add student population that would travel between the MSC and the Main Campus throughout the day. Although the MSC Projects would add three new parking lots on the campus, existing informal parking along McAllister would be removed. Fifty existing campus parking spaces would be designated for exclusive use of visitors to the Seymour Marine Discovery Center and for public coastal access (both of which are required by the CLRDP). As a consequence, total parking demand may exceed total campus supply. It is likely that at least some persons in the MSC-affiliate population who elect to drive to the MSC would not find parking places on the campus and would seek parking off campus, most likely on the one to two blocks of Delaware Avenue and Shaffer Avenue closest to the campus entrance.

This parking use, if it occurs, could be accompanied by increased motor vehicle traffic circulation on these blocks by persons seeking parking, and increased pedestrian use of the road shoulders by persons walking onto the campus from street parking locations, which could increase the potential for motor vehicle/ bicycle/ pedestrian conflicts. Increased pedestrian traffic associated with the CBB Project in relation to persons parking in the first block of Delaware, or walking to the MSC from the Delaware/ Natural Bridges transit stop, also could contribute to this potential conflict, because there is an existing gap in the Delaware sidewalk immediately outside the campus entrance.

As analyzed above, it is anticipated that existing and planned campus TDM programs and facilities included in the project would reduce potential CBB trip generation and associated parking demand. MSC Projects Mitigation Measure TRA-1A (above) would support the campus's efforts to reduce campus trip generation and related parking demand. TRA-1B and -C also would be implemented to monitor parking utilization outside the campus entrance and to implement additional TDM measures if this monitoring indicates that additional TDM reductions are needed. MSC Projects Mitigation Measure TRA-3A would also implement these measures to reduce the potential for pedestrian/ bicycle/ motor vehicle conflicts.

In addition, the Campus would implement CLRDP Mitigation Measure 4.15-2, detailed above, to improve pedestrian safety and connectivity between the closest transit stops and sidewalks that will start at the campus entrance, and also to provide safe routes for persons parking on Delaware Avenue either for access to the MSC or for coastal access. The CLRDP EIR Mitigation Monitoring Program requires that this mitigation measure be implemented prior to occupancy of the first MSC project. This requirement would be triggered by the CBB Project, the first project that would include new operational population. Under this mitigation measure, UC Santa Cruz would pay the City a fair share of the cost of a pedestrian improvement along the north side of Delaware Avenue, most likely based on proportional use of the facility. As described in the CLRDP EIR, this improvement could be as simple as installing a raised asphalt curb approximately 5 to 6 feet away from the existing curb or edge of pavement with openings to maintain existing drainage. Design and construction of this improvement to close the existing gap in

pedestrian facilities in this area can and should be completed by the City of Santa Cruz since Delaware Avenue is under its jurisdiction. The City’s 2012-14 Capital Improvement Plan identifies extensions of necessary sidewalks as a future project, although particular locations are not identified. CLRDP General Mitigation Measure 4.15-2 would be implemented in conjunction with the CBB Project, and the City can and should implement the improvement, which would improve connectivity to transit and pedestrian safety on Delaware Avenue.

Implementation of MSC Projects Mitigation Measures TRA-3A and 3B would reduce potential trip generation and minimize and monitor parking demand associated with the proposed MSC Projects; provide for the enhancement of campus TDM programs as needed to meet changing conditions; provide safe and effective pedestrian facilities; and minimize potential conflicts between motor vehicle, bicycles and pedestrians. With the implementation of these measures, the impact would be less-than significant.

Substantially Increase Hazards Due to a Design Feature

<p><b>MSC Projects Impact TRA-4:</b></p>	<p>The MSC Projects would <u>result in increased motor vehicle, pedestrian and bicycle traffic in the project vicinity and on the MSC, would</u> alter the roadway at the MSC entrance, and would introduce new parking lot intersections with campus roadways and new pedestrian crossings of campus roadways, but <u>the Project-related traffic would not be incompatible with existing campus or local roadway uses. New campus roadways</u> <del>these</del> would be designed consistent with roadway safety standards and CLRDP guidelines to ensure that the project does not result in any increase in hazards related to design features.</p>
<p><b>Applicable CLRDP Mitigation/ Implementation Measures:</b></p>	<p>Implementation Measure 5.6.5 – Crosswalk Design</p>
<p><b>Applicable Projects/Project Elements</b></p>	<p>CBB MSCI Phase A NEF</p>
<p><b>Significance</b></p>	<p>Less than significant</p>
<p><b>Project Mitigation</b></p>	<p><b>MSC Projects Mitigation Measure TRA-4A:</b> Parking lot entrances to campus roads will be stop sign-controlled to minimize potential motor vehicle, pedestrian and bicycle traffic conflicts.</p>
	<p><b>MSC Projects Mitigation Measure TRA-4B:</b> A stop sign will be installed on the new Delaware Avenue Extension at the campus exit (eastbound), <u>and other traffic-calming measures will be included in the entrance design if warranted based on design assessment.</u> <del>and</del> The University also will coordinate with the City of Santa Cruz regarding recommended installation of stop signs at the campus entrance intersection on Shaffer Road (southbound), Delaware Avenue</p>

	(westbound) and the exit from the De Anza residential community.
	<b><u>MSC Projects Mitigation Measures TRA-4C:</u></b> <u>When new fencing is installed along the northern and eastern boundaries of the campus, signage will be posted on the fence at a location adjacent to each pedestrian route advising caution in crossing the adjacent railroad tracks.</u>
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (p. 4.15-35) determined that CLRDP development would not result in design hazards with respect to site access or circulation by vehicles. It also was determined that adjacent streets could safely accommodate the addition of projected traffic volumes associated with the proposed project. The CLRDP EIR reported in 2004 that there were about six low speed pass-by trips per week along the UPRR tracks in the campus vicinity (CLRDP EIR, p. 4.11-8) and, based on the low volume of traffic on the line, did not evaluate hazards associated with railroad crossings and potential railroad rights of way trespass.

**Project Impact.** The proposed CBB, MSC Phase A, and NEF Projects comply with and incorporate applicable CLRDP design requirements and IMs, including development of a dedicated bikeway and pedestrian trail network and sidewalks that will separate bicycles and pedestrians from motor vehicle traffic and improve bicycle and pedestrian circulation and safety on the campus. The MSC Projects would not include any design features that would increase hazards in any transportation mode. However, based on roadway design analysis (Fehr and Peers 2011), it is recommended that parking lot entrances to campus roadways be stop-sign controlled, and that the main entrance to the campus be four-way stop controlled (MSC Projects Mitigation Measures TRA-4A and TRA-4B). These measures would further reduce the less-than-significant impacts of Projects development with respect to roadway design hazards.

As described in this section, implementation of the proposed MSC Projects would result in increased motor vehicle traffic at intersections near the campus and likely also would result in increased pedestrian and bicycle traffic at some intersections. As described in Section 3.15.1.1 (Roadway Systems), above, a Union Pacific Railroad line between the coastal town of Davenport, to the north of Santa Cruz, and Watsonville, to the south (known as the Santa Cruz Branch Line), runs along the northern border of the Marine Science Campus. East of the campus, the railroad line crosses Natural Bridges Drive, a City of Santa Cruz roadway frequently used by traffic traveling from UCSC’s main campus to the Marine Science Campus. In addition, the alignment of Shaffer Road, a City of Santa Cruz street that extends from Highway 1 on the north to Delaware Avenue on the south, crosses the railroad track and runs along the eastern boundary of the Marine Science Campus. Shaffer Road is discontinuous at the railroad track, which is slightly elevated at this intersection such that motor vehicles cannot cross the tracks. However, online aerial photos show that there is a casual pedestrian path across the railroad right of way from the segment of Shaffer Road north of the railroad track to the Homeless Garden area located east of Shaffer Road south of the railroad tracks, which are not fenced in this area.

The segment of the UPRR line between Santa Cruz and Davenport at that time was in use for freight hauling operations by the Sierra Northern Railway, primarily for the CEMEX plant in Davenport. CEMEX closed in 2009. Sierra Northern currently runs trains twice per week on the Santa Cruz Branch Line southward from Santa Cruz to serve existing freight customers between Santa Cruz and Watsonville. In the absence of freight clients north of Santa Cruz that would call for active use of the line, Sierra Northern currently is using the segment of the line between Davenport and Santa Cruz (the segment that passes the MSC) for storage of unused rail cars (SCCRTC 2011).

Early in 2011, the Santa Cruz County Regional Transportation Commission (SCCRTC) acquired the Santa Cruz Branch Line rights of way for recreational rail, preservation, and future transportation uses that could include passenger rail service, transit, bicycle and pedestrian facilities, and freight rail service. Sierra Northern proposes to invest up to \$2,000,000 to implement recreational rail service on the line segment from Santa Cruz to Davenport (SCCRTC 2011), which passes by the MSC. There currently is little or no rail traffic on the Santa Cruz Branch Line in the vicinity of Natural Bridges Drive and Shaffer Road. Future rail traffic on the alignment cannot be predicted at this time but recreational traffic is unlikely to exceed the historic patterns of light use.

As identified in the section, the proposed MSC Projects would result in some increase in motor vehicle, pedestrian and bicycle traffic on Natural Bridges Drive. The majority of pedestrian traffic to the campus is associated with city bus stops, and routes between these stops and the Marine Science Campus do not cross the railroad tracks. One city bus route uses Natural Bridges Drive, but it is not anticipated that the frequency of service would increase to serve the proposed MSC Projects. The existing at-grade crossing of SPRR on Natural Bridges Drive includes train-activated guard arms, warning signals and pedestrian sidewalks. In this light industrial urban area, trains move at low speeds, typically between 3 and 8 miles per hour based on incident records for intersections in Santa Cruz. The Federal Railway Administration website [railway accident database \(http://safetydata.fra.dot.gov/OfficeofSafety/PublicSite/Crossing/Crossing.aspx\)](http://safetydata.fra.dot.gov/OfficeofSafety/PublicSite/Crossing/Crossing.aspx) reports a single car/train incident for intersection #768162B, in 1997. This intersection is identified as Natural Bridges Drive on the Public Utility Commission's Highway/Rail Crossing Inventory data base (<http://www.cpuc.ca.gov/PUC/transportation/crossings/crossingininventory.htm>), but the accident from indicates that the incident (a low speed train-car collision due to a car stopped on the tracks, which resulted in minor damage to the car) actually occurred at Bay Street, and not the Natural Bridges Drive crossing. As assessed by the MSC Projects traffic consultant, the existing standard protections at the at-grade crossing appear to be adequate to avoid or minimize any potential hazard associated with pedestrian, bicycle and vehicle traffic at this intersection based on the historically low levels of rail traffic, anticipated low future levels, and historic absence of accidents. The crossing at this location is controlled by a train-activated signal arm, and includes pedestrian sidewalks and standard warning lights, bells and signs, and meets all current safety standards (Schneider 2011a). The risk to traffic crossing this line therefore is less than significant.

With respect to the Shaffer Road intersection with the UPRR tracks, the only likely source of pedestrian and bicycle traffic to the MSC along the informal footpath at this crossing is an apartment complex on Shaffer Road north of the railroad tracks. UCSC affiliates may be among the resident these apartments, and that some subset of these may work or attend classes at the MSC. If so, it is possible that a small number of pedestrians or bicyclists traveling to the MSC might cross the railroad tracks at Shaffer Road

to access the campus. However, it is not anticipated that the proposed Project would increase the number of persons residing in the apartments who would be affiliated with the campus, since there will be no increase in housing capacity in the complex. Therefore there is no evidence that the MSC Projects would result increased pedestrian and bicycle use of this crossing. The Projects therefore would not represent a use incompatible with the adjacent railroad, nor would the Projects increase the less-than-significant hazard associated with use of the informal crossing at Shaffer Road. Nonetheless, MSC Projects Mitigation Measures TRA-4C has been added to the Final EIR to further reduce the potential for a less-than-significant incompatibility impact with respect to pedestrian and bicycle traffic across the railroad at Shaffer Road. In addition, the Campus has committed, through CLRDP IM 5.1.7 and under the 2008 Settlement Agreement, to pay its fair share of the cost an emergency at-grade motor vehicle crossing of railroad, should the City carry out such a project in the future. This project has been discussed, but a specific project has not been proposed at this time (Schneiter 2011b).

*Result In Inadequate Emergency Access*

<b>MSC Projects Impact TRA-5</b>	Simultaneous construction activity for MSC Projects or project elements could conflict with traffic flow into and out of the MSC; impede daily access to the site by employee, student, and visitor vehicle, bike, and pedestrian traffic; conflict with traffic associated with school programs and other special events; and impede emergency access and egress.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects</b>	All
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure TRA-5A:</b> Delaware Avenue Extension will not be closed to vehicle traffic until the new entry road proposed by the MSC Phase A Project is operational for normal vehicle use.

	<p><b>MSC Projects Mitigation Measure TRA-5B:</b> The University will include the following requirements in construction contract specifications to minimize traffic blockage and delays:</p> <ul style="list-style-type: none"> <li>• Construction work shall be conducted so as to ensure the least possible obstruction to traffic.</li> <li>• At no time will more than one lane of Delaware Avenue Extension or McAllister Way be blocked.</li> <li>• Contractors shall provide traffic control when any vehicle lane is blocked.</li> <li>• Contractors shall notify the University’s representative at least two weeks before any partial road closure.</li> <li>• When a pedestrian/bicycle path will be blocked, detour signs will be installed to clearly designate an alternate route. Temporary fencing or other indicators of pedestrian and bicycle hazards will be provided.</li> <li>• Fire hydrants shall be kept accessible to firefighting equipment at all times.</li> </ul>
	<p><b>MSC Projects Mitigation Measure TRA-5C:</b> Construction project managers will notify City police and fire departments, the Director of the Seymour Center, NOAA, CDFG, and campus dispatchers in advance of lane closures, to ensure adequate access for routine operation and emergency vehicles during temporary lane closures.</p>
	<p><b>MSC Projects Mitigation Measure TRA-5D:</b> The University will coordinate among contractors and subcontractors to minimize the number and extent of simultaneous construction activities that affect driveways, paths, and roadways, and will require contractors to plan for daily construction activities a week in advance, provide a schedule, and observe the schedule to the greatest extent feasible. The University’s representative will develop a weekly schedule of contractor activities and provide it to NOAA, CDFG, the Director of the Seymour Center, and other affected parties. Construction project managers will coordinate regularly with the University’s representative, who will notify NOAA, CDFG, the manager of LML, and the director of the Seymour Marine Discovery Center to keep them informed of upcoming construction activities; path, lane or parking lot closures; and major equipment activity or material hauling as far in advance as feasible, to minimize potential construction conflicts with routine and special event traffic.</p>

	<b>MSC Projects Mitigation Measure TRA-5E:</b> The University will coordinate regularly with the City of Santa Cruz on the timing and nature of work at the campus entrance and along Shaffer Road to minimize construction traffic conflicts with residents of the De Anza facility and with users of the Homeless Garden Project, and will inform De Anza residents and Homeless Garden users of construction activity with signs or flyers.
	<b>MSC Projects Mitigation Measure TRA-5F:</b> The University will post flyers and/or signs at the campus entrance and major campus facilities and provide the same for the Homeless Garden Project and the De Anza facility, with a University phone number or other means for the public to submit questions or complaints regarding construction traffic or traffic incidents, <del>and</del> will respond promptly to inquiries <u>and complaints and, if warranted after investigation, take specific actions to resolve the complaint.</u>
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** As analyzed in the CLRDP EIR (p. 4.15-36), emergency vehicular access would continue to be provided by the Delaware Avenue Extension through the main gate under the CLRDP. Because roadways would not include curbs, it would be possible for emergency vehicles to bypass an accident or other obstruction in the roadway if the primary entrance to the campus were blocked by an accident or other emergency, by driving off road.

With regard to evacuation needs, the very low volume of traffic at the Delaware Avenue/Shaffer Road intersection would provide ample capacity for vehicles to exit the site immediately. In addition, staff, students and visitors to the site could also leave on foot via the proposed trail system. Based on this assessment, project operations are not expected to result in inadequate emergency access and no significant impact was identified (CLRDP EIR p. 4.15-36). The potential for project construction to impede emergency access was not assessed.

**Project Impact.** The proposed CBB lab and Greenhouse Complex include emergency access lanes designed to provide adequate emergency access to all sides of each building and allow emergency vehicles to turn around. Project operations would not result in inadequate emergency access.

Construction of the CBB, MSC Phase A, and NEF Projects likely would be simultaneous, and could overlap with the small amount of construction proposed for the SRP Phase 1B Project. This simultaneous construction would involve a substantial amount of short-term daytime construction traffic through the campus entrance and along campus roadways. In addition, the MSC Project would entail rerouting of the campus main entry road, as well as extensive utility trenching in the McAllister Way corridor, off-haul or movement of spoils, and both removal of and construction of parking, all of which potentially could impede routine and emergency access to the campus. The MSC includes only a single route into and out

of the campus, which would be heavily used by construction vehicles during the construction period, while also continuing in use as the sole vehicle access route for campus deliveries and for employees and visitors, including school groups. Because of noise considerations and to avoid potential impacts to wildlife, including California red-legged frogs, there will be a limited potential to schedule work during evening hours to avoid traffic conflicts. Similarly, with heavy weekend use of the Seymour Discovery Center, weekend road closures to accommodate construction also would not generally be feasible. Therefore, it is anticipated that most construction activities would take place during the campus' normal daylight operating hours, and would have to work around normal operational traffic and special events traffic.

Construction activity potentially could result in conflicts with employee and visitor traffic, which could impede routine campus operations and access to campus special events. This is a potentially significant impact. Mitigation measures MSC TRA-5A through -5F would ensure that construction activities are carefully scheduled to minimize traffic disruptions, provide safe access and minimize inconvenience for visitors and campus users of the campus, keep all users and neighbors informed of anticipated activity, and maintain communications among all parties who might be affected. With the implementation of these measures, the impact of the MSC Projects on emergency and routine access and operations would be less than significant.

### 3.15.5.4 Cumulative Impacts and Mitigation Measures

#### *Intersection Operations*

<b>MSC Projects Impact TRA-6</b>	Under 2016 Cumulative conditions, five intersections would operate at substandard LOS E or F during AM or PM peak hours, with or without the CBB and NEF projects. These projects would add more than 3 percent to cumulative traffic volumes without the CBB and NEF projects under 2016 Cumulative Plus Project conditions at the unsignalized intersections of Western Drive / High Street, which also would meet signal warrants. The CBB and NEF Projects' impact at this intersection therefore would be cumulatively considerable.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	General Mitigation Measure 4.15-6
<b>Applicable Projects</b>	CBB, NEF
<b>Significance</b>	Significant
<b>Project Mitigation</b>	Implement MSC Projects Mitigation <u>Measure</u> TRA-2, above.
<b>Residual Significance</b>	Less than significant

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**Previous Analysis.** The CLRDP EIR analyzed the projected operations of study intersections in 2010 with cumulative traffic including near-term CLRDP traffic; and projected operations of study intersections in 2020 with cumulative traffic including both near-term and long-term projected traffic from CLRDP development (CLRDP Section 4.15). That analysis determined that near-term CLRDP development in conjunction with other envisioned development and background growth would result in cumulative impacts at six study area intersections under both 2010 and 2020 conditions. For cumulative analysis, the CLRDP EIR considered that a CLRDP traffic contribution of more than 1 percent of the total traffic at intersections that would operate at substandard levels of service under 2010 or 2020 conditions would be a cumulatively considerable impact. Using this threshold, the CLRDP EIR identified that the contribution of CLRDP near term and full development would be cumulatively considerable at five of the six affected intersections: Mission Street/Bay Street, Mission Street/Chestnut Street, State Route 1/River Street, High Street/Western Drive and Empire Grade/Heller Drive (CLRDP Impact 4.15-6). At a sixth intersection, Bay Street/Escalona, the CLRDP contribution would not be cumulatively considerable because full CLRDP development would contribute less than 1 percent to total traffic through that intersection. Under General Mitigation Measure 4.15-6, the University would contribute its fair share to the cost of intersection improvements at the Bay/Mission and Mission/Chestnut, as identified in Mitigation 4.15-1 and -4, and also at High Street/Western Drive (a stoplight), Empire Grade/Heller Drive (a stoplight), and State Route 1/River Street. The potential improvements for the State Route 1/River Street intersection were to be identified by the City of Santa Cruz. The CLRDP EIR concluded that the improvement of intersections with State facilities or installation of traffic signals on State, City or County roadways would fall within the jurisdiction of agencies other than the University of California and therefore would be outside of the control of the University. Further, as noted above, proposed improvements at some of the intersections might not be feasible within the available rights of way. For these reasons, the Campus' contribution to the impact was determined to be significant and unavoidable even with mitigation. Note that the University, with grant funding from Caltrans through FHWA and in consultation with the County of Santa Cruz, completed installation of a traffic signal at the intersection of Heller/Empire Grade in 2010; therefore, this cumulative impact has been fully mitigated. The analysis below augments the cumulative program-level analysis presented in the CLRDP EIR and considers MSC Projects' cumulative conditions in 2016, but does not replace the CLRDP EIR cumulative analysis.

**Project Impact.** For the MSC Projects, cumulative traffic is assumed to consist of existing peak hour traffic, plus traffic from the reasonably foreseeable projects in the study area that are listed in Table 3.0-1 in Section 3.0. In addition, an annual growth factor of 1.2 percent (representing general background growth not associated with the listed projects) was applied to the existing traffic volumes at each intersection for each of the years between 2010 and 2016. The annual growth factor was established by reviewing forecasts from the AMBAG travel demand model, which is used to estimate future traffic volumes associated with projected land-use changes in the Santa Cruz and Monterey County area. AMBAG's projections and travel demand model also take into account projected growth at UC Santa Cruz.

Figures 3.15-8 and 3.15-9, at the end of this section, present the 2016 Cumulative Conditions peak-hour volumes with and without CBB/ NEF Project traffic. Table 3.15-8, which provides intersection analysis data for 2016 Cumulative and Cumulative Plus Project conditions follow the impact blocks below.

Impacts under Cumulative Plus Project Conditions were identified based on the significance criteria identified in Section 3.15.5.1, above. As shown in Table 3.15-8, below, five project study intersections would operate at an unacceptable LOS with or without the addition of CBB/ NEF Project traffic. The CBB/ NEF Projects would add more than 3 percent to the cumulative traffic volumes through one of these intersections, Western Drive/High Street, under 2016 Cumulative Plus Project conditions, and this unsignalized intersection also would meet signal warrants. This would be a significant impact. A traffic signal has been indicated as the necessary improvement for the Western/High intersection

Table 3.15-8

## Summary of Cumulative and Cumulative Plus Project Intersection Levels of Service

Intersection	Peak Hour	Cumulative No Project		Cumulative Plus Project		% Project Would Add to No Project	Signal Warrant Satisfied	Significant Impact? <sup>3</sup>
		Delay <sup>1</sup>	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>			
1. Western Dr./ High St.*	AM	20.7 (3.9)	C (A)	22.8 (4.3)	C (A)	--		No
	PM	<b>51.7</b> (8.2)	<b>F</b> (A)	<b>79.0</b> (14.1)	<b>F</b> (C)	<b>3.5</b>	<b>Yes</b>	<b>Yes</b>
2. Western Dr./ SR 1	AM	13.3	B	14.3	B	--		No
	PM	15.2	B	17.0	B	--		No
3. Natural Bridges Dr./ Delaware Ave.*	AM	10.7	B	11.0	B	--		No
	PM	11.9	B	12.2	B	--		No
4. Swift St./ Delaware Ave.*	AM	29.3	C	32.4	C	--		No
	PM	<b>68.9</b>	<b>F</b>	<b>74.2</b>	<b>F</b>	<b>1.1</b>	<b>Yes</b>	<b>No</b>
5. Swift St./ SR 1	AM	26.8	C	27.0	C	--		No
	PM	27.1	C	28.3	C	--		No
6. Mission St./Almar & Younglove Ave.	AM	15.1	B	15.0	B	--		No
	PM	29.5	D	30.9	C	--		No
7. Mission St./ Bay St.	AM	30.4	C	32.5	C	--		No
	PM	50.8	D	53.7	D	--		No
8. Mission St./ Laurel St.	AM	<b>85.5</b>	<b>F</b>	<b>69.0</b>	<b>E</b>	<b>1.4</b>		<b>No</b>
	PM	<b>&gt; 180</b>	<b>F</b>	<b>&gt; 180</b>	<b>F</b>	<b>1.2</b>		<b>No</b>
9. Mission St./ King & Union St.	AM	35.0	D	34.5	C	--		No
	PM	46.2	D	47.3	D	--		No
10. SR 1/Mission St./ Chestnut St.	AM	<b>78.0</b>	<b>E</b>	<b>78.8</b>	<b>E</b>	0.8		No
	PM	<b>87.4</b>	<b>F</b>	<b>91.6</b>	<b>F</b>	0.7		No
11. SR 1/ River St. (SR 9)	AM	<b>100.0</b>	<b>F</b>	<b>93.7</b>	<b>F</b>	0.5		No
	PM	<b>153.4</b>	<b>F</b>	<b>153.9</b>	<b>F</b>	0.5		No

Source: Fehr & Peers, April 2011.

## Notes:

- Whole intersection weighted average total delay for signalized and all-way stop-controlled intersections (expressed in seconds per vehicle). For side-street stop controlled intersections, delays for worst movement and average intersection delay are shown: worst movement (intersection average).
  - LOS calculations performed using the 2000 *Highway Capacity Manual - Special Report 209* delay methods for signalized and unsignalized intersections.
  - Unacceptable operations are indicated in **bold** type.
  - Reduced delay occurs at some intersections as the addition of project traffic is either added to movements with less delay (thus reducing the average delay), or the addition of project traffic modified the actuated cycle length/green time such that the signal operates more efficiently.
- \* Denotes unsignalized intersections.

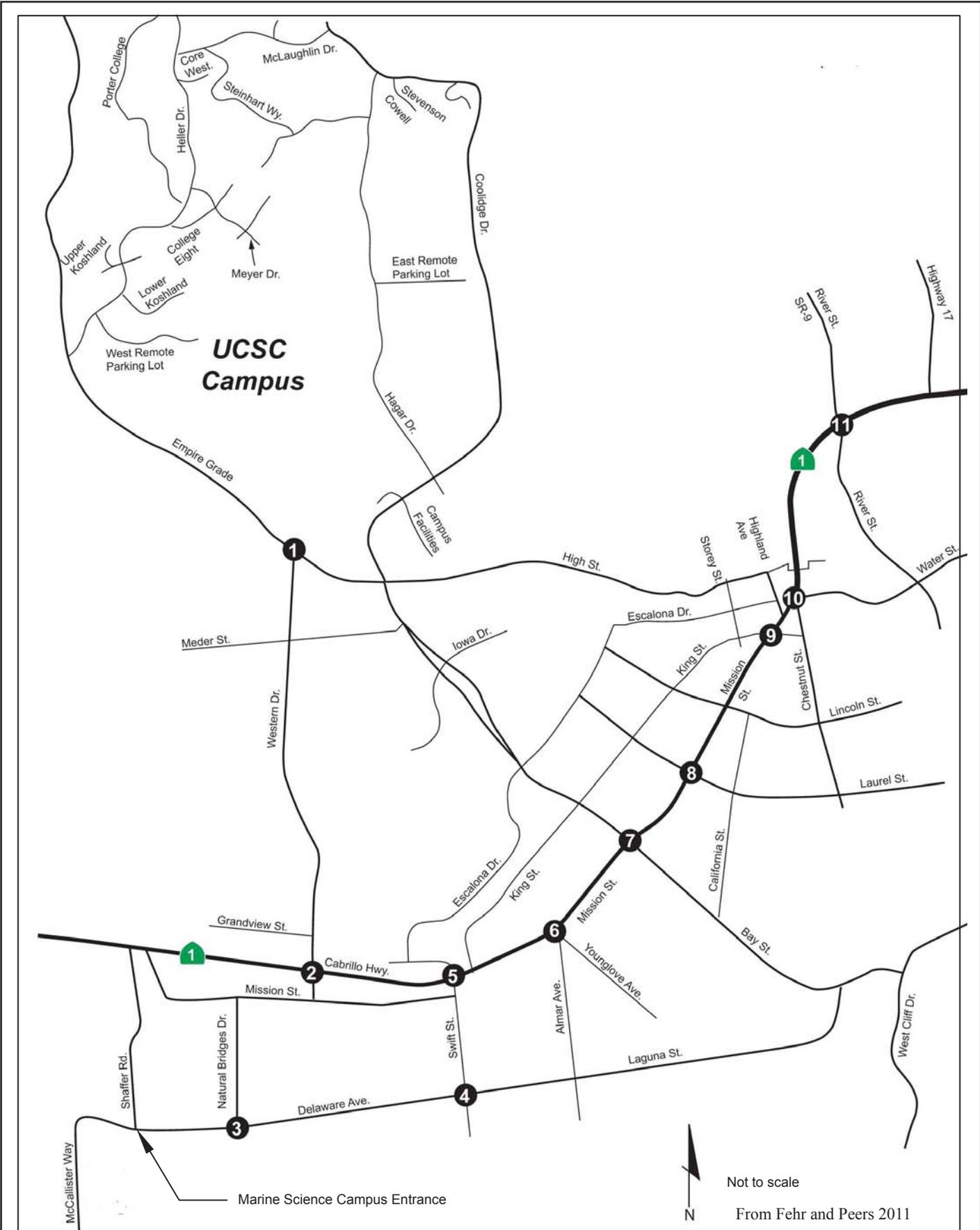
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As discussed above under MSC Impact TRA-2, the University has contributed payments to the City's traffic impact fee program, consistent with its commitment under 2005 LRDP Mitigation Measure TRA-2A (which identified a significant impact at Western/High) and the 2008 Comprehensive Settlement Agreement, to pay for 3,900 new trips above the 2005 baseline trip count at the Main Campus west and main entrances. The University also has committed to contribute funds to the City's Traffic Impact Fee program as agreed under the 2008 Comprehensive Settlement Agreement specifically for development on the MSC. The adoption by the University of the Mitigation Monitoring and Reporting Program for the CLRDP in conjunction with approval of the CLRDP in September 2004 also commits the Campus to pay a fair share of the cost of this improvement. Project trips through the Western/High intersection can be assumed primarily to be trips between the Main Campus and the MSC, and therefore are captured in the Main Campus' annual gate counts of average daily trips, and are further addressed through the Comprehensive Settlement Agreement commitment for MSC traffic contributions to the City's TIF account based on the City's trip generation methodology and fee per trip in place at the time all project approvals are obtained. The improvement identified to mitigate the Western/High impact is included in the City's Traffic Impact Fee Study, which also includes a cost estimate for the improvement. The University has made payments for projected 2005 LRDP-related traffic and has committed to pay its proportionate share of the cost of needed improvements for MSC-related traffic. The Campus' contribution to the impact at Western/High therefore is mitigated to a less-than-cumulatively considerable level and the impact therefore is less than significant after mitigation.

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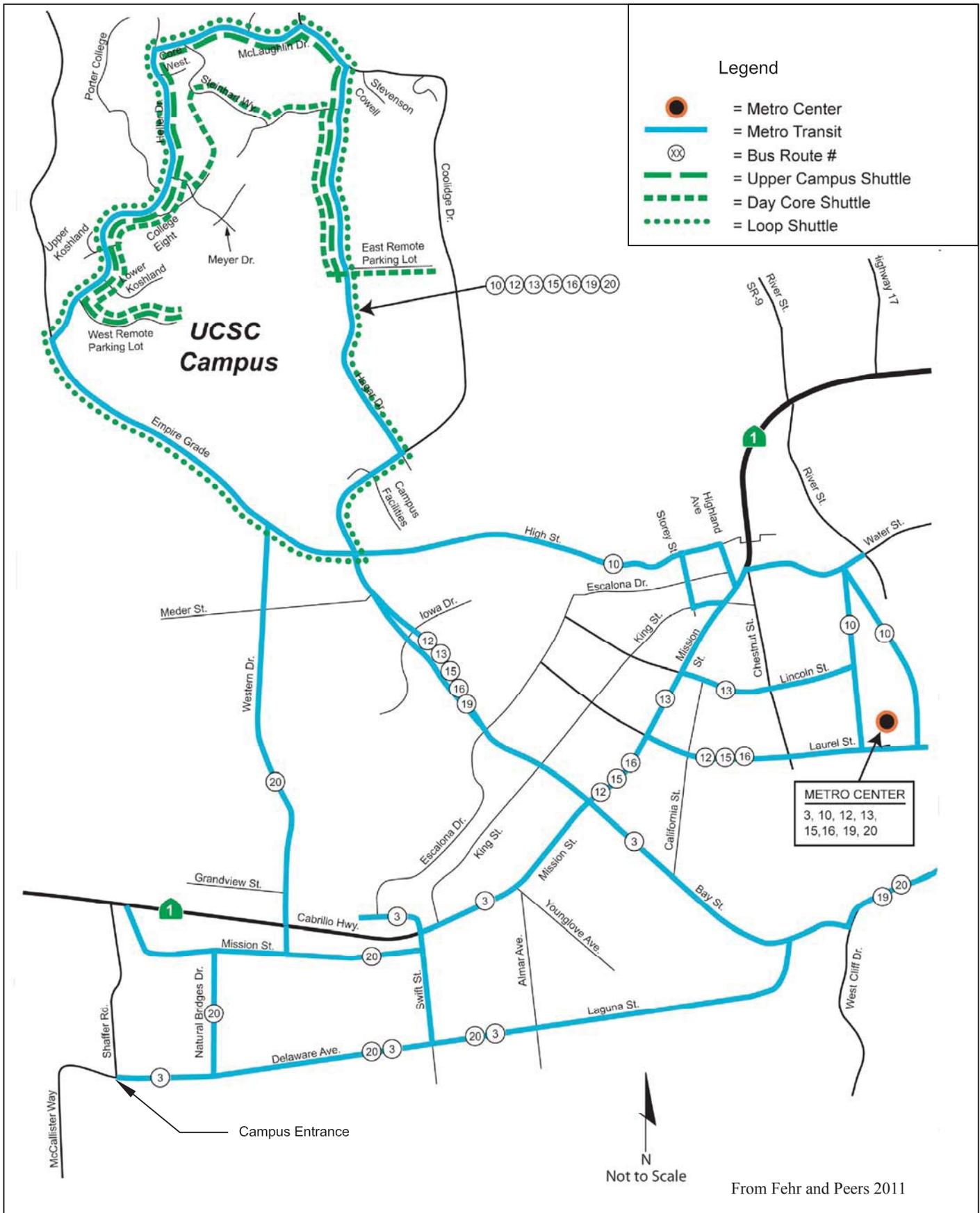
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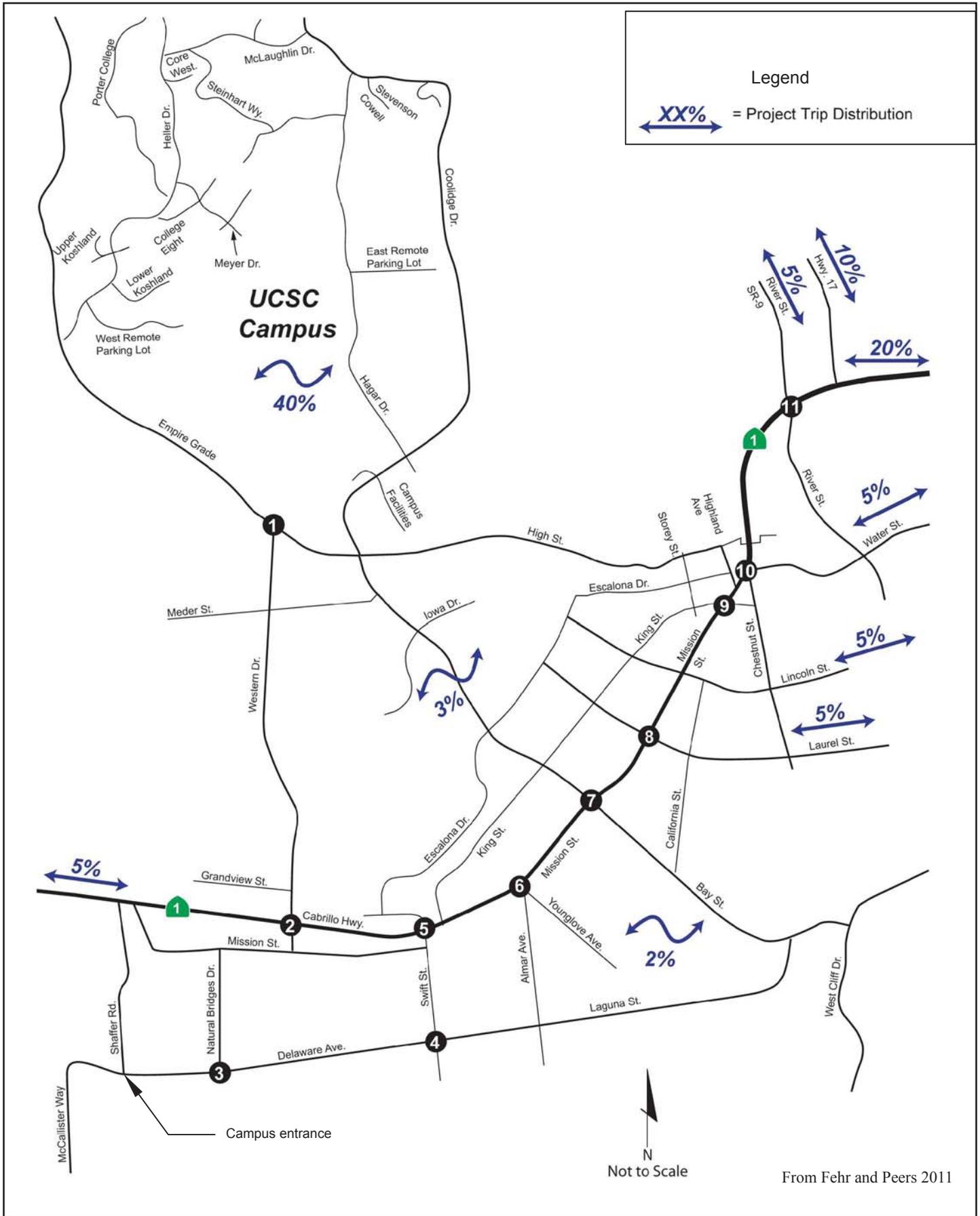


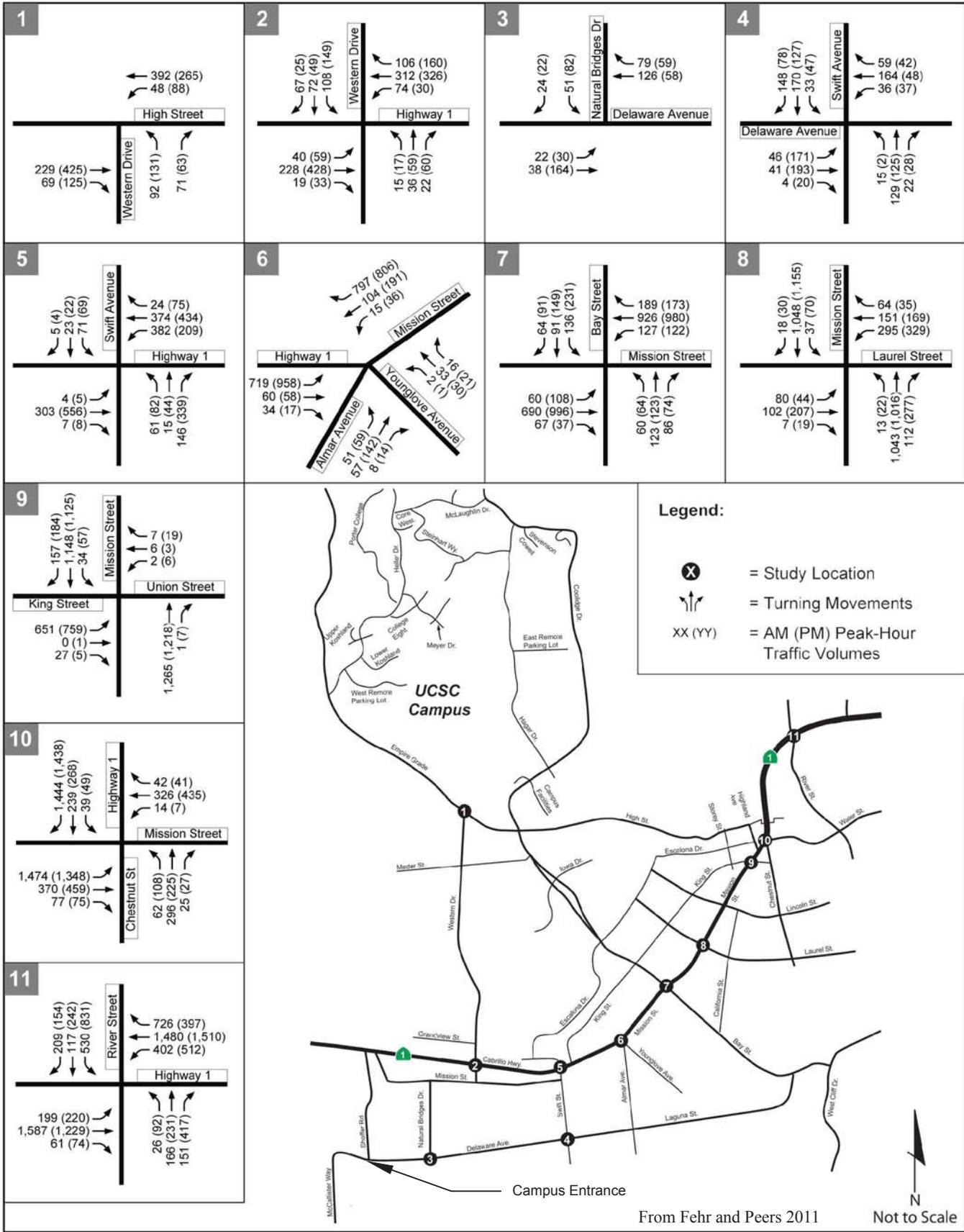
UC Santa Cruz Marine Science Campus  
 Coastal Biology Building and  
 Infrastructure Improvements  
 Final Environmental Impact Report Nov. 2011

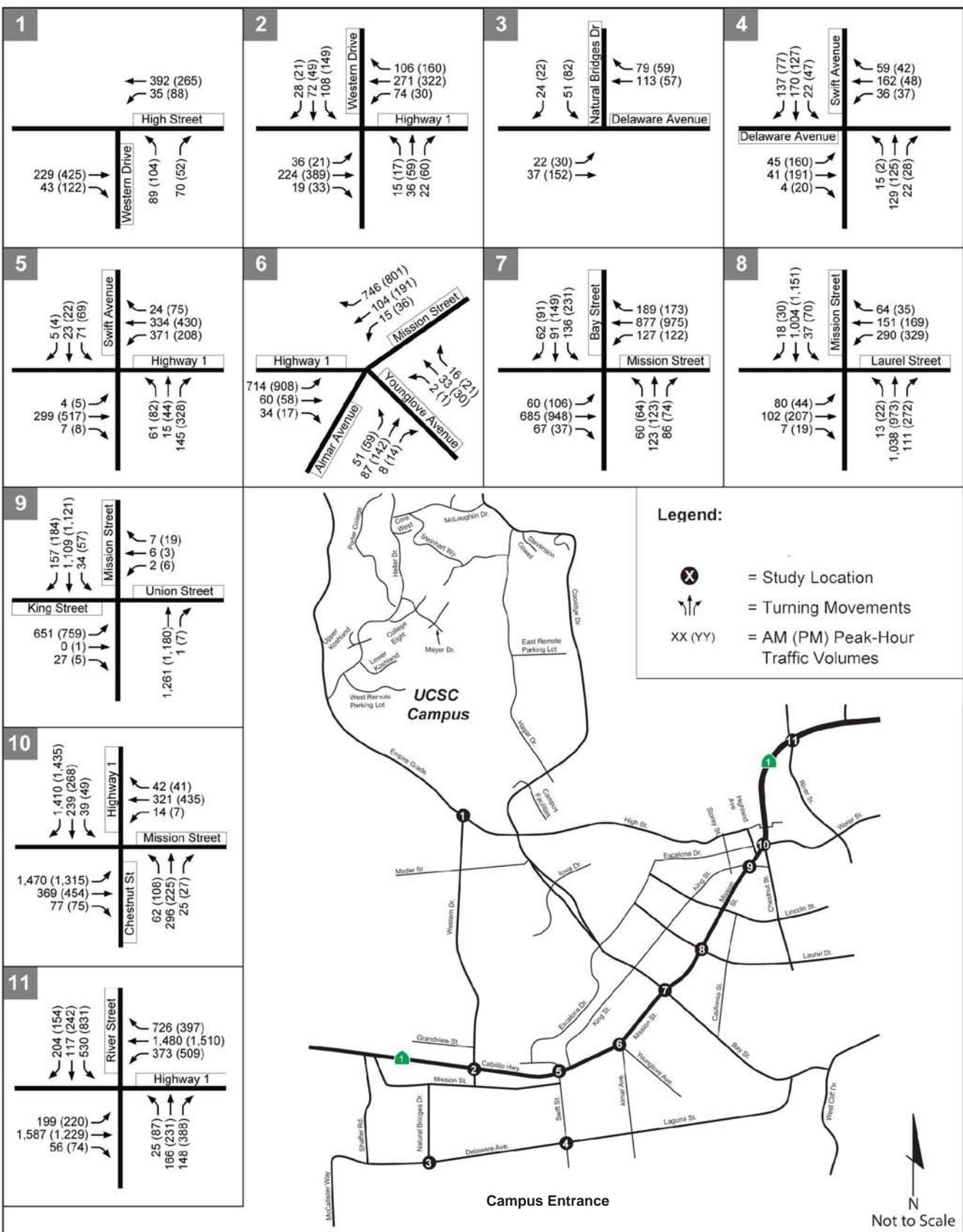
Project Area Circulation Network  
 and Study Intersection

Figure  
 3.15-1

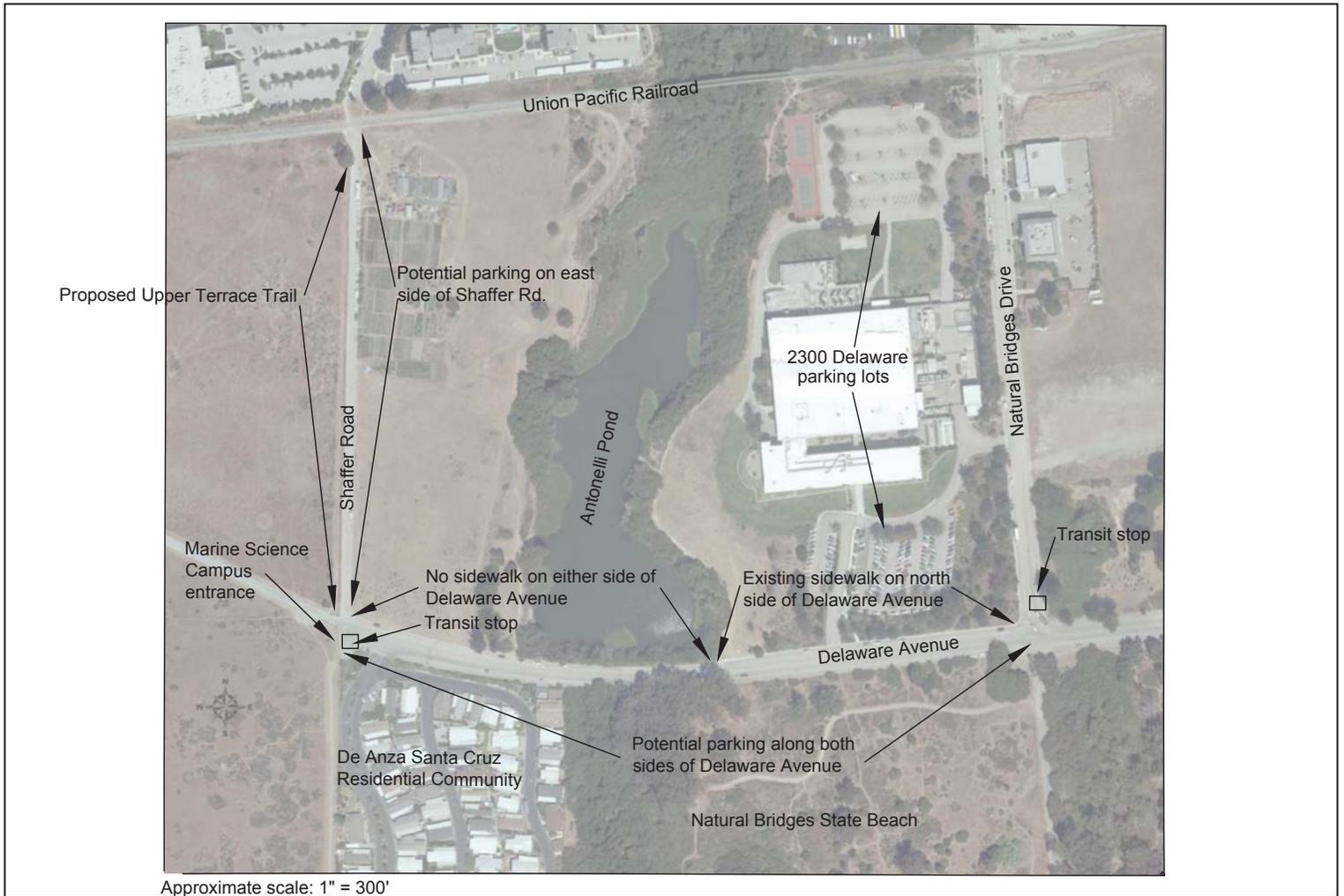




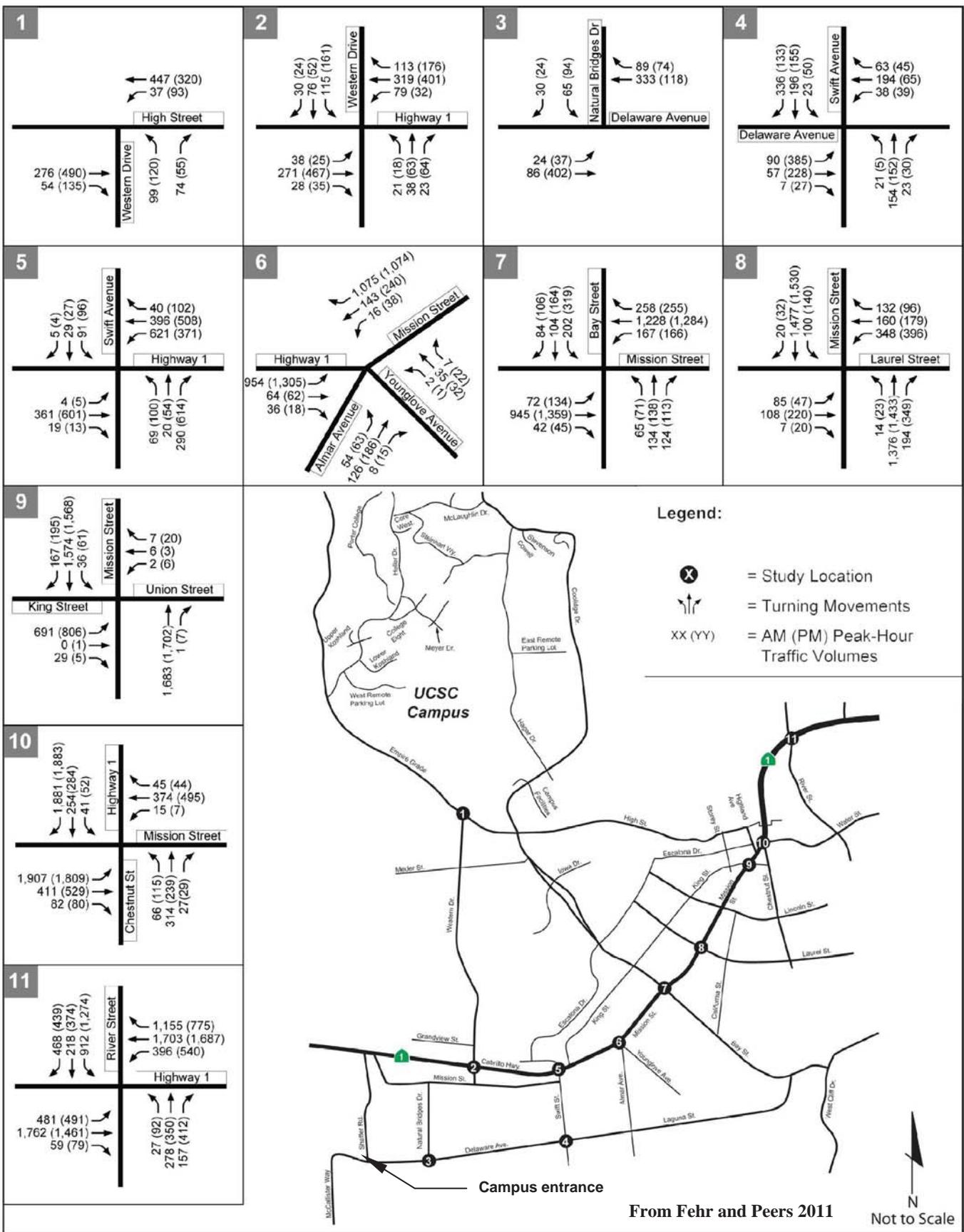


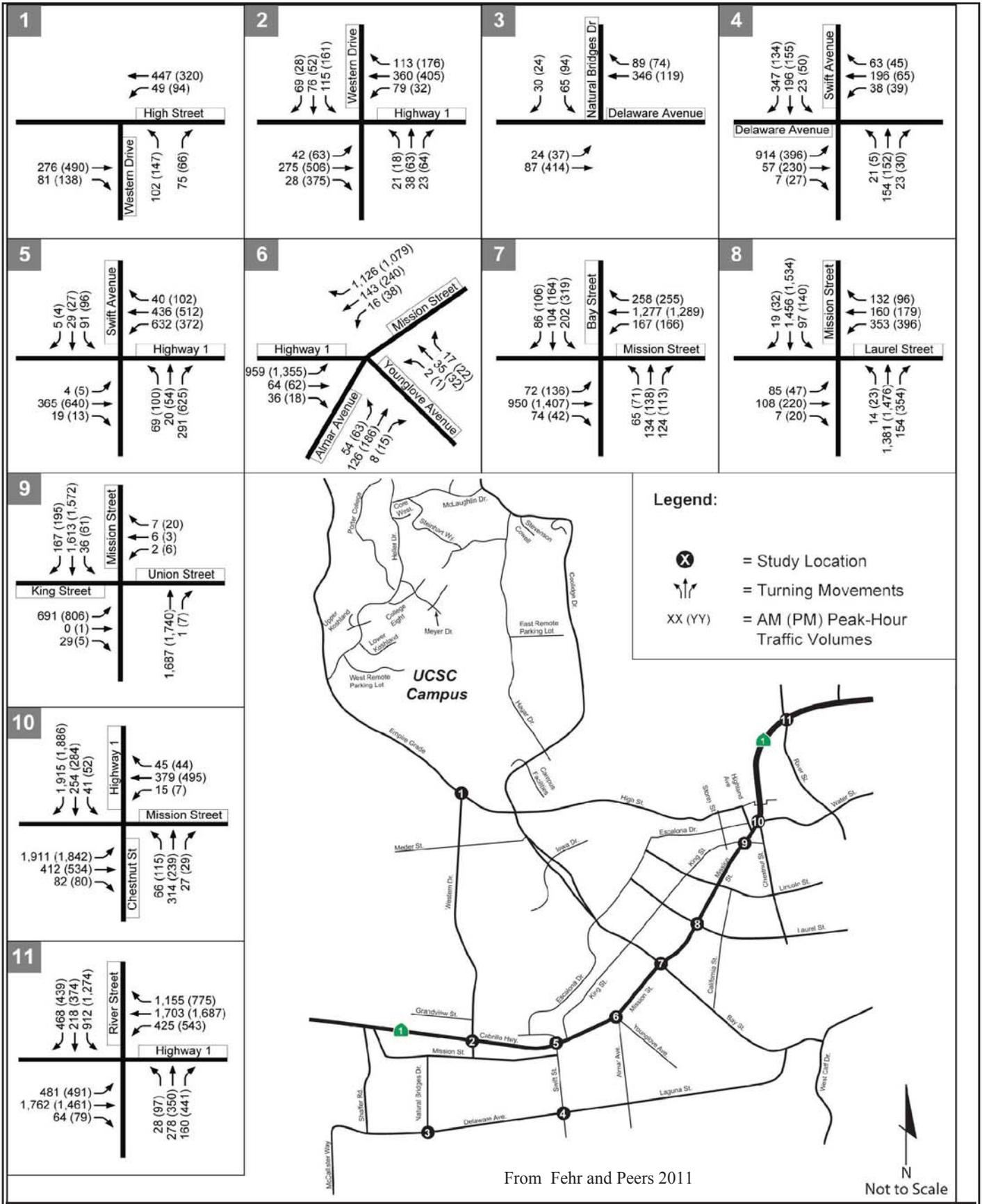






UC Santa Cruz Marine Science Campus Coastal Biology Building and Infrastructure Improvements Final Environmental Impact Report Nov. 2011	Off-Campus Parking Capacity, Transit Stops and Pedestrian Facilities	Figure 3.15-7
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**3.16 UTILITIES AND SERVICE SYSTEMS**

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## 3.16 UTILITIES AND SERVICE SYSTEMS

This section describes existing utilities and service systems serving the Marine Science Campus (MSC) and evaluates the effects on these systems of the proposed MSC Projects. This section describes and evaluates the following utilities and service systems: water supply and distribution, seawater, wastewater, solid waste, electricity, natural gas, and telecommunications. This section provides project-level analysis and additional detail for each of these topics, and it supplements/augments (pursuant to CEQA Guidelines Section 15152) the analysis set forth in the CLRDP EIR's Section 4.16. The improvements to storm water drainage systems that are required to serve the proposed development and the potential environmental impacts of the construction and operation of these systems are analyzed in Section 3.9, Hydrology and Water Quality. The contribution of the project's energy use to global climate change is analyzed in Section 3.5, Climate Change. Energy, and energy conservation are discussed in Chapter 5, Other CEQA Considerations.

During the scoping process for this EIR, comments were received regarding the following:

- The project demand for the seawater system and upgrades to the seawater system required to accommodate additional demand.
- Elements included in the project to move away from the use of fossil fuels.

### 3.16.1 Environmental Setting

#### 3.16.1.1 Study Area

For purposes of evaluating impacts of the proposed project on utilities and service systems, the study area is defined to include all of the MSC and other areas served by the Santa Cruz Water District (SCWD), Santa Cruz Municipal Utilities (SCMU), and local facilities of the Pacific Gas and Electric Company (PG&E).

#### 3.16.1.2 Water Supply

##### Regulatory Setting

The SCWD is a municipal utility owned and operated by the City of Santa Cruz. The governing body for the SCWD is the City Council. The SCWD provides water service to an area of approximately 30 square miles that includes the entire City of Santa Cruz, adjoining unincorporated areas of Santa Cruz County, a small part of the City of Capitola, and coastal agricultural lands north of the City. The SCWD provides water to the MSC under the terms of a 1997 Water System Connections/Construction Agreement with the University.

The SCWD service area includes the MSC. The City's water planning process is governed in part by State laws. The Urban Water Management Planning Act, which became part of the California Water Code with the passage of Assembly Bill 797 in 1983, requires that every urban water supplier that provides water for

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municipal purposes to more than 3,000 customers, or that supplies more than 3,000 acre-feet of water annually, prepare and adopt an urban water management plan and update it every five years. Urban Water Management Plans have taken on a new significance in recent years under related legislation enacted in 2001 that changes the way land-use decisions are linked to water supply availability. Senate Bills 610 and 221 require water agencies to provide detailed assessments of their long-term water supplies to city and county decision makers prior to the approval of certain development projects. The bills also require cities and counties to make findings to verify that adequate water supplies are available before development can proceed. These statutes cite Urban Water Management Plans as a key source of information for preparing assessments and verifications of water supply. The City updated its Urban Water Management Plan (UWMP) in 2005 (City of Santa Cruz 2006). The City Council approved the 2005 UWMP in February 2006.

The California Water Code law requires all public water suppliers to develop contingency plans for situations of up to a 50 percent shortage in water supply and to describe the actions and consumption reduction methods that apply to each stage of the plan. The City of Santa Cruz adopted a new water shortage contingency plan in March 2009. Under the 2008 Comprehensive Settlement Agreement (CSA), which resolved litigation with the City, County, and several community groups and members of the public involving the 2005 Long Range Development (LRDP) for the UC Santa Cruz Main Campus, the University agreed to comply with any service-area-wide water restrictions or mandatory use curtailment imposed by the City in response to a declaration of water shortage emergency conditions.

The City's 2009 Water Shortage Contingency Plan recommends a five-stage approach that classifies shortage events into one of five levels. These range from a Water Shortage Alert for a shortage of less than five percent (Stage 1) to a Critical Water Shortage Emergency for a shortage of 35 to 50 percent (Stage 5) (City of Santa Cruz 2009). At all levels, water uses necessary for health and safety are given the highest priority, business uses the second priority, and all irrigation uses the lowest priority. In all cases except the most extreme (50 percent shortage), the allocation for residential customers would be adequate to meet essential health and safety needs, assuming the use of water-conserving fixtures and minimal leakage. Irrigation use would be subject to the largest reductions, ranging from 30 percent in Stage 2 (15 percent system shortage) to 100 percent in Stage 5. With a system shortage of 50 percent, residential allocations would allow only about 40 gallons per person per day, which would require substantial conservation efforts even for efficient households. At this stage, all outdoor uses, including irrigation and car washing, would be prohibited, and facilities such as public showers, public pools, and hot tubs would likely be forced to close. Local parks and playing fields might also have to be closed. A shortage of 50 percent could constitute a natural disaster and might require management under the state Standardized Emergency Management Plan (City of Santa Cruz 2009).

The City's Water Shortage Contingency Plan includes curtailment allocations for the UC Santa Cruz campus. These allocations, which the City developed in consultation with Campus staff, are based on correlation of UC Santa Cruz water use with those of other user classes (e.g., multi-family residential, commercial, irrigation, etc.). Under these allocations, UC Santa Cruz would be required to reduce water use by a percentage approximately equal to the system shortfall. For example, in the event of a 25 percent shortfall, UC Santa Cruz would be required to reduce use by 24 percent; in a system shortfall of 50 percent, UC Santa Cruz would be required to reduce water use by 48 percent.

### Existing and Planned Water Supply

#### Existing Water Supply

The following description of the City's water supply system summarizes information presented in the 2005 UWMP (City of Santa Cruz 2006). The SCWD relies entirely on rainfall, surface runoff, and groundwater infiltration occurring within watersheds located in Santa Cruz County. No water is purchased from state or federal sources or imported to the region from outside the Santa Cruz area. The City currently obtains water from four sources:

- Diversions from three streams (Reggiardo Creek, Laguna Creek, and Majors Creek) and one natural spring (Liddell Spring) on Santa Cruz County's north coast
- The San Lorenzo River
- Loch Lomond Reservoir
- Live Oak (Beltz) wells

Water is diverted from the San Lorenzo River at two locations: at Tait Street near the City's northern boundary, by way of a surface water diversion and two shallow wells; and at the Felton Diversion Station, about six miles upstream from the Tait Street Diversion. Water from the Felton Diversion Station is pumped to Loch Lomond Reservoir, located on Newell Creek near the community of Ben Lomond. That reservoir also captures and stores runoff flowing into the reservoir directly from the Newell Creek watershed. The nine-mile Newell Creek pipeline carries water from Loch Lomond Reservoir to the City's Graham Hill Water Treatment Plant. The three Live Oak wells in the southeastern portion of the City's water service area draw from the Purisima groundwater basin. The City's use of groundwater from this basin is governed by a cooperative agreement with the Soquel Creek and Central water districts, and by an agreement with the County of Santa Cruz for groundwater management within the Soquel-Aptos Basin, which includes the Purisima formation.

All surface water is treated at the Graham Hill Water Treatment Plan, which has a capacity of about 20 million gallons per day (mgd) (City of Santa Cruz 2006). The Live Oak Treatment Plant treats groundwater from the Live Oak wells to remove manganese and iron and has a capacity of approximately 2 mgd.

According to the 2005 UWMP, about 32 percent of the water produced in the SCWD service area between 2000 and 2004 was obtained from the North Coast diversions; about 47 percent from the San Lorenzo River; about 17 percent from Loch Lomond; and about 4 percent from the Live Oak wells. This is reflective of the manner in which water is obtained in normal water years and during the majority of the year. Because of the lower cost of production, excellent water quality, and fewer water rights limitations, the North Coast sources are used to the greatest extent possible, followed by diversion from the San Lorenzo River. During drier years and summer months, more water is obtained from Loch Lomond and the groundwater wells.

The SCWD shares the San Lorenzo River watershed, its primary source for drinking water, with three other water districts, several private water companies, and individual property owners. Groundwater from

the Purisima formation is used not only by the SCWD, but also by the Soquel Creek Water District (SqCWD), Central Water District, and numerous private property owners (City of Santa Cruz 2006).

The total capacity of the City’s existing water supply sources in normal water years is approximately 4.3 billion gallons per year, as shown in Table 3.15-1, below. Net water production averaged about 3.9 billion gallons per year between 2000 and 2004.

**Table 3.16-1**  
**Capacity of Existing SCWD Water Supplies, by Source**

Source	Groundwater	North Coast Diversions	San Lorenzo River	Loch Lomond Reservoir	TOTAL
<b>Annual water production (millions of gallons)*</b>	187	1,007	2,008	1,042	4,314

**Note:** Assumes normal water conditions and no change to current operations or water rights. **Source:** City of Santa Cruz, 2006.

Supply projections provided in the 2005 UWMP assume that the City would continue to use its existing supply sources as in the past. However, the 2005 UWMP identifies some ongoing “challenges”, which could potentially result in some loss of supply. These sources of uncertainty, which are described in more detail below, are: (1) the City’s permit application under Section 10 of the federal Endangered Species Act and its accompanying proposed Habitat Conservation Plan (HCP) for operations of the City Water and Public Works departments; (2) a Water Rights Conformance Proposal related to the City’s rights to divert water from Newell Creek and San Lorenzo River at Felton; (3) the City’s petition to the State Water Resources Control Board to extend the time the City is allowed for putting to full beneficial use its permit to divert water from the San Lorenzo River at Felton to the Loch Lomond Reservoir; (4) seawater intrusion into the Purisima aquifer; and (5) water quality issues.

**Habitat Conservation Plan.** The City has commenced a federal Endangered Species Act Section 10 permit process to address the effects of City activities, including surface water diversion facilities and pipelines, on threatened and endangered species. The City is negotiating the terms of an HCP that will be filed as part of the permit application. The HCP will address the potential effects of City activities on anadromous salmonids (coho and steelhead) that inhabit the San Lorenzo River; California red-legged frogs (CRLF) that inhabit small coastal streams and ponds; and Pacific pond turtles, which breed at Loch Lomond. It is anticipated that the HCP will require changes in the City’s operation and management activities and in the timing and use of these existing surface water supply sources. The City’s Draft Final Water Supply Assessment (WSA) for the 2030 General Plan, prepared in March 2011, states that the amount of water that will be needed for habitat conservation under the terms of the HCP, and the seasonal variation in the amount needed are “very uncertain.” The HCP may also involve structural remedies to improve habitat that would not affect water supplies, such as placement of woody structures in streams. A draft HCP has not been prepared and the length of time it will take to finalize the HCP is unknown.

Therefore, according to the City's WSA, the effect of implementation of the HCP, if any, on the City's water supply, is unknown (Erler and Kalinowski, Inc. 2011).

**Newell Creek Water Rights Conformance.** The City is in the process of applying to the SWRCB to rectify a technical deficiency in its Newell Creek water rights. The current water rights allow the City to use Loch Lomond only for storage of water diverted from the San Lorenzo River by way of the Felton Diversion, and not for use of the water that flows directly to Loch Lomond from the Newell Creek watershed. The City's application requests that the water rights be amended to allow for direct diversion of runoff, consistent with historic practice. The proposed direct diversion rights are limited to the same volume of water as the existing rights. Approval of the City's application would bring the current operations into conformance with the water rights. If the SWRCB does not approve the City's application, the City would not be permitted to divert water from Newell Creek under certain conditions. Although this would not reduce the total amount of water available to the City, it would reduce the system's operational flexibility (City of Santa Cruz 2006).

**Extension for Felton Diversion.** The City also is applying for an extension of time to make full use of its right to divert water from the San Lorenzo River at Felton. If approved, this extension would provide the City with an opportunity to exercise its rights to divert a larger amount of water from the San Lorenzo River at Felton than the City has diverted historically. The City expects to need the full amount of its rights from the Felton Diversion to meet water demand during operational outages, changes in operations in response to environmental concerns, and dry and drought periods, as well as to meet projected future water demand. The petition is currently being protested by the California Department of Fish and Game and is awaiting decision by the SWRCB. (Erler and Kalinowski 2011).

**Seawater Intrusion.** Production of groundwater from the Purisima aquifer may be compromised by seawater intrusion. In normal years, the City pumps approximately 1 mgd from this aquifer. Historically, during drought conditions the City has used up to 2 million gallons per day (mgd). According to the 2005 UWMP, if all users continue to pump groundwater at the present rate, the City's future use of the Live Oak wells at 2 mgd may not be possible without exacerbating conditions that could lead to seawater intrusion. The City is currently in the process of pursuing installation of replacement wells to provide a capacity of 2 mgd (Erler and Kalinowski 2011).

**Water Quality Issues.** The 2005 UWMP identifies two water quality management issues that may affect supply reliability. First, the quality of the water from Liddell Spring, one of the North Coast sources, is potentially threatened by expansion of a nearby quarry operation. The City is working with the quarry owner to ensure that the long-term quality of this water source is not impaired. Second, the UWMP notes that the Graham Hill Water Treatment Plant cannot at this time operate at its original design capacity because of state and federal drinking water quality regulations and new regulations that require increased disinfection for microbial pathogens. The City plans construction of the required upgrades in 2011–2012.

#### Planned Desalination Plant

Since 1997, the City of Santa Cruz has been considering options for both decreasing demand and increasing supply in order to address the problem of water shortage during drought and to plan for future growth. In November 2005, the City Council adopted the Integrated Water Plan (IWP), which included

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three components: (1) water conservation programs that will result in long-term savings of nearly 300 million gallons per year (mgy); (2) use curtailments of up to 15 percent in drought years; and (3) a seawater desalination plant to provide a backup source of water for drought. The adopted IWP includes an option under which the desalination plant would be constructed and operated in cooperation with the SqCWD so that SqCWD can use up to 1.25 mgd (456 mgy) of the plant's capacity when the City does not need it (City of Santa Cruz 2006). The City plans to build the plant with the capacity to produce 2.5 mgd initially, with the potential for expansion in 1 mgd increments to 4.5 mgd in the future, as needed to avoid greater use curtailments as demand grows and also to meet demand in normal water years in the future.

The 2005 UWMP estimated that the desalination plant would be on-line around the year 2010, pending numerous regulatory agency approvals. However, the City's current schedule anticipates that construction of the full-scale desalination plant will begin in 2012 and will be complete in 2015 (<http://scwd2desal.org>). Even this longer-term schedule is subject to change, however, and the desalination plant has a number of hurdles to clear before final project approval, including technical review of the results of the pilot test and approval by regulatory agencies. The City acknowledges that there is uncertainty with respect to construction of the permanent facility, because design, environmental review, and permitting must still be performed. There is also uncertainty as to whether or when the Coastal Commission will approve the project. Nevertheless, the City is actively planning and pursuing development of the desalination plant and has identified desalination as the only feasible option for developing a new water source in the near term.

#### Marine Science Campus Water Demand

The MSC is located within Santa Cruz City limits, and current and future water service would be provided by the SCWD. Treated water is supplied to the site through a City-owned 12-inch water main in Delaware Avenue at Shaffer Road. On site, a 10-inch water main owned by the University distributes water to the existing University facilities, the Seymour Marine Discovery Center, the National Oceanic and Atmospheric Administration (NOAA) facility, and California Department of Fish and Game (CDFG) facility.

Table 3.16-2 lists the existing uses on the project site and illustrates the water demand generated by those uses. As shown in the table, in 2010 the existing uses on the project site generated an annual water demand of approximately 9 mgy.

**Table 3.16-2**  
**Average Existing MSC Water Demand 2010**

Existing Use	Water Use (gpy) <sup>a</sup>
<b>UC Santa Cruz Facilities<sup>b</sup></b>	7,533,165
<b>NOAA Facility</b>	833,084
<b>Greenhouses</b>	51,611
<b>Irrigation</b>	86,233
<b>CDFG</b>	491,577
<b>TOTAL</b>	<b>8,995,670</b>

<sup>a</sup>Gallons per year.

<sup>b</sup>Includes original LML buildings, Seymour Discovery Center, Center for Ocean Health, and caretaker trailers.

Source: UCSC Physical Plant, 2010 submeter data.

The UC Santa Cruz Main Campus used a total of about 200 million gallons in 2007 and about 201 million gallons in 2008. Total UC Santa Cruz water use, including the Main Campus, the MSC, and 2300 Delaware Avenue, is approximately 212 mgd as of 2010.

*Existing and Projected Demand in the SCWD Service Area*

The City's most recent water planning document, the 2005 UWMP adopted in February 2006, presents two future demand scenarios for the City's water service area through 2020 (City of Santa Cruz 2006). Both scenarios use 2005 as the baseline year. The first scenario assumes that water use by the three major user groups (single-family residential, multi-family residential, and businesses) will grow at an annual rate of about 0.8 percent based on the amount of growth envisioned in the existing housing elements of jurisdictions that are all or partly within the SCWD service area (Santa Cruz County and the cities of Santa Cruz and Capitola). It also assumes that water use at the UC Santa Cruz Main Campus and MSC will grow at the rate projected in the Draft 2005 LRDP EIR. The second scenario is based on lower growth rate projections: about 0.4 percent for the City's three major user groups (based on actual growth rates between 1997 and 2005), and an increase in campus water use that is half that projected in the Draft 2005 LRDP EIR. Under both scenarios, projected demand was adjusted downward to reflect 130 mgd of estimated savings from conservation programs. The 2005 UWMP concludes that under the lower growth scenario, the total cumulative water demand would "increase slightly" from 3.9 billion gallons in 2005 to just over 4 billion gallons a year by 2020. Under the higher growth scenario demand would increase to over 4.3 billion gallons by 2020 (City of Santa Cruz 2006).

The City updated the 2005 UWMP water demand projections as part of the WSA prepared for the City's 2030 General Plan (Erler and Kalinowski 2011). The revised projections extend out to the year 2030 and incorporate changes to UC Santa Cruz' future demand projections in accordance with the 2005 LRDP Final EIR and provisions of the 2008 Comprehensive Settlement Agreement Comprehensive Settlement Agreement with the City of Santa Cruz, the County of Santa Cruz, two community associations, and several individuals to resolve litigation with respect to The Regents' approval of the 2005 LRDP (CSA).

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The updated projections were based on AMBAG's June 2008 population projections. The WSA developed projections for two separate water demand scenarios, assuming the per capita water use projected by the UWMP for the years 2010 through 2020. Scenario 1, which assumes a 0.8 percent annual increase in water demand, reflects a high growth in the City's three largest customer classes (residential, business, and irrigation), which is consistent with general plans for the City's service area. Scenario 2 assumes a 0.4 percent annual increase, which reflects historical trends in water demand growth.

#### Normal Water Years

The WSA estimated that under Scenario 1 (0.8 percent growth in the service area water demand per year), the City's water supplies may, during a normal year, be insufficient to fully support the demands of the existing and planned future uses by 2020. The magnitude of projected shortfall would be about 0.3 percent in 2020 and 5 percent by 2030. Under Scenario 2 (0.4 percent growth per year), the City would have adequate supplies for its water service area through 2030 during normal water years.

#### Drought Years

In drought periods, production from the City's existing water sources is reduced because the yield of surface water sources is lower and the City has limited storage capacity. The 2005 UWMP estimates that in a single dry water year the total water supply would be reduced to 3,800 mgd, and as a result would not be adequate to meet the existing annual demand of approximately 3,900 million gallons. In the second year of drought, the annual supply would be reduced to 2,700 million gallons. According to the 2005 UWMP, in an extreme two-year drought similar to the 1976–1977 event, there could be a peak-season water supply shortfall of 45 percent under existing demand conditions.

Based on historical variation in annual rainfall, the UWMP concludes that, statistically, the likelihood of experiencing a shortage of greater than 10 percent is currently about one in 10. The likelihood of a shortage occurring will increase as system demand increases. If demand increases as projected in the UWMP and the City does not develop new supplies, the maximum peak season shortage would increase to 56 percent by 2020. The frequency of water supply deficits of lesser magnitude would also increase (City of Santa Cruz 2006).

The WSA concludes that the City does not have sufficient water to meet current or future projected water demand during dry years under either the low- or high-growth scenario. This finding is consistent with the 2005 UWMP findings and the conclusions presented in the 2003 Integrated Water Plan. Supply deficits are projected to be the greatest during the second year of a multiple-year drought. The WSA projected that the magnitude of the deficit would increase from 30 or 31 percent in 2010 to between 36 and 38 percent, depending on the rate of growth in demand.

#### Existing Water Distribution System

The MSC currently receives water from the City of Santa Cruz via a 10-inch diameter line. The University owns and operates the water distribution system within the campus. The campus uses City water for domestic purposes in campus buildings, as well as for fire suppression and irrigation. There are no fresh water storage facilities or wells on the site.

A significant portion of the MSC's water distribution system was constructed in 1997 to serve the University and CDFG facilities. A 10-inch-diameter main runs westerly from the City connection to McAllister Way along the approximate route of the proposed new entry road (see Figure 2-3b). The 10-inch diameter main continues south down McAllister Way before reducing to an 8-inch diameter main near the southwestern corner of the NOAA facility. The 8-inch diameter main terminates at the Long Marine Lab at the south end of McAllister Way. In 1999, NOAA constructed a 10-inch diameter extension from the northeast corner of their site running due north along the Middle Terrace Walk utility corridor (see Figure 2-3b). The existing distribution system meets current UC Santa Cruz standards, is in good condition, and has the capacity to handle existing and projected future maximum-day demands. However, the distribution system is not looped and therefore could fail in the event of a break in or service to a water main. Improvements are also required to improve the capacity of the system to meet fire-flow demands for CLRDP development.

### 3.16.1.3 Wastewater

The Santa Cruz Public Works Department provides wastewater collection services to residents of Santa Cruz and to UC Santa Cruz, including the MSC. Wastewater is collected in a network of sewer and trunk lines and conveyed to the City's Wastewater Treatment Plant (WWTP) at Neary Lagoon, located off Bay Street. Treated wastewater is discharged into the Monterey Bay via a 12,000-foot-long ocean outfall line. The WWTP has an existing average dry-weather flow capacity of 17 mgd, and it can accommodate peak wet-weather flows of up to 81 mgd (City of Santa Cruz Public Works Department web site 2008). The plant currently operates at approximately 60 percent of capacity, with an average daily flow of 10 million gpd. The City maintains over 200 miles of sewer pipes ranging from 6 to 54 inches in diameter (City of Santa Cruz Public Works Department web site 2008).

The MSC sanitary sewer collection system is comprised of approximately 3,000 linear feet of pipe ranging in size from 4 to 8 inches in diameter. Wastewater from the Lower Terrace facilities flows to a 10,000-gallon underground tank at the southern end of McAllister Way that has been converted into a lift station wet well. Pumps at this lift station convey flow through a 4-inch force main to a manhole in McAllister Way at the southwest corner of the NOAA site. The wastewater then flows east through a gravity line to a second lift station, at the southeast corner of the NOAA property, which is owned and operated by NOAA. The existing development on the Middle Terrace is served by gravity sewer lines that flow to the NOAA lift station. At the NOAA lift station, these flows are combined with the flow from the NOAA facility and then pumped via a 4-inch force main to another manhole about 400 feet to the north. From there it flows by gravity down an 8-inch line and enters the municipal system at a manhole at Delaware Avenue and Shaffer Road.

A City pump station at Shaffer Road and Delaware Avenue pumps flows through an 8-inch force main that connects to the trunk lines at the intersection of Delaware Avenue and Natural Bridges Drive. From that point, the sewage flows southerly and easterly to the wastewater treatment plant. The City upgraded the pump station in 2010 and sized it to accommodate flows from future development anticipated in the previously approved CLRDP.

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### 3.16.1.4 Solid Waste

This section provides an overview of applicable solid waste regulations and describes existing solid waste and recycling collection services on the Marine Science Campus.

#### *Regulatory setting*

The California Integrated Waste Management Act of 1989 (Assembly Bill [AB] 939) required the implementation of integrated waste management plans and mandated that county and local governments divert at least 50 percent of all solid waste generated, starting January 1, 2000. The University of California is exempt from this Act. However, in 1989, Assembly Concurrent Resolution (ACR) 149 was passed, requesting that the University abide by the diversion benchmarks established in AB 939. It is University policy to comply with ACR 149.

#### *Waste Disposal*

The City of Santa Cruz has its own municipal landfill, located three miles west of the city limits, that serves the entire incorporated city, including UC Santa Cruz. As of 2005, the City of Santa Cruz Public Works Department indicated that this landfill has a total capacity of 10,484,325 cubic yards and a remaining capacity of 6,029,272 cubic yards (58 percent). The landfill is not expected to reach capacity until 2037. The City has a waste diversion rate of about 62 percent (CIWMB web site 2009).

In 2003, the City landfill accepted 56,100 tons of solid waste. The UC Santa Cruz campus disposed directly of about 2,450 tons of solid waste in the City landfill in 2003.<sup>1</sup> This represents about 4 percent of the total waste disposed at the landfill. In FY 2009-10 the campus disposed of 1,938 tons of waste in the landfill (UC Santa Cruz 2011).

#### *Recycling*

Campuswide refuse collection is performed six days a week by the UC Santa Cruz Physical Plant. Recycling has been in place at UC Santa Cruz since 1989. Campus recycling is overseen by Physical Plant, which collects materials from recycling bins throughout the campus, including cardboard; mixed paper; clear and colored glass; aluminum, tin, and steel cans; and plastic. The Campus also collects green-waste, such as tree trimmings and lawn waste, from campus groundskeepers. The Campus operates an “e-waste” recycling program for consumer electronic devices, which are recycled through certified recyclers. UC Santa Cruz has steadily increased the percentage of its waste stream that is recycled (not including construction and demolition waste), from 24 percent in 2002 to 55 percent in 2009-10 (UC Santa Cruz 2011).

### 3.16.1.5 Electricity and Natural Gas

#### *Regulatory Framework*

The State of California regulates energy consumption in new buildings within the state under Title 24 of the California Code of Regulations, developed by the California Energy Commission (CEC). The Title 24

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<sup>1</sup> Materials sent to the landfill include refuse, barnyard and miscellaneous refuse, and surplus waste materials.

Building Energy Efficiency Standards apply to new construction of both residential and non-residential buildings and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The University is required to construct its projects to comply with Title 24 requirements.

### Electricity

Electricity is brought to the campus by 21kV PG&E distribution lines along an easement located off-campus along the west side of the City limit line. The 21kV feed runs down McAllister Way to the Lower Terrace. PG&E supplies power to the University, NOAA, and CDFG through separate metered services. Existing facilities in the Middle Terrace are served by three transformers supplying power to the Avian Facility, NOAA, and CDFG. In the Lower Terrace, the PG&E primary power system terminates at two 21kV/480V step-down transformers located west of the Seymour Center and on the northern edge of the parking lot adjacent to the Ocean Health Building. University-owned electrical lines in the Lower Terrace supply power to the Long Marine Lab buildings, the Ocean Health Building, the Seymour Marine Discovery Center, caretaker units, and the filtered seawater system. Two diesel emergency generators provide backup power for Lower Terrace facilities; the NOAA and CDFG facilities have their own separate emergency generators.

Energy is used at the MSC to pump seawater and heat the dolphin pools at the LML complex and to provide power, heat, and light to the other buildings on the site. The metering system measures electricity for the Long Marine Lab and the Ocean Health buildings as one account, and provides a separate reading for the Seymour Marine Discovery Center. The largest existing electrical loads are the 1,000-gpm pumps that raise seawater from the surf zone to the LML complex on the Lower Terrace (see Section 3.16.16, below).

**Table 3.16-3**  
**Existing MSC Electricity Usage**

Facility	Electricity Usage (kWh)	
	2009	2010
<b>Seymour Marine Discovery Center</b>	478,827	439,854
<b>Caretaker Units</b>	7,893	7,506
<b>Long Marine Lab—Old Facilities</b>	484,723	434,827
<b>Filtered Seawater System</b>	364,799	363,010
<b>Ocean Health Building</b>	1,236,449	1,065,482
<b>TOTAL</b>	<b>2,572,691</b>	<b>2,310,679</b>

Source: UC Santa Cruz Physical Plant, submeter data.

### Natural Gas

Natural gas is used on the campus to heat buildings and domestic water, and for laboratory use. The campus receives natural gas from PG&E's underground gas main in Delaware Avenue at the intersection with Shaffer Road. PG&E owns and maintains the natural gas lines on the campus and supplies natural

gas to the University buildings and the NOAA facility. The natural gas usage for the existing University facilities on the campus is presented in Table 3.16-4.

**Table 3.16-4**

**Existing MSC Natural Gas Consumption**

Facilities	Natural Gas Usage (therms)	
	2009	2010
Ocean Health Building	18,937	24,705
Seymour Center	3,969	4,286
Younger Building	11,107	18,949
Dolphin Facility Boiler	25,781	45,111
Caretaker Trailers	440	314
<b>Total</b>	<b>50,715</b>	<b>76,663</b>

Source: UC Santa Cruz Physical Plant submeter data.

*The Regents Policy on Sustainable Practices*

The University of California Policy on Sustainable Practices includes the following recommendations:

- Incorporate the principles of energy efficiency and sustainability in all capital projects within budgetary constraints and programmatic requirements.
- Minimize the use of nonrenewable energy sources on behalf of the University’s built environment by creating a portfolio approach to energy use, including the use of local renewable energy and purchase of green power from the grid as well as conservation measures that reduce energy consumption.

For new buildings, the policy sets a goal for all new building projects, other than acute-care facilities, to outperform the required provisions of the California Energy Code (Title 24) by at least 20 percent, and states that campus will strive to design buildings that outperform Title 24 energy efficiency standards by 30 percent or more whenever possible. The policy also states that campuses will design and build all new laboratory buildings to a minimum standard equivalent to a LEED™-NC “Silver” rating and the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria (EPC), as appropriate. All new building projects must achieve at least two of the available credits in LEED™-NC’s Water Efficiency category.

*Campus Standards Handbook*

The energy standards contained in CCR Title 24 set the minimum energy efficiency design criteria for all campus construction. The Campus Standards Handbook formalizes UC Santa Cruz’s interest in pursuing cost effective energy conservation measures over and above the requirements of Title 24. In particular, the handbook suggests energy-saving design alternatives and includes guidelines to reduce the cost of energy over the life of a building. For example, all major energy-consuming equipment permanently installed in buildings is to be controlled and monitored by the Campus Energy Management System. In addition, UC Santa Cruz has a policy of providing air conditioning only as needed for proper functioning

and protection of equipment or materials; for environmental control for research if it can be clearly determined that it is more energy efficient to provide cooling than to provide mechanical ventilation in order to meet applicable health and safety standards; and for small temporary units (portables or trailers). To provide for human comfort during the cooling season, Campus Standards require that natural or forced ventilation shall be used to provide cooling in buildings not programmed for air conditioning; and that building designs include provisions to minimize and delay heat gain through the building envelope and to maximize ventilation efficiency.

### 3.16.1.6 Seawater

The seawater system on the MSC consists of two ocean intakes and a distribution system that provide water to the major research facilities system. The original seawater intake was constructed in 1978 and upgraded in 1986 and 2006. This system draws up to 1,000 gallons per minute (gpm) of raw seawater from the surf zone at the southern end of the project site. Seawater is pumped by two centrifugal pumps, each rated at 500 gpm, through two 10-inch intake lines, supported on steel beams at the base of the sea cliff, into a 40-foot tall caisson. The caisson, which was drilled through the roof of a natural sea cave that is exposed to the surf, houses the primary pumps that convey the seawater through underground pipes to a filter system and then to the primary reservoir.

In 2003, NOAA constructed a second ocean intake consisting of a wet sump caisson with two new 50 HP vertical turbine pumps, each rated at 900 gpm. The two vertical turbine pumps deliver 1,500 gpm when operated together. The original intake and the NOAA intake are combined in a common manifold to deliver seawater to four high-rate sand filters. The sand media filters discharge into a 150,000-gallon primary storage reservoir. Two canned vertical turbine pumps distribute filtered seawater from the primary reservoir to secondary seawater storage tanks at four MSC locations.

The filtered seawater distribution system is composed of approximately 2,000 linear feet of 8-inch-diameter pipe located primarily beneath McAllister Way. The system is operated with a constant trickling base flow for the live marine aquaculture tanks and other seawater facilities. The existing distribution locations are currently metered and tied to the University's Honeywell SL500 Energy Management System. Effluent seawater is collected from facilities and transmitted through an 18-inch diameter storm/seawater pipe located in McAllister Way, where it is then discharged into the ocean.

### 3.16.1.7 Telecommunications

The existing AT&T service enters the site from the north via underground conduit along the same alignment as the PG&E electrical line. One conduit is occupied with a copper twisted pair feeder cable serving the site; the other two conduits are open with a pull rope in each. AT&T's underground infrastructure connects to a pull box located at the north end of McAllister Way and continues south along McAllister Way to the Younger building on the Lower Terrace. UC Santa Cruz telephone and network service at the MSC is connected to the Main Campus through a line circuit leased from AT&T. This conduit has turn-ups at five locations on the Middle Terrace.

### 3.16.2 Relevant Features of the Project

The NEF and SRP 1B Projects would not construct any utilities and would not create any demand for utilities and therefore would have no impact related to utilities.

#### 3.16.2.1 Coastal Biology Building (CBB) Project

The proposed Coastal Biology Building (CBB) project includes development of a new lab building, two new parking lots, a Greenhouse Complex, and associated utilities and stormwater system. The proposed Marine Science Campus Infrastructure (MSCI) Project consists of campus utility and circulation improvements to serve both the CBB Project and future campus development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking; an interpretive program shelter; educational signage; and outdoor exhibits. Under the proposed SRP 1B, CLRDP-mandated wetland restoration and habitat improvements would be implemented.

Utility connections to the CBB lab building and greenhouses would be provided from the Middle Terrace utility corridor or from the McAllister Way utility corridor, depending on the utility and the configuration of looping. The CBB Project would also include a 40kW, natural gas/propane emergency generator in the Subarea 6 utility yard, and two 200kW natural gas standby generators at the new utility yard in subarea 2 that would be constructed as part of the MSCI Project.

The estimated water, electricity and natural gas usage and wastewater generation for the CBB lab building and Greenhouse Complex are presented in Table 3.16-5.

**Table 3.16-5  
Estimated Utility Usage for CBB Project**

<b>Project Element</b>	<b>Water Usage (gallons/yr)</b>	<b>Waste Water Generation (gallons/yr)<sup>d</sup></b>	<b>Electricity Usage (kWh/yr)</b>	<b>Natural Gas Usage (therms/yr)</b>
<b>CBB</b>	1,460,000 <sup>a</sup>	1,314,000	712,880 <sup>e</sup>	48,240 <sup>g</sup>
<b>Greenhouses</b>	21,900 <sup>b</sup>	NA	144,000 <sup>f</sup>	3,960 <sup>g</sup>
<b>Greenhouse research facility</b>	142,350 <sup>a</sup>	128,115	58,520 <sup>e</sup>	7,560 <sup>g</sup>
<b>Landscape irrigation</b>	276,386 <sup>c</sup>	NA	NA	NA
<b>TOTAL</b>	<b>1,900,636</b>	<b>1,442,115</b>	<b>915,400</b>	<b>59,760</b>

**Notes:**

<sup>a</sup> Assumes water-use factor of 0.1 gallon/gsf/yr day for Marine Research and Education Facilities, from CLRDP EIR, Table 4.16-3.

<sup>b</sup> Provided by Jim Velzy, Director, UCSC Greenhouses.

<sup>c</sup> Based on 39,950 sf of landscaping, using low-water-use planting.

<sup>d</sup> Wastewater assumed to be 90 percent of indoor water use.

<sup>e</sup> Use factor of 26.6 kWh/yr/asf is based on electricity use at the Ocean Health Building.

<sup>f</sup> Based on a total of 120,000 W of lighting for the six greenhouses, and average annual use of 1,000 hrs/yr; from Jim Velzy, Director, UCSC Greenhouses.

<sup>g</sup> Use factor of 1.8 therms/yr/asf is based on natural gas use at the Ocean Health Building.

Seawater would be used in the seawater tank facility in the new lab building for research. Seawater would be delivered to and collected from the building through connections to the existing seawater supply and discharge pipelines beneath McAllister Way. A seawater storage tank would be constructed on the site adjacent to McAllister Way. No upgrades to the existing raw seawater system would be required to serve the new building.

The CBB Project would generate an estimated 30 tons of solid waste annually.<sup>2</sup>

### 3.16.2.2 Marine Science Campus Infrastructure (MSCI) Project

The proposed MSCI Project would make improvements to the potable water, sewer, storm drain, electrical, and roadway circulation systems throughout the Marine Science Campus to address existing utility deficiencies and to support the future development on the Middle Terrace as described in the CLRDP. The proposed project also includes development of a utility yard in Subarea 2 and associated backbone standby power, and also a propane fuel distribution line in the new roadway and McAllister Way. The project would not make any improvements to the seawater intake, distribution, or discharge system. The proposed utility corridors are shown on Figure 2.3b.

#### Potable Water Distribution System Improvements

Phase A of the MSCI would install approximately 1,360 lf of new 10-inch-diameter water lines to provide a second feed to the Lower Terrace and a looped backbone for service to the CBB and other future development on the Middle Terrace. The additional lines would ensure that there is adequate fire water pressure throughout the campus and would provide system redundancy for uninterrupted service in the event of a pipeline break or other partial system failure. The new 10-inch lines would consist of three segments: (1) along the northern edge of the Middle Terrace Development Zone, to the CDFG facility, where the existing 10-inch distribution main in McAllister Way terminates; (2) from McAllister Way to the Middle Terrace utility corridor north of the proposed CBB lab building; and (3) from McAllister Way to the Middle Terrace utility corridor north of the NOAA facility.

Under MSCI Phase B, 550 feet of new pipeline would be installed under the new service road along the eastern edge of the Middle Terrace Development Zone, and an additional 175 feet of pipeline would connect the southern end of that line to the existing water line in the Middle Terrace Walk utility corridor. New fire hydrants would also be installed along the existing and new water lines to serve future buildings in the Middle Terrace.

#### Sewer Improvements

Under Phase A of the MSCI, the Campus would extend the existing force main in McAllister Way and install new gravity-flow lines, which would bypass the NOAA lift station and connect to the City's sewer at a greater depth than the existing connection. The south-flowing line from the CDFG facility to the southwest corner of the NOAA facility, and the pipeline segment along the southern edge of the NOAA property that now carries flows from the Lower Terrace to the NOAA lift station, would be abandoned.

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<sup>2</sup> Estimated solid waste is based on a factor of 0.0009 tons/asf/yr, provided by UC Santa Cruz Physical Plant (CLRDP EIR, p. 4.16-15).

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The existing force main in McAllister Way would be extended to a new manhole near the northwest corner of the NOAA facility, where it would connect with a new gravity-feed line to be installed beneath McAllister Way and the new MSC road. The new gravity line would connect with the existing sewer line approximately 200 feet west of the campus entrance, and would enter the City's sewer system at a depth of about 26 feet. The new lines would carry the both Lower Terrace flows that now flow to the NOAA lift station and existing and future flows from the CDFG building, the CBB lab building, and other future development north of the NOAA facility in the Middle Terrace Development Zone. MSCI Phase B does not include any sewer system improvements.

#### Electricity

Phase A of the MSCI Project would construct the first phase of a standby electrical generation and distribution system for the CBB Project and future Middle Terrace development. In this phase, new electrical conduit would be installed in the new campus road and McAllister Way and beneath the fire lane north of the CBB lab building to distribute power from the standby and emergency generators that would be installed in the Utility Yard as part of the CBB Project. The Utility Yard would have space for additional generators to be added as needed to serve future development. Phase A of the MSCI Project would also install empty conduit and electrical manholes in the new campus roadway and McAllister Way to allow for a possible future Campus-owned electrical distribution system.

Phase B of the MSCI would extend the new electrical line in McAllister Way south from the NOAA facility to the southern end of the road, and east and west within the Lower Terrace Development Zone to serve future buildings. Phase B would also install approximately 550 feet of new electrical line beneath the new service road along the eastern edge of the Middle Terrace Development Zone, and an additional 175 feet of line to connect the southern end of that line to the Middle Terrace Walk utility corridor.

#### Natural Gas System Improvements

Under MSCI Project Phase A, a portion of the existing natural gas line that crosses the northern portion of the Middle Terrace Development Zone between the campus entrance and McAllister Way would be abandoned at the CDFG facility, and a new line constructed along the new campus entrance road. Phase A also would install a new gas line that would run between the CBB lab building and Parking Lot D, from McAllister Way to the (future) Middle Terrace Walk. This line would serve future development in Development Subarea 9, southeast of the NOAA facility, but would be installed in conjunction with other MSCI Project elements proposed along the same alignment to avoid future disturbance of that area.

MSCI Phase B would install approximately 450 linear feet of natural gas distribution pipeline beneath the proposed service road along the eastern edge of the Middle Terrace Development Zone, to serve future buildings adjacent to the service road.

#### Telecommunications System Improvements

The MSCI Project Phase A would make improvements to the AT&T telephone and UC Santa Cruz fiber service to the campus. The existing AT&T telephone service would be expanded by installing additional conduit from the existing primary AT&T Minimum Point of Entry (MPOE) at the Younger Building to a new MPOE located near the new greenhouses. The new conduit would be installed along McAllister Way between the Lower and Middle terraces.

Phase A of the MSCI Project also would extend the existing UC Santa Cruz dark fiber service to the MSC by installing fiber optic data cable from the MSC entrance, along the existing utility corridor near the route of the new campus entry road, then along the McAllister Way utility corridor to the new Campus Area Distribution Frame (ADF) located in the new Greenhouse Complex (Figure 2-2c).

Phase B would also install approximately 550 feet of new communications line beneath the new service road along the eastern edge of the Middle Terrace Development Zone; 175 feet of new line to connect the service road utility corridor to the Middle Terrace Walk utility corridor; and an additional line that would run east from the new campus entry road at the CDFG facility into the Middle Terrace Development Zone.

#### Filtered Seawater System Improvements

As part of MSCI Phase A, a series of new connection points would be installed along the existing seawater distribution lines to improve system reliability. Each new connection point would be in the form of a “T” in the main supply line, with a valve and a connector in a below-ground hand hole. In the event of a break or other malfunction in the seawater distribution pipeline, a hose would be laid on the ground between the two connection points to bypass the break. These improvements would make it possible to keep the system in service if a segment of the line needs to be repaired, by using the valves to isolate and bypass the problem portion of pipe. These bypass connection points would be spaced approximately 250 feet apart.

During MSCI Phase B, the existing seawater supply and return system would be extended north and east, to serve future buildings in the Middle Terrace Development Zone. Approximately 1,800 LF would be installed in a loop around the exterior boundaries of development Subareas 4 and 8 to provide a redundant supply to future buildings. The existing gravity return line would be extended north, parallel or beneath McAllister Road, for a distance of approximately 300 feet. A second return leg would extend east and then north, for a distance of approximately 1000 feet, to serve buildings in Development Subarea 8.

### 3.16.3 Applicable CLRDP EIR Mitigation Measures

The following CLRDP EIR mitigation measures related to utilities are applicable to the proposed project:

- Mitigation 4.16-1a: Specify all toilets, urinals, showers, and washing machines as low-flush and low-flow.
- Mitigation 4.16-1b: Voluntary compliance with City water demand offset.
- Mitigation 4.16-1d: City can and should develop new water supplies.

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### 3.16.4 Impacts and Mitigation Measures

#### 3.16.4.1 Standards of Significance

For the purposes of this EIR, the proposed MSCI and CBB projects would have a significant impact with regard to utilities and service systems if they would:

- Exceed the Central Coast Regional Water Quality Control Board’s wastewater treatment requirement.
- Require or result in the construction or expansion of water or wastewater treatment facilities, which would cause significant environmental effects.
- Require or result in the construction or expansion of storm water drainage facilities, which could cause significant environmental effects.
- Result in the need for new or expanded water supply entitlements due to insufficient water supplies available to serve the project from existing entitlements and resources.
- Exceed available wastewater treatment capacity.
- Be served by a landfill with insufficient permitted capacity to accommodate the project’s solid waste disposal needs.
- Fail to comply with applicable federal, state, and local statutes and regulations related to solid waste.
- Require or result in the construction or expansion of electrical, natural gas, cooling water, or heating water facilities, which would cause significant environmental impacts.
- Require or result in the construction or expansion of telecommunication facilities, which would cause significant environmental impacts.

Impacts with respect to the standards listed above (with two exceptions: the standards that address water quality effects from the discharge of treated effluent and the impacts of new or expanded storm water drainage facilities) are analyzed in the discussion that follows. Water quality effects from the discharge of treated wastewater, and storm water drainage are analyzed in Section 3.9, *Hydrology and Water Quality*.

#### 3.16.4.2 Project Impacts and Mitigation Measures

##### Water Distribution Infrastructure

<b>CBB Impact UTIL-1</b>	Construction of new water distribution lines on the MSC as part of the MSCI Project could result in impacts to biological and cultural resources, and to water and air quality.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	General Mitigation 4.16-1a General Mitigation Measure 4.16-1b General Mitigation Measure 4.16-1d

	<p>Implementation Measure 2.1.1 - Oversizing of Utility Lines Prohibited</p> <p>Implementation Measure 2.1.2 - Utility Prohibition Zone</p> <p>Implementation Measure 4.2.10 - Placement of Utility Lines Underground</p> <p>Implementation Measure 8.1.1 – Sizing of Utilities</p> <p>Implementation Measure 8.2.1 - Installation of New Utility Lines and Related Facilities</p>
<b>Applicable Projects/Project Elements</b>	MSCI (water distribution lines)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	Not required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR did not analyze the impacts of construction of water distribution infrastructure.

**Project Impact.** The existing City water distribution pipelines have adequate capacity to serve the proposed development. The MSCI Project Phase A and Phase B would construct new Campus-owned water distribution lines along the alignments described in Section 3.16.2.2 and shown on Figure 2-3a. Phase A of the MSCI Project would also relocate the existing City water meter on the south side of Delaware Avenue Extension at the MSC entrance to another, less visible, location in the campus entry area. The CBB Project would construct new water lines to the CBB lab building from the new water line across the Middle Terrace north of the new lab building, and from an existing water line south of the CDFG facility to the new Greenhouse Complex. The environmental impacts of constructing the new water lines and relocating the water meter are addressed in other sections of this EIR.

Vegetation clearing, ground disturbance, and the use of heavy equipment for construction could result in impacts at the MSC to biological resources and undiscovered cultural resources. Construction emissions of air pollutants could impact air quality, and construction soil disturbance could affect the quality of storm water runoff. The Campus would implement the mitigation measures identified in Section 3.4, *Biological Resources*, and Section 3.6, *Cultural Resources*, to mitigate potential impacts to biological and cultural resources from construction of new water pipelines to a less-than-significant level. Potential impacts to air quality and water quality from construction activities related to utility extensions or placement would be mitigated to less-than-significant levels by implementing mitigation measures presented in Section 3.3, *Air Quality* and Section 3.9, *Hydrology and Water Quality*. Therefore, the effects associated with utility extensions on campus would be less than significant.

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*Water Supply*

<b>MSC Projects Impact UTIL-2</b>	Development of the proposed CBB Project would result in new water demand of approximately 1.9 million gallons per year in normal water years.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	General Mitigation 4.16-1a General Mitigation Measure 4.16-1b General Mitigation Measure 4.16-1d
<b>Applicable Projects/Project Elements</b>	CBB Project (lab building and Greenhouse Complex)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	Not required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.16-13 to 4.16-14) estimated that the water demand associated with development under the CLRDP would be 0.45 percent of the existing system demand for the SCWD service area, which would not constitute a significant increase in water demand. The other proposed MSC Projects would not result in any operational water demand. Therefore, implementation of the CLRDP would not require new or expanded water entitlements or construction of new or expanded water supply facilities, and the impact of development under the CLRDP on regional water supply would be less than significant.

**Project Impact.** The projected water demand for the proposed CBB Project would be approximately 1.9 mgy, which would be approximately 0.05 percent of existing system demand. The other proposed MSC Project would not result in any operational water demand. Consistent with CLRDP EIR General Mitigation Measure 4.16-1a and Campus Standards, the Projects would include high-efficiency plumbing fixtures, including dual-flush (1.6/1.1gpf) toilets, 0.125-gpf urinals, 0.5-gpm restroom faucets, and 1.5-gpm showerheads. As required by the CLRDP, all landscaping plantings would be native plant species that are appropriate to the habitat and region, and therefore would not require significant irrigation after they have been established.

As described in Section 3.16.1.2, the City's March 2011 WSA (p. 40) assumes that the City's available water supply during normal water years will remain constant at 4,314 mgy through 2030. The WSA estimates the water demand in the City's service area in 2010 at between 3,522 and 3,993 mgy. On the basis of this analysis, it appears that the City has an excess capacity of approximately 300 mgy. The CBB Project would use approximately 0.6 percent of this remaining capacity. As discussed above, the City is negotiating with NOAA Fisheries Service the terms of an HCP that will result in loss of some of the City's existing water supplies. Because the terms of the HCP have not been determined and have not been taken into account in the City's published water planning documents, it would be speculative for this EIR to draw conclusions about the effect of the future HCP on the ability of SCWD to meet the project

demand. Therefore, existing, available, water supplies are sufficient to provide water to the proposed project in normal water years, and the impact would be less than significant.

<b>MSC Projects Impact UTIL-3</b>	Development of the proposed CBB Project would result in new water demand of approximately 1.9 million gallons per year (mgy), which could exacerbate water shortages that may occur in drought years under existing demand conditions.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	General Mitigation 4.16-1a General Mitigation Measure 4.16-1b General Mitigation Measure 4.16-1d
<b>Applicable Projects/Project Elements</b>	CBB Project (lab building and Greenhouse Complex)
<b>Significance</b>	Less than significant
<b>Project Mitigation:</b>	Not required

**Previous Analysis.** The CLRDP EIR (pp. 4.16-13 to 4.16-14) acknowledged that, under drought conditions, current water supplies are less than the service area water demands, but concluded that the CLRDP’s entire building program itself would not require new or expanded water entitlements or construction of new or expanded water supply facilities, and therefore effects on water supply related to the CLRDP’s entire building program would be less than significant.

**Project Impact.** New water demand associated with the proposed CBB Project would add to existing service-area-wide water demand during drought periods, when supplies are not adequate to meet existing demand. The other proposed MSC Projects would not contribute operational water demand. UC Santa Cruz’ share of peak-season system-wide demand is approximately 5 percent. Under drought conditions, the campus would reduce its use of water from the City in conformance with the curtailments required of other similar users under the City’s Water Shortage Contingency Plan. The curtailments would range from 15 percent to 52 percent for the campus as a whole, depending on the severity of the drought (City of Santa Cruz 2009). Such curtailments would ensure that demand, including project demand, is within available supplies in drought years. Therefore, the project impact with respect to water supply during drought years is less than significant and project mitigation is not required.

*On-Campus Wastewater Conveyance*

<b>MSC Projects Impact UTIL-4</b>	Construction of the new sewer line on the MSC as part of the MSCI Project could result in impacts to biological and cultural resources, site hydrology, and water and air quality.
<b>Applicable CLRDP Mitigation/Implementation</b>	Implementation Measure 2.1.1 - Oversizing of Utility Lines Prohibited Implementation Measure 2.1.2 - Utility Prohibition Zone

<b>Measures</b>	Implementation Measure 4.2.10 - Placement of Utility Lines Underground Implementation Measure 8.1.1 – Sizing of Utilities Implementation Measure 8.2.1 - Installation of New Utility Lines and Related Facilities
<b>Applicable Projects/Project Elements</b>	MSCI Project (sewer line)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	Not required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR did not analyze the impacts of construction of new wastewater conveyance facilities.

**Project Impact.** As described in Section 3.16.2.2, above, the MSCI Project would install new gravity-flow sewer lines and extend an existing force main in McAllister Way. Wastewater from the proposed CBB lab building and new Greenhouse Complex would discharge to the new MSC sewer line to be constructed in McAllister Way as part of the MSCI Project. The environmental impacts of constructing the new sewer lines are addressed in other sections of this EIR. Vegetation clearing, ground disturbance, and the use of heavy equipment for construction could result in impacts at the MSC to biological resources and undiscovered cultural resources. Construction emissions of air pollutants could impact air quality, and construction soil disturbance could affect the quality of storm water runoff. The Campus would implement the mitigation measures identified in Section 3.4, *Biological Resources*, and Section 3.6, *Cultural Resources*, to mitigate potential impacts to biological and cultural resources from construction of new water pipelines to a less-than-significant level. Potential impacts to air quality and water quality from construction activities related to utility extensions or placement would be mitigated to less-than-significant levels by implementation of mitigation measures identified in Section 3.3, *Air Quality* and Section 3.9, *Hydrology and Water Quality*. Therefore, the effects associated with on-campus wastewater conveyance pipelines would be less than significant.

*Off-Campus Wastewater Treatment and Conveyance*

**Previous Analysis.** Wastewater flows from the MSC are conveyed to the City’s wastewater treatment plant. The treatment plant has a design capacity of 17 million gpd and current average daily flow of 10 million gpd. The CLRDP EIR estimated that development under the CLRDP would increase wastewater flows by an average of approximately 49,000 gpd, or 17,000 mgd, and concluded that the treatment plant would have adequate capacity to serve the campus.

**Project Impact.** The CBB Project would generate approximately 1.4 mgd of wastewater, or an average of approximately 3,800 gpd. The project is within the capacity of the City’s existing wastewater treatment plant and would not result in the need for expansion of the City’s wastewater treatment plant. With the

upgrades to the City's wastewater pump station at Delaware Avenue and Shaffer Road in 2010, the City's wastewater conveyance system has adequate capacity to serve development under the CLRDP. Therefore the project would not require improvements to off-campus wastewater conveyance systems that could result in significant environmental impacts.

Solid Waste

<b>MSC Projects Impact UTIL-5</b>	Construction activities associated with the MSC Projects and operation of the CBB Project would generate solid waste but would not result in the need for construction of a new landfill.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/Project Elements</b>	CBB, MSC I, and NEF Projects (construction activities) CBB Project (operations)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	Not required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR determined that, because the existing City landfill has adequate capacity to serve the CLRDP's waste disposal needs, and the University has and would continue to voluntarily comply with state and local statutes pertaining to solid waste through its campuswide recycling program, implementation of the CLRDP would result in a less-than-significant impact with respect to solid waste.

**Project Impact.** The Campus would require the construction contractors hired to construct MSC Projects to divert from landfill disposal a minimum of 75 percent of nonhazardous project construction waste, other than excavated soil and land clearing debris.

Project operations would generate approximately 36 tons of solid waste annually. The CLRDP EIR estimated that development under the CLRDP would generate a total of 470 tons per year of solid waste at full development. UC Santa Cruz has steadily decreased the percentage of its waste stream that is sent to landfill disposal, from 76 percent in 2002 to 45 percent in FY 2009-2010 (UC Santa Cruz 2011). The CLRDP EIR determined that because the City's landfill has adequate capacity to accept this amount of waste, and because the University has and would continue to voluntarily comply with state and local statutes pertaining to solid waste through its campus-wide recycling program, implementation of the CLRDP would not result in the need for expansion of the existing landfill or construction of a new landfill. The Projects' impact would be less than significant.

*Electricity*

<b>MSC Projects Impact UTIL-6</b>	Construction of the new electrical lines and emergency and standby generators on the MSC as part of the CBB and MSCI projects could result in impacts to biological and cultural resources, and to water and air quality.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	Implementation Measure 2.1.1 - Oversizing of Utility Lines Prohibited Implementation Measure 2.1.2 - Utility Prohibition Zone Implementation Measure 4.2.10 - Placement of Utility Lines Underground Implementation Measure 8.1.1 – Sizing of Utilities Implementation Measure 8.2.1 - Installation of New Utility Lines and Related Facilities
<b>Applicable Projects/Project Elements</b>	CBB and MSCI Projects (new electrical lines and generators)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	Not required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR estimated that the full CLRDP development program would increase energy use on the campus by approximately 3.8 MWh.

**Project Impact.** The projected annual electricity usage for the CBB Project is 915,400 kWh. The project would be served by connections to the existing PG&E service in McAllister Way. The project would also include a 40kW natural gas/propane emergency generator in the Subarea 6 utility yard and two 200-kW natural gas standby generators at the new Utility Yard in Development Subarea 2 that would be constructed as part of the MSCI Project. Standby power would be distributed to the new lab building and Greenhouse Complex via underground conduits in the McAllister utility corridor. The environmental impacts of constructing the new electrical lines and generators are addressed in other sections of this EIR. Vegetation clearing, ground disturbance, and the use of heavy equipment for construction could result in impacts at the MSC to biological resources and undiscovered cultural resources. Construction emissions of air pollutants could impact air quality, and construction soil disturbance could affect the quality of storm water runoff. The Campus would implement the mitigation measures in Section 3.4, *Biological Resources* and Section 3.6, *Cultural Resources* to mitigate potential impacts to biological and cultural resources from construction of the new electrical lines and generators to a less-than-significant level. Potential impacts to air quality and water quality from construction activities related to new utility lines and generators would be mitigated to less-than-significant levels by implementing mitigation measures

presented in Section 3.3, *Air Quality* and Section 3.9, *Hydrology and Water Quality*. Therefore, the effects associated with on-campus electrical lines and generators would be less than significant.

Natural Gas

<b>MSC Projects Impact UTIL-7</b>	Construction of the new natural gas lines on the MSC as part of the CBB and MSCI projects could result in impacts to biological and cultural resources and to water and air quality.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	Implementation Measure 2.1.1 - Oversizing of Utility Lines Prohibited Implementation Measure 2.1.2 - Utility Prohibition Zone Implementation Measure 4.2.10 - Placement of Utility Lines Underground Implementation Measure 8.1.1 – Sizing of Utilities Implementation Measure 8.2.1 - Installation of New Utility Lines and Related Facilities
<b>Applicable Projects/Project Elements</b>	CBB and MSCI Projects (natural gas lines)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	Not required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** According to the CLRDP EIR, no major offsite improvements would be required to accommodate the natural gas demand associated with development under the CLRDP. Onsite improvements would include the extension of underground gas service to new buildings from existing gas mains. The CLRDP EIR did not analyze the environmental impacts of the extension of underground gas service to new buildings from existing gas mains.

**Project Impact.** The estimated natural gas demand of the proposed Projects is 59,760 therms, and the projected annual natural gas use is 59,670 therms. The CBB lab building, the new Greenhouse Complex, and the utility yard would be served by new connections to the existing PG&E natural gas line. The environmental impacts of constructing the new gas lines are addressed in other sections of this EIR. Vegetation clearing, ground disturbance, and the use of heavy equipment for construction could result in impacts at the MSC to biological resources and undiscovered cultural resources. Construction emissions could impact air quality, and construction soil disturbance could affect the quality of storm water runoff. The Campus would implement the mitigation measures in Section 3.4, *Biological Resources* and Section 3.6, *Cultural Resources* to mitigate potential impacts to biological and cultural resources from construction of the new gas lines to a less-than-significant level. Potential impacts to air quality and water quality from construction activities related to new utility lines would be mitigated to less-than-significant levels by implementing mitigation measures presented in Section 3.3, *Air Quality* and Section 3.9,

*Hydrology and Water Quality.* Therefore, the effects associated with construction of on-campus natural gas lines would be less than significant.

Telecommunications

<b>MSC Projects Impact UTIL-8</b>	Construction of new telecommunications facilities on the MSC as part of the CBB and MSC Projects could result in impacts to biological and cultural resources, and to water and air quality.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	Implementation Measure 2.1.1 - Oversizing of Utility Lines Prohibited Implementation Measure 2.1.2 - Utility Prohibition Zone Implementation Measure 4.2.10 - Placement of Utility Lines Underground Implementation Measure 8.1.1 – Sizing of Utilities Implementation Measure 8.2.1 - Installation of New Utility Lines and Related Facilities
<b>Applicable Projects/Project Elements</b>	CBB and MSC Projects (telecommunications facilities)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	Not required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR did not analyze the environmental impacts of the new on-campus telecommunications facilities that would be required to serve development under the CLRDP.

**Project Impact.** The MSC would make improvements to the AT&T telephone and UC Santa Cruz fiber optic service to the MSC. The existing AT&T telephone service would be expanded by installing additional conduit from the existing AT&T pull box at the north end of McAllister Way, south along the existing AT&T conduit alignment. The new conduit would be installed in an existing trench in McAllister Way to the southern end of the Middle Terrace Development Zone, with a new lateral trench for conduit to the proposed CBB building.

The project would upgrade the existing UC Santa Cruz fiber optic service to the MSC by installing fiber optic data cable from a new connection point at the MSC entrance. From the entrance, the new fiber optic conduit would be installed in the existing utility corridor near the route of the new campus entry road, then along the McAllister Way utility corridor. AT&T and fiber optic service to the CBB lab building and the new Greenhouse Complex would be provided from the new or existing service in McAllister Way.

All new telecommunications lines would be within the utility alignments as shown on Figure 2-3b. The environmental impacts of constructing the new telecommunications lines are addressed in other sections of this EIR. Vegetation clearing, ground disturbance, and the use of heavy equipment for construction

could result in impacts at the MSC to biological resources and undiscovered cultural resources. Construction emissions could impact air quality, and construction soil disturbance could affect the quality of storm water runoff. The Campus would implement the mitigation measures in Section 3.4, *Biological Resources* and Section 3.6, *Cultural Resources*, to mitigate potential impacts to biological and cultural resources from construction of the new telecommunications lines to a less-than-significant level. Potential impacts to air quality and water quality from construction activities related to new utility lines would be mitigated to less-than-significant levels by implementing mitigation measures presented in Section 3.3, *Air Quality* and Section 3.9, *Hydrology and Water Quality*. Therefore, the effects associated with development of on-campus communications infrastructure would be less than significant.

### 3.16.4.3 Cumulative Impacts and Mitigation Measures

#### Water Supply

<b>MSC Projects Impact UTIL-9</b>	Development of the proposed CBB Project, in conjunction with other development in the SCWD service area, would result in additional water demand in a system that has inadequate supplies during drought periods and that may not have adequate supplies in normal water years after 2020. The contribution of the proposed project to this impact would not be cumulatively considerable.
<b>Applicable CLRDP Mitigation</b>	General Mitigation Measures 4.16-1a through 4.16-1d
<b>Applicable Projects/ Project Elements</b>	CBB Project All Projects (short-term irrigation)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure UTIL-9:</b> Before CBB Project construction is completed, the Campus shall conduct a water efficiency study of existing University facilities at the MSC. The study will assess existing campus water uses, identify options for reducing water consumption, prioritize feasible improvements based on the amount of potential water savings and cost effectiveness, and recommend top priority measures for implementation within the succeeding five years. The Campus shall implement the top priority measures within five years of completing the study.
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** At the time the CLRDP EIR was certified in September 2004, the City had not yet conducted environmental review of the IWP, including the proposed desalination plant. In the absence of

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this environmental review, the CLRDP EIR (pp. 4.16-17 to 4.16-18) conservatively assumed that development of a new water supply by the City to meet demand during drought could cause significant adverse effects on the environment. Therefore, the CLRDP EIR concluded that the cumulative impact associated with water supply needed to support development in the SCWD service area would be significant and unavoidable, and development under the CLRDP would make a cumulatively considerable contribution to this impact.

**Project Impact.** As discussed under MSC Projects Impacts UTIL-2 and UTIL-3, above, the MSC, NEF, and SRP 1B Projects would not result in new water demand except for temporary short-term irrigation as required for establishment of landscape and restoration plantings. Furthermore, existing water supplies are adequate to serve the proposed CBB Project during normal water years, and in drought years the campus would reduce its use of water from the City consistent with the curtailments required of other similar users. Therefore, the project impact is less than significant. The cumulative impact would be considered significant if the cumulative water demand would trigger the need for new or expanded water resources, the development of which would have significant environmental impacts.

As explained in Section 3.0, cumulative analysis in this EIR is based on a list of past, present, and probable future projects producing related or cumulative impacts. The study area for the analysis of cumulative water impacts is the area within the City of Santa Cruz water service boundaries, which includes UC Santa Cruz, the City of Santa Cruz, a portion of the City of Capitola, and some unincorporated areas of Santa Cruz County. UC Santa Cruz and City of Santa Cruz projects that would contribute to this impact are listed in Table 3.0-1. For the analysis of cumulative water supply impacts, an estimate of water demand for reasonably foreseeable projects in areas outside the City that are within the City's water service area was obtained from the City of Santa Cruz Planning Department. The City of Santa Cruz estimates that City of Santa Cruz, City of Capitola, and County projects that have been approved, are under construction, or have pending applications would result in a cumulative additional water demand of approximately 144 mgd (City of Santa Cruz 2010). The Campus estimates that the water demand from reasonably foreseeable campus projects, including the CBB Project, would be approximately 33.4 mgd (Table 3.16-6). Therefore, the total cumulative water demand would be approximately 177 mgd.

**Table 3.16-6****Projected Water Demand, Pending or Approved Reasonably Foreseeable Projects**

<b>Name/Address</b>	<b>Description</b>	<b>Projected Water Demand (mgy)</b>
<b>Non-UC Projects</b>		
<b>City of Santa Cruz Projects</b>	See list in Table 3.0-1	91
<b>City of Capitola and County of Santa Cruz Projects</b>	Provided by City Water Department based on increased population growth to 2020 based on AMBAG population projections.	53
<b>Subtotal, Non-UC Projects</b>		<b>144</b>
<b>UC Santa Cruz Projects</b>		
<b>Infrastructure Improvements, Phase 1 (cooling tower)</b>	Improvements to campus cooling water system, including new evaporative cooling tower	4
<b>UCSC Ranch View Terrace</b>	84 single-family dwellings (including 45 completed and occupied in 2008)	10.7
<b>McHenry Library</b>	Renovation and 85,400 new asf	2.6
<b>Cowell Student Health Center</b>	Renovation and 7,600 new asf	0
<b>Biomedical Sciences Facility</b>	Research labs and offices: 57,200 asf	1.9
<b>Porter A and B Student Residence Hall Additions</b>	Student housing (298 beds); completed and occupied 2009 and 2010	1.8
<b>Social Sciences Facility Phase 1</b>	Teaching, research labs & offices: 25,000 new sf	1.2
<b>Coastal Biology Building Project</b>	Research labs and offices: 25,000 new asf	1.9
<b>Subtotal, UC Projects</b>		<b>33.4</b>

**Sources:** Estimated water use for City and County projects from City of Santa Cruz 2011. Estimated water use for UC Santa Cruz projects was obtained from the relevant project CEQA documents, with the exception of the Social Sciences Facility Phase 1. For this project, the water demand was assumed to be similar to that of the Digital Arts Facility, which will be approximately the same size.

The City has estimated that existing supplies will be adequate to serve the projected cumulative demand, including demand associated with development under the CLRDP, through about 2020. After 2020, projected demand associated with existing development and new development after 2020 may begin to exceed existing supplies; by 2030, the unmet demand could reach 223 mgy (Erler and Kalinowski, Inc. 2011). The City's existing supplies are not, however, adequate to meet current demand in drought years. Increases in water demand associated with reasonably foreseeable future projects and background population growth would result in a significant cumulative impact related to this shortfall. As described in Section 3.15.1.2, the City is actively implementing effective water conservation programs. The City and the Soquel Creek Water District (SqCWD) have proposed a desalination plant to provide a supplemental water source for the City during drought conditions, and to enable the SqCWD to meet water demand in its service area while reducing withdrawal of groundwater to prevent seawater intrusion in the Soquel-Aptos area. Since the CLRDP was certified, the City has completed a program EIR (pEIR) for the IWP, which evaluated the potential environmental impacts of construction of a desalination plant at one of three alternative locations (EDAW 2005). The City is currently preparing a project-level EIR for the proposed desalination plant, at one of two locations that are still under consideration (City of Santa Cruz and

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Soquel Creek Water District 2010). Several alternative types of seawater intake, at various locations, are also still being considered and will be analyzed in the City's EIR.

The projected water demand of the proposed CBB Project is approximately 1.9 mgy. The other proposed MSC Projects do not include development that would generate operational demand. The City's water demand projections have taken into account the water demand associated with future development under the CLRDP, including the proposed CBB Project. The City estimates that, if the desalination plant is not constructed, its maximum water supply deficit in 2030, which would occur during the second year of drought, would be 1,628 mgy (City of Santa Cruz 2011). The annual water demand of the CBB Project is approximately 0.1 percent of this projected deficit. This would not be a noticeable contribution to the magnitude of the deficit, or to the curtailment required of individual residents, businesses, and other customers in the SCWD service area.

The MSC Projects, therefore, would not make a cumulatively considerable contribution to the significant cumulative impacts related to drought-year shortfalls, including the potential impacts of the desalination plant. Nonetheless, in consideration of the water supply deficit in drought years under current conditions, and the potential that service area demand could exceed supplies after 2020, the Campus would implement MSC Projects Mitigation UTIL-9 to support the City's water conservation efforts. Under this mitigation, the Campus would conduct a water use efficiency study at the MSC to identify opportunities for water conservation in site operations and facilities, and would implement the top priority improvements, based on the amount of potential water savings and cost effectiveness, within five years of completion of the study. The reduction in campus water use that would be achieved cannot be quantified at this time; however, implementation of this mitigation would reduce further reduce the CBB Project's less-than-significant contribution to cumulative water supply impacts.

#### Wastewater

**Previous Analysis.** The CLRDP EIR (pp. 4.16-18 to 4.16-19) concluded that wastewater generated by campus development under the CLRDP, in conjunction with other regional development, would not exceed the capacity of the City of Santa Cruz wastewater treatment plant. New development at the MSC, including the proposed CBB Project, would generate an estimated 48,828 gpd wastewater. The treatment plant has a remaining capacity of 7 million gpd, is currently operating at about 60 percent of capacity and is projected to have available capacity to treat wastewater from its service area through 2020.

**Project Impact.** The proposed project is within the scope of the development analyzed in the CLRDP. As analyzed in the CLRDP EIR, the increase in wastewater generation at the MSC in conjunction with wastewater generated by other regional development would not result in the need to construct a new wastewater treatment plant, and no impact would occur.

#### Solid Waste

**Previous Analysis.** The CLRDP EIR (p. 4.16-19) concluded that solid waste generated by development under the CLRDP in conjunction with other regional development, would not exceed the capacity of the City of Santa Cruz landfill. The City landfill at present has a remaining capacity of 58 percent of its total capacity and is not projected to reach capacity until 2037, well beyond the horizon year of the CLRDP.

On-going City and UC Santa Cruz Campus recycling programs would help to minimize the amount of solid waste disposed of at the landfill.

**Project Impact.** The proposed project is within the scope of the development analyzed in the CLRDP EIR. Therefore, the cumulative impact would not be significant. As analyzed in the CLRDP EIR, the increase in wastewater generation at the MSC in conjunction with wastewater generated by other regional development would not result in the need to construct a new wastewater treatment plant, and no impact would occur.

#### Electricity

**Previous Analysis.** According to the CLRDP EIR (p. 4.16-15), when PG&E installed 21-kilovolt (kV) service to the area, it planned for future expansion of the campus. The CLRDP EIR projected that development under the CLRDP would increase energy use on the campus by approximately 3.8 MWH from 2.1 MWH annually to 5.9 MWH annually. The CLRDP EIR (p. 4.16-20) determined that this increase in energy demand would not be considered wasteful, inefficient, or unnecessary, and neither the increase in demand nor the expansion of electrical infrastructure onto the site would result in significant impacts.

**Project Impact.** The proposed project is within the scope of the development analyzed in the CLRDP EIR and the existing PG&E service to the MSC is adequate to serve the proposed CBB Project. Therefore, the project would not contribute to a significant cumulative environmental impact with respect to demand for improvements to electrical generation and distribution facilities.

#### Natural Gas

**Previous Analysis.** The CLRDP EIR (p. 4.16-16) estimated that implementation of the CLRDP would increase the MSC's annual natural gas demand from approximately 150,240 therms to 257,120 therms, an increase of approximately 106,880 therms. According to the CLRDP EIR (p. 4.16-16), no major offsite improvements would be required to accommodate this demand. All new buildings would incorporate standard energy conservation measures, as required by Title 24. The designs of new buildings would follow appropriate building design requirements, such as passive solar design, and utilize energy-efficient methods and appliances, such as solar hot water systems and low-flow showerheads.

Thus, the CLRDP EIR (4.16-20) determined that, in light of standard energy conservation measures required by Title 24, the CLRDP's entire building program would not result in the wasteful, inefficient, or unnecessary consumption of natural gas, and that the CLRDP would not result in a significant cumulative impact on energy resources.

**Project Impact.** The natural gas demand associated with the CBB Project was taken into account in the CLRDP EIR, and existing natural gas service to the MSC is adequate to serve the proposed new facilities; therefore, the project would not contribute to a significant cumulative impact on energy resources.

#### Telecommunications

New and expanded telecommunication facilities and infrastructure would be built in conjunction with new development under the CLRDP to service to new and existing facilities. The proposed project would not contribute to the need for new or expanded off-site telecommunications facilities. Therefore, the

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proposed project would not contribute to a cumulative environmental impact from construction of new telecommunications facilities and infrastructure.

### 3.16.5 References

- Almond, L., City of Santa Cruz Water Department. 2009. Personal communication with Steve Paul, UC Santa Cruz Physical Planning and Construction. March 19.
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- City of Santa Cruz and Soquel Creek Water District. 2010. Notice of Preparation of an Environmental Impact Report. City of Santa Cruz and Soquel Creek Water District, Regional Desalination Project. November 15.
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- UC Santa Cruz 2011. *2005 LRDP EIR Annual Mitigation Monitoring Report, 2009-10*. (<http://lrpd.ucsc.edu/mitigation-monitoring-reports.shtml>)

### Websites

- California Integrated Waste Management Board (CIWMB) web site. <http://www.ciwmb.ca.gov/SWIS/44-AA-0001/Detail/>, accessed January 25, 2009.
- City of Santa Cruz Public Works web site: <http://www.ci.santa-cruz.ca.us/pw/>, accessed on November 28, 2008.
- UC Santa Cruz Environmental Health & Safety (EH&S) Waste Water Discharge web site: [http://ehs.ucsc.edu/environmental\\_programs/waste\\_water\\_discharge.php](http://ehs.ucsc.edu/environmental_programs/waste_water_discharge.php), accessed on November 18, 2008.
- U.S. EPA web site: [http://www.epa.gov/epaoswer/non-hw/recycle/recmeas/docs/guide\\_b.pdf](http://www.epa.gov/epaoswer/non-hw/recycle/recmeas/docs/guide_b.pdf), accessed on April 18, 2005.

**3.1 AESTHETICS**

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Figure 3.1-1	Key to Vantage Point Locations
Figure 3.1-2	Existing and Proposed Views from Highway 1
Figure 3.1-3	Existing and Proposed Views from Moore Creek Preserve
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Figure 3.1-6	Existing and Proposed Views from Delaware Avenue toward the North
Figure 3.1-7	Existing and Proposed Views from Pacific Ocean



This section describes the existing visual setting of the project site and surrounding areas and evaluates the potential for changes in the visual character of the area due to the proposed MSC Projects. This section provides project-level analysis and additional detail regarding aesthetics, and it augments and supplements, pursuant to CEQA Guidelines Section 15152, the analysis provided in Section 4.1 of UC Santa Cruz' CLRDP EIR.

No public comments related to aesthetics were received during the scoping period for this EIR.

### 3.1.1 Environmental Setting

See CLRDP EIR Section 4.1, pages 4.1-2 to 4.1-25, for a comprehensive discussion of the regulatory context and the visual setting of the entire campus.

#### 3.1.1.1 Local and Regional Setting

The Marine Science Campus (MSC) is located at the western edge of the City of Santa Cruz, where it forms a transition between the urban development to the east of the site to the rural and agricultural uses to the west and north. The area to the west of the site and south of Highway 1 is generally characterized by agricultural fields planted in row crops on the coastal terraces. Inland (north and west) from Highway 1, the terrain becomes hilly, gradually rising in elevation to form the Santa Cruz Mountains.

The De Anza Santa Cruz residential community, which bounds the campus on the east, is the only developed property adjacent to the campus. This development is surrounded by open space uses and undeveloped land, including: Natural Bridges State Beach to the east; Antonelli Pond to the northeast; undeveloped lots to the northwest; and the MSC on the west. The Natural Bridges Industrial Park, which consists of large, low-profile industrial buildings surrounded by large parking lots and landscaping, extends along Delaware Avenue east of the De Anza Santa Cruz community. West of the project site, the mostly flat agricultural fields adjacent to the western border of the site are interrupted by occasional farm structures and stands of trees, many of which serve as windbreaks for farm buildings. The grassy and undeveloped uplands to the north of Highway 1 create a picturesque backdrop to the coastal and rural setting in the foreground, seen in long-range, panoramic views from the site. The College Eight buildings at the UC Santa Cruz Main Campus and several residences are also visible in the distance to the north.

The coastline in the Santa Cruz area, including that along the southern edge of the Marine Science Campus site, is characterized by a low bluff that drops to a narrow beach and rock shelf, providing for generally unobstructed views across the terrace to the ocean. Highway 1, a County-designated scenic road northwest of the site, provides numerous scenic coastal views to motorists traveling eastbound and westbound, although for about 2,000 feet immediately north of the project site, Highway 1 has been excavated below the natural grade and provides no coastal views.

The project site is visible from a number of important vantage points, including portions of Highway 1 to the immediate northwest; Wilder Ranch State Park to the west; the City's Moore Creek Preserve

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(formerly known as the Bombay property) north of Highway 1; and Natural Bridges State Beach to the east. Views of the site are also available from adjacent areas, including from Delaware Avenue near the De Anza residential community; from Shaffer Road extension; and from the ocean immediately south of the site. Short-range views of the interior of the site are somewhat limited by the dense patches of vegetation and tall grasses on the terrace.

### 3.1.1.2 Site Characteristics

#### Visual Character and Quality

The existing visual character of the campus is a result of both natural processes and past and current human uses. The visual character of the site is also influenced by daily weather conditions, such as sun, rain, and fog, and by seasonal changes in the natural vegetation on-site. The campus consists of three visually distinct landscape units:

- The approximately 57-acre, mostly undeveloped, grassland that rises from the southern edge of the site to elevations of about 51 feet above sea level at the northern edge (the “Middle” and “Upper” terraces).
- The built environment of the original 16-acre LML site (the “Lower Terrace”).
- The approximately 25-acre Younger Lagoon, which consists of the lagoon, the surrounding wetlands, and the surrounding bluffs.

The largest existing building on the campus, and the only development on the Middle Terrace east of McAllister Way, is the two-story NOAA facility. The NOAA facility is surrounded on three sides by open grassland and on the west by McAllister Way. The portion of the Middle Terrace west of McAllister Way is more densely developed, with the 20,000-sf CDFG Marine Wildlife Center and the Avian (Oiled Seabird) Facility, which consists of two modular office units, three greenhouses, and a large outdoor paved area. Eight other greenhouses in various stages of collapse are also located in this area.

About 16 acres of the Lower Terrace are developed with the original Long Marine Lab (LML) complex and the Seymour Marine Discovery Center. The original LML buildings are generally clustered to the west of McAllister Way, which allows the open grassland portions of the terrace to appear as a continuous natural landscape. The two largest buildings on the Lower Terrace are the Center for Ocean Health (at approximately 23,000 sf) and the 20,000-sf Seymour Marine Discovery Center. Several smaller structures, including the Younger Building (approximately 3,700 sf), service building (approximately 2,300 sf), and caretakers’ units (1,400 sf) are located on the southernmost portion of the site adjacent to the marine mammal pools.

The existing buildings on the campus are one to two stories in height, and most are clad with board-and-batten siding and have gray roofs. The newer buildings have been designed to complement the materials and aesthetic quality of the initial complex through exterior finishes that reflect the colors in the site landscape, including blues, grays, greens, and tans. The buildings generally are designed in the “ranch vernacular” style, which uses the barn structure as a prototype.

### Natural Features

A variety of distinct types of grassland, scrub, and wetland habitats intermingle on the undeveloped terrace portion of the site. The grasslands exhibit seasonal changes in color, fading from bright green in winter to a tawny brown in summer and fall. The seasonal change in grassland color is important in establishing the distinctive summer pattern on the coastal terrace of light-colored, fine-textured open grasslands leading to a muted blue-gray horizon in the background created by the blending of ocean and sky. During the spring, the terrace is a visual mix of bright green grasses spotted with the yellow blossoms of the non-native invasive *Oxalis pes-caprae*. Seasonal wetlands on the marine terrace portion of the project site appear similar in form and color to adjacent grassland habitats. The vegetation in the existing development clusters reflects the coastal scrub-grassland characteristics that dominate the visual environment of the undeveloped land. Some non-native and ornamental plantings are also located at building entrances and along the bluff trail adjacent to the Seymour Marine Discovery Center, which leads to an ocean overlook.

Younger Lagoon, with its distinctive vegetation, provides a visual and physical connection to the ocean south of the site, the hills north and northwest of the site, and the open grassland areas of the terrace. Views of the lagoon from the terrace are obstructed by a landscaped earthen berm or fence line located along the majority of the eastern edge of the terrace, as well as by intervening buildings and mature grassland vegetation. Two overlooks are situated along the earthen berm to allow for views of the open water, including one looking southwest over the mouth of the lagoon towards the ocean and sand, and one at a central location on the western side of the berm, looking northwest over the lagoon toward the agricultural fields.

### Scenic Vistas and Scenic Resources

The CLRDP EIR (p. 4.1-1) defines a “scenic vista” as the scenic, relatively extensive view available from a scenic vantage point, scenic overlook, or scenic highway as designated by a state or local plan or policy. A “scenic resource” is a landscape pattern or feature, either built or natural, that is visually and aesthetically pleasing, and that therefore contributes to and helps define a distinct community or region. The CLRDP EIR considers as scenic resources the undeveloped open-space areas of the project site, including the undeveloped portions of the terrace and Younger Lagoon and the open grasslands of the terrace set against an ocean backdrop. The views of this scenic resource available from important off-site vantage points are considered “scenic vistas.”

The CLRDP EIR (pp. 4.1-7 to 4.1-21) describes three types of “important” off-site vantage points: short-range (less than ½ mile from the site); medium-range (½ mile to 1 mile from the site); and long-range (more than 1 mile from the site). CLRDP EIR Figures 4.1-2 through 4.1-9 provide images from the eight representative vantage points.

The CLRDP describes the following short-range vantage points:

- Shaffer Road adjacent to the railroad tracks and the community garden.
- Delaware Avenue terminus adjacent to the De Anza Santa Cruz residential community.
- The Pacific Ocean by boat.

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- The Natural Bridges State Beach parking area to the east of the De Anza Santa Cruz residential community.
  - Private views of the project site from the De Anza Santa Cruz residential community and from the south-facing windows and surface parking areas associated with the industrial uses immediately north of the site.

The CLRDP EIR (p. 4.1-6) determined that, among these short-range vantage points, only the Natural Bridges parking lot offers views of the MSC that meet the definition of “scenic vista.” The views from the other vantage points are not considered “scenic vistas” in the CLRDP EIR, either because they do not offer unimpeded views of the site; because the number of people viewing the site from these vantage points is limited; or, in the case of the De Anza Santa Cruz residential community, because a concrete masonry perimeter fence and mature landscaping limit the views.

The CLRDP describes the following medium-range vantage points. The views of the site from all three of these locations are considered to be “scenic vistas:”

- Highway 1, a little over ½ mile north of the intersection with Shaffer Road.
- The lower terrace of the Moore Creek Preserve (Bombay property) to the north, at an elevation of approximately 200 feet above sea level.
- The Wilder Ranch State Park beach area

The CLRDP EIR describes long-range views of the site from two points on Wilder Ranch State Park: the parking area, and the forested ridge to the north of Dairy Gulch (the “Upper Terrace”). The views of the MSC from both of these vantage points are considered “scenic vistas.”

Taking into account the City’s General Plan/LCP visual resources policies, for the purpose of the analysis of aesthetic impacts, the CLRDP EIR defines as “scenic resources” the open grasslands located on the terrace portion of the site (particularly those set against an ocean backdrop) and Younger Lagoon.

#### Light and Glare

Existing sources of light and glare on the project site are generally limited to the interior and exterior lighting for facilities, parking lots, and access roads. All on-site buildings and parking areas are currently equipped with outdoor, downward-directed light fixtures for nighttime lighting and security. The publicly accessible trail along the perimeter of the terrace does not have light fixtures. In addition, cars and trucks accessing the site are a potential source of glare. Other light sources in the project vicinity include the streetlights located along Shaffer Road and Delaware Avenue, and the exterior and interior light fixtures associated with the Raytek facilities to the north of the site and the De Anza Santa Cruz residential community to the east.

### 3.1.1.3 Regulatory Setting

The California Coastal Act establishes goals and policies that guide development within California’s coastal zone. These provisions seek, among other things, to protect the scenic and visual resources of coastal areas. As a state entity, UC Santa Cruz is not subject to municipal land-use enactments such as the

City and County General Plans. However, the Coastal Act requires that the CLRDP be consistent with the appropriate LCP to the fullest extent feasible.

California Coastal Act

Section 30251 of the Coastal Act states the guiding policy towards scenic and visual resources as follows:

*“The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local governments shall be subordinate to the character of its setting.”*

The Coastal Act specifically requires that development in areas adjacent to parks and recreation areas be compatible with adjacent parks and recreation areas [Section 30240(b)]; avoid alteration of natural landforms [Section 30253(2)]; protect special communities and neighborhoods that are popular visitor destination points for recreation uses [Section 30253(5)]; and protect visual access along the coast. CLRDP EIR Section 4.1 (pages 4.1-2 to 4.1-6) utilizes Coastal Act policies and the scenic resources protection policies of local LCPs to help identify “scenic vistas” and “scenic resources” for the purpose of evaluating the aesthetic impacts of development under the CLRDP.

In approving the CLRDP, the Coastal Commission determined that the provisions included in the CLRDP to address potential viewshed issues through meaningful siting and design criteria and related measures would provide adequate protection for visual resources, and that the CLRDP is consistent with the public viewshed policies of the Coastal Act.<sup>1</sup>

City of Santa Cruz General Plan and Local Coastal Program 1990-2005

The CLRDP EIR (p. 4.1-4) identifies the following City General Plan/LCP policies that identify visual resources in the vicinity of the MSC that could be affected by the proposed Projects:

- Program CD 2.1.3: Protect the Monterey Bay National Marine Sanctuary and the shoreline and views to and along the ocean, recognizing their value as natural and recreational resources.
- Program CD 2.2.1: Develop siting, scale, landscaping, and other design guidelines to protect visually sensitive areas and ensure that development is compatible with the character of the area. Areas to be protected include: open space land uses, foothills, bluffs, scenic coastal areas, Beach Hill, Pogonip, Far West Side, Mission Hill, Moore Creek, DeLaveaga Park, and San Lorenzo River.
- Program CD 5.4.1: A second policy states that development near the western entrances of the city should take into account the rural/urban transition and protect natural views.

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<sup>1</sup> California Coastal Commission, *UCSC Marine Science Campus Coastal Long Range Development Plan (CLRDP)*. Revised findings in support of the Commission’s December 13, 2007, certification of the CLRDP with suggested modifications. Prepared March 21, 2008 (for April 11, 2008 hearing), p. 95.

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- The City of Santa Cruz General Plan/LCP also identifies an important vantage point from Highway 1, just west of the city limit line, to the ocean. This vantage point is considered to provide public visual access for the purpose of this analysis.

#### Santa Cruz County General Plan/LCP

The CLRDP EIR (p. 4.1-3) lists the following County General Plan/LCP policies that identify visual resources in the vicinity of the MSC that could be affected by the proposed Projects:

- Policy 5.10.2, Development Within Visual Resource Areas: Recognize that visual resources of Santa Cruz County possess diverse characteristics and that the resources worthy of protection may include, but are not limited to, ocean views, agricultural fields, wooded forests, open meadows, and mountain hillside views. Require projects to be evaluated against the context of their unique environment and regulate structure height, setbacks, and design to protect these resources consistent with the objectives and policies of this section.
- Policy 5.10.3, Protection of Public Vistas: Protect significant public vistas as described in Policy 5.10.2 from all publicly used roads and vista points by minimizing disruption of landform and aesthetic character caused by grading operations, timber harvest, utility wires and poles, signs, and inappropriate landscaping and structure design. Provide necessary landscaping to screen development that is unavoidably within these vistas.
- Policy 5.10.11, Development Visible from Rural Scenic Road: In the viewsheds of rural scenic roads, require new discretionary development, including development envelopes in proposed land divisions, to be sited out of public view, obscured by natural landforms and/or existing vegetation. Where proposed structures on existing lots are unavoidably visible from scenic roads, identify those visual qualities worthy of protection (see Policy 5.10.2) and require the siting, architectural design, and landscaping to mitigate the impacts on those visual qualities.
- Policy 5.10.10, Designation of Scenic Roads: The Conservation and Open Space Element of the County General Plan/LCP identifies Highway 1 from San Mateo County to Monterey County as a Scenic Road, and states that “the public vistas from [scenic] roads shall be afforded the highest level of protection.”

#### 3.1.1.4 CLRDP Policies and Implementation Measures Applicable to the Proposed Projects

The CLRDP has delineated development areas and open space areas on the Land Use Diagram (CLRDP Figure 5.2) to ensure that significant view corridors to the ocean and surrounding hillsides and coastline remain open. In addition, the CLRDP sets design standards for development that are intended to minimize the visual impacts of development. The design standards are presented in Section 5.4 of the CLRDP (Policies 4.1 through 4.3 and the associated implementation measures), and in the Design Guidelines set forth in Chapter 6 of the CLRDP. The standards include clustering masses in defined development zones; limits on the height and mass of individual buildings; stepping down building heights toward the edges of development zones; limits on the amount and intensity of building and site lighting; limits on visual and

light intrusion into sensitive habitats; an architectural pallet of forms, scales, colors, and materials appropriate to the rural/urban transition; and landscape design, lighting, and site signage criteria to maintain and preserve the character of the coastal rural/agricultural landscape. Implementation measures applicable to the proposed Projects that reduce environmental impacts are listed under the relevant impact discussion in Section 3.1.4, below. The complete text of the applicable CLRDP policies and implementation measures is provided in Appendix C.

### 3.1.2 Relevant Project Characteristics

The proposed CBB project includes development of a new lab building, two new parking lots, a greenhouse complex, and associated utilities and stormwater system. The proposed Marine Science Campus Infrastructure (MSCI) Project consists of campus utility and circulation improvements to serve both the CBB Project and future campus development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking; an interpretive program shelter; educational signage; and outdoor exhibits. Under the proposed SRP 1B, CLRDP-mandated wetland restoration and habitat improvements would be implemented. SRP 1B has no aesthetic implications and is not addressed further in this section. CLRDP Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the projects described above, to clarify CLRDP language, to address minor changes to CLRDP language made during the Coastal Commission approval process, and to respond to the evolution of the CLRDP Resource Management Plan under the guidance of the Scientific Advisory Committee that was established to guide YLR restoration efforts, as required by the CLRDP. Action 4 of proposed CLRDP Amendment #1 would provide for the use of tall shrubs or other native vegetation rather than trees as windbreaks and screening, and would permit the replacement of existing Monterey cypress trees with tall shrubs in conjunction with earthen berms, which could be carried out in conjunction with the proposed Projects and other future development. The other actions included in Amendment #1 have no aesthetic implications and are not discussed further in this section.

The project elements that would be visible above ground are the new lab and greenhouse complex buildings, the Utility Yard in Subarea 2 and the Upper Terrace Storage Yard that would be constructed as part of Phase A of the MSCI Project, the new interpretive program shelter at Overlook A, and parking lots and associated lighting. All utility lines would be below ground. The CBB lab building would be roughly L-shaped, with its longer wing about 308 feet long and oriented east-west. The building would be two stories, with the exception of a one-story element at the south end of the western wing, which would house the large seminar room. The Utility Yard would be a triangular area of approximately ~~11,400~~ 3,330 sf that would house standby generators and a regulated waste storage facility. The Upper Terrace Storage Yard would be approximately 58,000 sf.

Consistent with CLRDP requirements, the maximum height for the lab building would be 36 feet; roof vents may extend to a total height of 41 feet (i.e., up to 5 feet above the roof). Building forms would be similar to existing buildings on the MSC, such as the Ocean Health Building and the Seymour Marine Discovery Center, with gabled and shed roof styles, wood cladding, and muted colors that blend with the landscape. Similar to these existing buildings, the lab building exterior would be clad in vertical board

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and batten wood or wood-like siding extending up over a board-formed concrete foundation, and would have shingle roofing. The Greenhouse Complex, which would be constructed in the Middle Terrace Development Zone west of McAllister Way, would consist of a cluster of six new greenhouses, an associated Greenhouse Research Facility, and a small utility building that would house an emergency generator and telecommunications equipment. All of the buildings in the greenhouse complex would be 12 feet tall. As required by the CLRDP, the earthen berm, fencing, and plantings between the greenhouses and the YLR boundary to the west would be improved as part of the project to screen the new development from YLR. Both the Utility Yard in Subarea 2 and the Upper Terrace Storage Yard and staging area would be surrounded by 8-foot tall, solid wooden fences, and augmented by earthen berms and plantings of native shrubs.

The CBB Project would include shielded lighting on the exterior of the new buildings and in Parking Lots C and D. To ensure against light spill into the adjacent Younger Lagoon Reserve, each greenhouse would be equipped with a light screening system (such as blinds, louvers, or shade cloths for walls and roof) that would be closed whenever night lighting is used. Site lighting would include pole-mounted fixtures in the parking lot and bollard-mounted fixtures along major or egress pedestrian circulation paths. These fixtures would be downward-directed and shielded. The MSCI Project would install lighting for the McAllister Way sidewalk, future bus stops, the Utility Yard (including security lighting on the hazardous waste storage facility), and the Upper Terrace Storage Yard. A campus identification sign at the main entrance also may be illuminated. The new main road from the campus entrance to the Seymour Marine Discovery Center parking lot would be lighted by low bollard-type lighting along the McAllister sidewalk. This lighting would be augmented by taller cut-off shielded lighting only at entrances to parking lots, building entries, and at pedestrian crossings. Parking Lot A would not be used at night and would not be lighted. Other proposed pedestrian and bicycle trails, including the main entry multi-use trail, would not include lighting except as needed for safety, such as at vehicle road and parking lot driveway crossings and intersections of pedestrian paths with the multi-use trail route. Figure 2-5 shows the locations of new lighting included in the proposed Projects.

### 3.1.3 Applicable CLRDP EIR Mitigation Measures

There are no CLRDP EIR mitigation measures related to aesthetics that are applicable to the proposed MSC Projects.

### 3.1.4 Impacts and Mitigation Measures

#### 3.1.4.1 Standards of Significance

For the purposes of this EIR, a project would have a significant impact with regard to aesthetics if it would:

- Have a substantial adverse effect on a scenic vista as defined in the CLRDP EIR.

- Substantially damage scenic resources as defined in the CLRDP EIR, including, but not limited to, trees, rock outcroppings, or historic buildings within a state scenic highway.
- Substantially degrade the existing visual character or quality of the site and its surroundings.
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

Potential adverse impacts of light and glare from the proposed new development on nocturnal wildlife movement in the original YLR, are analyzed in Section 3.4, *Biological Resources*.

#### 3.1.4.2 Analytical Method

To determine the significance of the Projects' potential effects on scenic vistas and the visual quality of the campus, the analysis considers the nature and magnitude of anticipated visual change resulting from the proposed MSC Projects; the number of public vantage points from which this change would be visible; and the number of viewers who would be affected by this change.

To assess the potential effects of the MSC Projects on the visual character and quality of the project site and its surroundings, a computer model of the project site was created, superimposing images of the proposed new buildings and other structures on digital photos of the site. The model included the proposed CBB lab building and Greenhouse Complex, and the fences of the proposed Utility Yard and the Upper Terrace Storage Yard. The potential photovoltaic panels above Parking Lot D were not included in the model, as they would not be visible from any of the vantage points. A schematic elevation of the photovoltaic panels is provided in Figure 2-2d in Chapter 2 of this EIR. The visual simulations illustrate "before" and "after" conditions from three medium-range vantage points and two short-range vantage points. These vantage points were selected from among those modeled for the CLRDP EIR as those in which the new buildings would be most prominent. The Pacific Ocean vantage point was moved slightly to a location from which the CBB lab building would be visible. The medium-range vantage points are: Highway 1, Marker 21.51 (about 2,500 feet northwest of the campus); the lower terrace of the City's Moore Creek Preserve; and the Bluff Trail at Wilder Ranch State Park. Figure 3.1-1 shows the locations of the vantage points. Photos of each of the views under existing conditions and with the proposed Projects are presented in Figures 3.1-2 through 3.1-7. The simulations focus on general building massing, height, and likely range of colors, and they provide information to allow assessment of potential visual impacts. The short-range vantage points are: Delaware Avenue at the MSC entrance (Shaffer/Delaware intersection) and offshore from the campus in the Pacific Ocean. Two simulations from the Delaware Avenue vantage point were prepared, one looking toward the south-southwest, and the other looking toward the north. These simulations are not intended to present a full illustration of building architectural details.

### 3.1.4.3 Project Impacts and Mitigation Measures

#### *Scenic Vistas*

<b>MSC Projects Impact AES-1</b>	The CBB lab building and greenhouses and the Utility Yard and Storage Yard that would be developed under the MSC Project would be visible in scenic vistas from medium- and short-range vantage points in the vicinity of the MSC.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	Implementation Measure 1.1.1 - Figures of Chapter 5. Implementation Measure 2.3.1 - Cluster Development Implementation Measure 4.2.3 - Building and Other Structure Height Implementation Measure 4.2.4 - Laboratory Buildings Implementation Measure 4.2.9 - Building Length Limitations Implementation Measure 4.2.10 - Placement of Utility Lines Underground Implementation Measure 4.2.12 - Development in Northernmost Portion of Middle Terrace Implementation Measure 4.2.15 - Building Development West of McAllister Way in Middle Terrace Implementation Measure 4.2.16 - Building Development Outside of Subareas Prohibited
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building, greenhouses) MSCI Project (Utility Yard, Upper Terrace Storage Yard)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.1-31 to 4.1-36) analyzed potential impacts of development under the CLRDP on scenic vistas available from Highway 1 (marker 21.51) to the northwest of the MSC; from the lower terrace of the City’s Moore Creek Preserve (formerly known as the Bombay property) to the north; from two vantage points in Wilder Ranch State Park to the west; and from Natural Bridges State Beach to the east. The implementation measures and design guidelines included in the CLRDP would limit any potential visual intrusion effects of the Projects upon public views from important vantage points. These measures include specifications for articulated building masses, exterior finishes, and colors that would be compatible with the natural landscape and would minimize any perceived contrast between the structures and the surrounding visual environment. In addition, the

delineation of development zones and open space areas, as well as restrictions on building heights, would retain significant view corridors toward the ocean, coastline, and hillsides.

From the Natural Bridges State Beach, the site would appear more intensively developed, as the new development associated with the CBB and MSC Projects would extend across the width of the view. However, the components of the scenic vista that give it scenic quality (including visual access to the Pacific Ocean and coastline in the foreground and the hillsides in the background) would not be obstructed or significantly altered. Although some new buildings on the Middle and Lower Terrace would be visible from Highway 1, the scale of the buildings would be small against the panoramic view of water and the ocean-sky horizon, and the expanse of agricultural fields in the foreground. New development under the CLRDP would be clearly visible from the lower terrace of the Moore Creek Preserve. However, the majority of the site, including Younger Lagoon, the terrace wetlands, wildlife corridor, and associated buffers, would be preserved and would remain open, thereby offering a visual break and connection to the surrounding open agricultural fields. Therefore, although development under the CLRDP would alter the appearance of the MSC, views of the campus would continue to appear as part of the background, dominated by the vegetation and open lands in the foreground and to the west, and the vast water and sky views in the background to the south, southeast, and southwest.

For the reasons summarized above, the CLRDP EIR determined that the impact of implementation of the CLRDP on scenic vistas would be less than significant, and no CLRDP-level mitigation measures were required.

**Project Impact.** The visual simulations of the proposed development from Highway 1, the lower terrace of the City's Moore Creek Preserve, and the Wilder Ranch Bluff Trail (Figures 3.1-2, 3.1-3, and 3.1-4) illustrate the potential effects of the MSC Projects on scenic vistas. As shown on Figure 3.1-2, portions of the CBB lab building would be visible from Highway 1, but the reconstructed berm along the top of the Younger Lagoon bluff would block views of the new greenhouses from this vantage point. The mass of the CBB lab building would appear clustered with the existing CDFG and NOAA facilities. However, consistent with the analysis in the CLRDP EIR, the scale of the combined building mass would be small compared to the expanse of agricultural fields in the foreground.

From the lower terrace of the Moore Creek Preserve, as shown in Figure 3.1-3, the entire northern façade of the CBB lab building would be visible. However, the NOAA facility and the Seymour Marine Discovery Center would provide a visual backdrop to the new building. The new roofline would be slightly lower than those of the existing facilities, so that the new building would not be visually prominent. The fence surrounding the Subarea 2 Utility Yard would be visible in front of the CBB lab building. A portion of the Upper Terrace Storage Yard fence would be visible, but its mass would be minor compared to the existing development to the north, which would appear in front of the Storage Yard. None of the new development would obstruct the existing view corridors from this vantage point, and the majority of the MSC would still appear as natural open space.

The western façade of the CBB lab building and the associated seawater tank would be visible from the Wilder Ranch Bluff Trail. As shown on Figure 3.1-4, from this vantage point, the CBB lab building would not appear as clustered with the CDFG and NOAA facilities and would partially block views of the line of trees in the distance. Although the site would appear more intensively developed from this vantage

point with implementation of the CBB Project, the visual corridors across the site toward the ocean would remain open and the remaining open space areas on the terrace would maintain the visual integrity of the surrounding rural coastal landscape. In this view, the scale of the buildings would be diminished by foreground views of the beach, the expanse across the YLR, the Pacific Ocean, the cliffs along the Lower Terrace development area, and vast background views of open sky.

As described in Section 3.1.2, above, Action 4 of proposed CLRDP Amendment #1 would provide for the use of tall shrubs and other native vegetation, rather than trees, for windbreaks and screening. According to the CLRDP (Chapter 6, p. 10) the purpose of the windbreaks required by the CLRDP is to “reinforce views, provide visual screening of buildings and parking, enhance site aesthetics, and mitigate winds.” The trees are not intended to completely surround or screen individual buildings, but to provide a major landscape “structure” and to focus views to the ocean, the Monterey Peninsula, or major inland features. The use of tall shrubs would provide the intended landscape structure, and would provide partial screening for building facades, although not to the same extent as the trees specified in the CLRDP. However, the purpose of the windbreaks trees in the CLRDP was not to screen buildings completely. The proposed shrubs would be more consistent with the natural setting of the terrace and would provide partial screening and visual softening of the new built features. Therefore, Action 4 of proposed CLRDP Amendment #1 would not increase the visual impacts of the development under the CLRDP that were analyzed in the CLRDP EIR.

For the reasons described above, the impacts of the proposed CBB and MSCI projects and CLRDP Amendment #1 on scenic vistas would be less than significant and no mitigation is required.

Scenic Resources

<b>MSC Projects Impact AES-2:</b>	The CBB lab building and greenhouses and the Utility Yard and Storage Yard that would be developed under the MSCI Project would alter views of the open grasslands on the site and of Younger Lagoon, which are considered to be scenic resources.
<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	Implementation Measure 1.1.1 - Figures of Chapter 5. Implementation Measure 2.3.1 - Cluster Development Implementation Measure 2.3.3 - Windbreak/Screening Trees Implementation Measure 3.5.5 - Siting of Windbreak/Screening Trees Implementation Measure 4.2.3 - Building and Other Structure Height Implementation Measure 4.2.4 - Laboratory Buildings Implementation Measure 4.2.7 - Construction Materials Implementation Measure 4.2.8 - Building Setbacks Implementation Measure 4.2.9 - Building Length Limitations Implementation Measure 4.2.10 - Placement of Utility Lines Underground

	<p>Implementation Measure 4.2.11 - Windbreak/Screening Trees</p> <p>Implementation Measure 4.2.12 - Development in Northernmost Portion of Middle Terrace</p> <p>Implementation Measure 4.2.15 - Building Development West of McAllister Way in Middle Terrace</p> <p>Implementation Measure 4.2.16 - Building Development Outside of Subareas Prohibited</p> <p>Implementation Measure 4.3.8 - Lighting Plan Required</p>
<b>Applicable Project/ Project Elements</b>	<p>CBB Project (lab building, greenhouses)</p> <p>MSCI Project (Utility Yard, Upper Terrace Storage Yard)</p>
<b>Significance:</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.1-38 to 4.1-39) analyzed the potential impacts of implementation of the CLRDP on scenic resources, defined as the open grasslands located on the terrace portion of the site (particularly those set against an ocean backdrop) and Younger Lagoon. The CLRDP EIR determined that development under the CLRDP would not result in significant impacts on these resources because much of the Middle and Upper terraces would be preserved as open space through protection and enhancement of biological resources, clustering of buildings, limits on building height and length, setbacks from streets, management of public access, and enhancements to public overlooks (CLRDP EIR p. 4.1-38).

**Project Impact.** The new development would comply with the siting and design guidelines in the CLRDP. The new CBB lab building and the greenhouses would be clustered with the existing NOAA and CDFG facilities on the Middle Terrace and siting would comply with the required setbacks from campus roads. The exterior colors of the new buildings would be selected to blend with the natural vegetation. Tall shrubs would be included in the landscaping for the new lab building to provide the screening required by the CLRDP. The fencing for the Subarea 2 Utility Yard and the Upper Terrace Storage Yard would be constructed of wood that would blend with the existing vegetation as it weathers. Although not shown on the visual simulations, landscaping would be used to screen the fences and further reduce any visual contrast with the natural vegetation.

The visual simulations of the view of the new development from Delaware Avenue at the MSC entrance and from the Pacific Ocean (Figures 3.1-5 through 3.1-7) illustrate the potential effects of the proposed CBB and MSCI projects on the scenic resources identified in the CLRDP EIR. From Delaware Avenue at the campus entrance looking toward the south-southwest (Figure 3.1-5), the second story of the CBB lab would be visible to the right of the existing NOAA facility, and a portion of the fence surrounding the new Utility Yard in Subarea 2 would be visible in the distance. From the same vantage point looking

toward the north (Figure 3.1-6), the 8-foot-tall fence surrounding the Upper Terrace Storage Yard would be partly obscured by the intervening wetland vegetation. The CBB lab building would expand the visible building mass, but the existing vegetation, which would remain in place after construction, would partially screen the new development. The clustering of the CBB lab building with the NOAA facility, and the open space that would be preserved around the new development, would minimize any perceived contrast between the structures and the surrounding visual environment.

From the ocean vantage point (Figure 3.1-7), the only new development that would be visible would be the north wing of the new CBB lab building; the remainder of the building would be hidden by the NOAA facility. The new development would increase the overall amount of development within campus views, but the new development would be clustered visually with existing development, and the overall view across the eastern portion of the MSC to the coastal hills would be preserved. The scale of the development on the MSC as an element of the view, relative to the ocean bluff and the grassland and forested hills in the distance, would not increase.

For the reasons described above, the impacts of the proposed CBB and MSC Projects and CLRDP Amendment #1 on scenic resources would be less than significant, and no mitigation is required.

*Visual Character and Quality*

<b>MSC Projects Impact AES-3</b>	The CBB and MSC Projects would increase the amount of urban development on the MSC, which could alter the visual character and quality of the site.
<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	<p>Implementation Measure 1.1.1 - Figures of Chapter 5.</p> <p>Implementation Measure 2.3.1 - Cluster Development</p> <p>Implementation Measure 4.2.3 - Building and Other Structure Height</p> <p>Implementation Measure 4.2.4 - Laboratory Buildings</p> <p>Implementation Measure 4.2.7 - Construction Materials</p> <p>Implementation Measure 4.2.9 - Building Length Limitations</p> <p>Implementation Measure 4.2.10 - Placement of Utility Lines Underground</p> <p>Implementation Measure 4.2.12 - Development in Northernmost Portion of Middle Terrace</p> <p>Implementation Measure 4.2.15 - Building Development West of McAllister Way in Middle Terrace</p> <p>Implementation Measure 4.2.16 - Building Development Outside of Subareas Prohibited</p>
<b>Applicable Project/ Project Elements</b>	<p>CBB Project (lab, greenhouses, parking and staging areas)</p> <p>MSCI Project Phase A and Phase B (trails, roads, parking lots, Utility Yard, Upper Terrace Storage Yard, staging areas)</p>
<b>Significance</b>	Less than significant

<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.1-39 to 4.1-42) analyzed the potential that inappropriately designed development on the MSC could result on a significant impact on the visual character or quality of the campus or its surroundings, given the scenic character of the coast and the mix of urban development, open space resources, and agricultural uses that characterize the campus and vicinity under existing conditions. The CLRDP EIR concluded that the height and scale of the proposed development would be compatible with the height and scale of existing development at and near the site, and that the design of future buildings would reflect the coastal architectural style prescribed in the CLRDP design guidelines, policies, and implementation measures. In addition, the establishment of open space areas and the proposed landscaping would create a graduated visual link to adjacent rural areas. Therefore, the CLRDP EIR concluded that implementation of the CLRDP development program would not cause significant adverse impacts on the visual character or quality of the site and its surroundings (CLRDP EIR p. 4.1-42).

**Project Impact.** As detailed in Appendix C, *CLRDP Policies and Implementation Measures Applicable to the Proposed Projects*, the siting and design of the proposed development would be consistent with the applicable requirements of the CLRDP. These requirements include clustered building arrangements generally surrounded by open space; setbacks from adjacent properties and from campus roads; limits on building height and massing; architectural design based on the coastal vernacular; muted colors; landscaping with native trees and vegetation indigenous to the coast of western Santa Cruz County and southern San Mateo County; drainage basins; and drainage swales vegetated with native plantings. As discussed in the CLRDP EIR, compliance with these requirements would ensure that the height and scale of the proposed development would be compatible with the height and scale of existing development at the site, and would preserve open space areas and provide landscaping that would create a graduated visual link to adjacent rural areas (CLRDP EIR, pp. 4.1-40 to 4.1-41). Therefore, although the proposed development would alter the visual character and quality of the site, this would not cause significant adverse impacts on the visual character or quality of the site and its surroundings, and no mitigation is required.

#### Light and Glare

<b>MSC Projects Impact AES-4</b>	The CBB and MSCCI projects would increase the amount of exterior lighting on the MSC, which, if not appropriately limited and screened, could result in a deterioration of nighttime views from neighboring uses, reduce the perceived open space boundary that separates these uses, and contribute to the perception of extension of urbanized areas to the city limit.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	Implementation Measure 4.3.3 - All Lighting Implementation Measure 4.3.4 - Building Lighting

	Implementation Measure 4.3.5 - Street and Trail Lighting Implementation Measure 4.3.6 - Parking Lot and Maintenance Yard Lighting Implementation Measure 4.3.7 - Sign Lighting Implementation Measure 4.3.8 - Lighting Plan Required
<b>Applicable Project/ Project Elements</b>	CBB Project (lab, greenhouses, parking) MSC Project Phase A and Phase B (roads, parking lots, Utility Yard, Upper Terrace Storage Yard)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR analyzed the potential that an increase in the amount of light and glare produced at the MSC from exterior lights on the proposed buildings, from lighting around open operation areas (such as the shared lay-down yard), from the headlights of vehicles entering and exiting the site, from street, parking lot, public-access trail, and informational signage lighting, and from the reflection of these sources of light on the proposed buildings and paved areas, would result in a deterioration of nighttime views from neighboring uses, reduce the perceived open space boundary that separates these uses, and contribute to the perception of extension of urbanized areas to the city limit (CLRDP EIR pp. 4.1-43 to 4.1.44). The CLRDP EIR determined that implementation of the CLRDP development program would not cause significant adverse lighting effects because CLRDP policies and implementation measures require that lighting on the MSC be provided at the lowest levels necessary to achieve safety and efficient navigation. Exterior building lighting would be limited to entries and usable interior courtyards; no façade or accent lighting would be allowed except where necessary for safety. Streets would be lighted only within the development areas, while trails would only be lighted as needed for safety with low-height wood bollards and downward directed fixtures. Parking lot lighting would be provided at the lowest levels necessary for safety, and only those parking areas within the development zones would be lit. The visibility and intensity of interior lighting that is visible outside the building development area would be minimized (CLRDP EIR p. 4.1-44).

**Project Impact.** Lighting for the proposed MSC Projects has been selected and sited to comply with the applicable CLRDP policies, implementation measures, and design guidelines to minimize the effect of increased lighting associated with CLRDP development. As described above, all lighting would be shielded to prevent light from spreading vertically or horizontally. Consistent with CLRDP requirements, downward-directed and shielded lighting mounted on bollards would be used along the McAllister Way sidewalk. Other proposed pedestrian and bicycle trails, including the main entry multi-use trail, would not include lighting except as needed for safety, at road and driveway crossings, and at intersections of pedestrian paths with the multi-use trail. Pole-mounted lights would be used only in parking lots C and D, at building entries, and at pedestrian crossings. Parking Lot A would not be used at night and would not

be lighted. Each greenhouse would be equipped with a light screening system (such as blinds, louvers or shade cloths for walls and roof) that would be closed whenever night lighting is used. If photovoltaic panels are constructed over Parking Lot D, they would not have the potential to increase daytime glare, since they would be designed to absorb light rather than to reflect it. In compliance with CLRDP requirements, light and glare from windows of the CBB lab building and Greenhouse Complex would not be visible from within the original YLR.

Compliance with the CLRDP lighting standards, which are included in the Projects, would minimize the potential for the proposed new development to contribute to light pollution in the area. Therefore, the impacts of the proposed MSC Projects with respect to light and glare would be less than significant and no mitigation measures are required.

#### 3.1.4.4 Cumulative Impacts and Mitigation Measures

##### *Scenic Vistas, Visual Character and Quality, Light and Glare*

<b>MSC Projects Impact AES-45:</b>	The CBB and MSC projects, in conjunction with other development in the vicinity of the MSC, could result in adverse impacts on scenic vistas, scenic resources, or the visual character and quality of the area, and could increase the amount of light pollution in the vicinity of the MSC.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	<p>Implementation Measure 1.1.1 - Figures of Chapter 5.</p> <p>Implementation Measure 2.3.1 - Cluster Development</p> <p>Implementation Measure 2.3.3 - Windbreak/Screening Trees</p> <p>Implementation Measure 3.5.5 - Siting of Windbreak/Screening Trees</p> <p>Implementation Measure 4.2.3 - Building and Other Structure Height</p> <p>Implementation Measure 4.2.4 - Laboratory Buildings</p> <p>Implementation Measure 4.2.7 - Construction Materials</p> <p>Implementation Measure 4.2.8 - Building Setbacks</p> <p>Implementation Measure 4.2.9 - Building Length Limitations</p> <p>Implementation Measure 4.2.10 - Placement of Utility Lines Underground</p> <p>Implementation Measure 4.2.11 - Windbreak/Screening Trees</p> <p>Implementation Measure 4.2.12 - Development in Northernmost Portion of Middle Terrace</p> <p>Implementation Measure 4.2.15 - Building Development West of McAllister Way in Middle Terrace</p> <p>Implementation Measure 4.2.16 - Building Development Outside of</p>

	Subareas Prohibited Implementation Measure 4.3.3 - All Lighting Implementation Measure 4.3.4 - Building Lighting Implementation Measure 4.3.5 - Street and Trail Lighting Implementation Measure 4.3.6 - Parking Lot and Maintenance Yard Lighting Implementation Measure 4.3.7 - Sign Lighting Implementation Measure 4.3.8 - Lighting Plan Required
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab, greenhouses, parking) MSCI Phase A and Phase B Project (roads, parking lots, Utility Yard, Upper Terrace Storage Yard)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis—Scenic Vistas.** The cumulative analysis of aesthetic impacts in the CLRDP EIR (4.1-45 to 4.1.46) assumed that new development on the remaining undeveloped parcels in the Santa Cruz westside study area would be consistent with existing City of Santa Cruz General Plan land-use designations. These land-use designations include Low Density Residential and Low Medium Density Residential for much of the land east and northeast of the MSC and for lands east of Moore Creek and north of Highway 1. The CLRDP EIR determined that the impact of cumulative development on scenic vistas from the viewpoints presented in the visual simulations would be less than significant (CLRDP EIR p. 4.1-46). Much of the westside study area other than the MSC is screened from the Highway 1 vantage point by tall trees (and in any case would appear as distant views). From the Moore Creek vantage point, development of areas east of the MSC would also be screened by topography to a great extent. Similarly, viewpoints from Wilder Ranch State Park do not provide sweeping views over the westside study area, although there is a wide view of the Marine Science Campus. From Natural Bridges State Beach, views over the westside study area would be screened by existing development close to the State Beach. Furthermore, development on remaining vacant parcels within the Santa Cruz westside study area would be required to adhere to the relevant policies and would be subject to the City’s design review process. This would ensure the protection of the scenic view corridors located at the western entrance to the City of Santa Cruz.

**Visual Character and Quality.** Buildout of the Santa Cruz westside study area would be expected to result in a more intensively developed and urbanized appearance and character, but the scale, mass, height, and types of future development would not be expected to differ substantially from existing uses. The change in visual character of this area is not considered a cumulatively significant adverse visual impact because the area has already been altered by urbanization and because most future projects would

be built as infill adjacent to already developed areas. Although the CLRDP would also add buildings to the westside study area and thereby contribute to the incremental buildup of the area, the CLRDP includes measures that require and ensure the preservation of open space as natural habitat and clustering of development. As a result, the campus site would not appear as dense urban development and would continue to provide an impression of an urban/rural margin.

Both the CLRDP, which regulates development at the MSC, and the City of Santa Cruz General Plan, which regulates other development in the City of Santa Cruz, include design guidelines that regulate building height, scale, mass, and density. CLRDP design guidelines direct the development of MSC buildings to be consistent with the agricultural heritage of the area in design and finish. Design within the City of Santa Cruz would be subject to individual approvals by the City, which would ensure consistency with General Plan guidelines. These measures would ensure that cumulative development does not result in a loss of visual quality, and the CLRDP EIR concluded that cumulative impact on the visual quality of the study area would be less than significant (CLRDP EIR, pp. 4.1-46 to 4.1-47).

**Light and Glare.** Similarly, design aspects that contribute to light and glare impacts are regulated by both the City of Santa Cruz General Plan and by the proposed CLRDP. These design guidelines would minimize the increase in regional light and glare that would result from cumulative development to the extent possible, and the cumulative impact associated with light and glare in the study area would be less than significant (CLRDP EIR, p. 4.1-47).

**Project Impact.** The new buildings and other facilities that would be constructed under the proposed MSC Projects would be within the building program analyzed in the CLRDP EIR and would comply with the design standards and other development parameters specified in the CLRDP. There has been no significant development in the immediate vicinity of the MSC since the CLRDP EIR was certified in September 2004, and the City and County land-use designations for the adjacent properties have not been changed. However, the City of Santa Cruz and Soquel Creek Water District (SqCWD) have proposed to develop a desalination plant at one of two sites in the westside study area, one of which is on the property on the east side of Shaffer Road opposite the MSC Upper Terrace Development Zone. A portion of this property is currently used for agriculture by the Homeless Garden Project, a non-profit job training program. The environmental impacts of developing the desalination plant at this and two other potential locations were analyzed at a program level in the City's Integrated Water Plan Program EIR (IWP pEIR) (EDAW 2005); the City and SqCWD are currently preparing a project EIR on the proposed desalination plant and associated facilities. The Notice of Preparation for the desalination project EIR states that the potential desalination plant sites are not visible in designated scenic vistas and that the sites are not visible from Highway 1 (City of Santa Cruz and Soquel Creek Water District 2010). The IWP pEIR (pages 5.10-12 to 5.10-18) concludes that the addition of a new desalination plant at either of the two sites currently under consideration would not substantially degrade the existing visual character or alter light/glare during construction or operation with the implementation of identified mitigation measures (EDAW 2005). The City's project EIR will further evaluate this topic, based on project-specific design details and visual analyses to be developed during the EIR process.

Based on the conclusions of the CLRDP EIR and the IWP pEIR, the consistency of the proposed MSC Projects with the CLRDP siting and design parameters, and the fact that the proposed desalination plant

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sites are not visible within designated scenic vistas, the impacts of the proposed MSC Projects with respect to scenic vistas, the visual character or quality of the area, and increased light and glare, in conjunction with other reasonably foreseeable development in the study area, would be less than significant.

### 3.1.5 References

City of Santa Cruz. 1994. *General Plan and Local Coastal Program, 1990-2005*, Adopted October 27, 1992, last amended October 25, 1994.

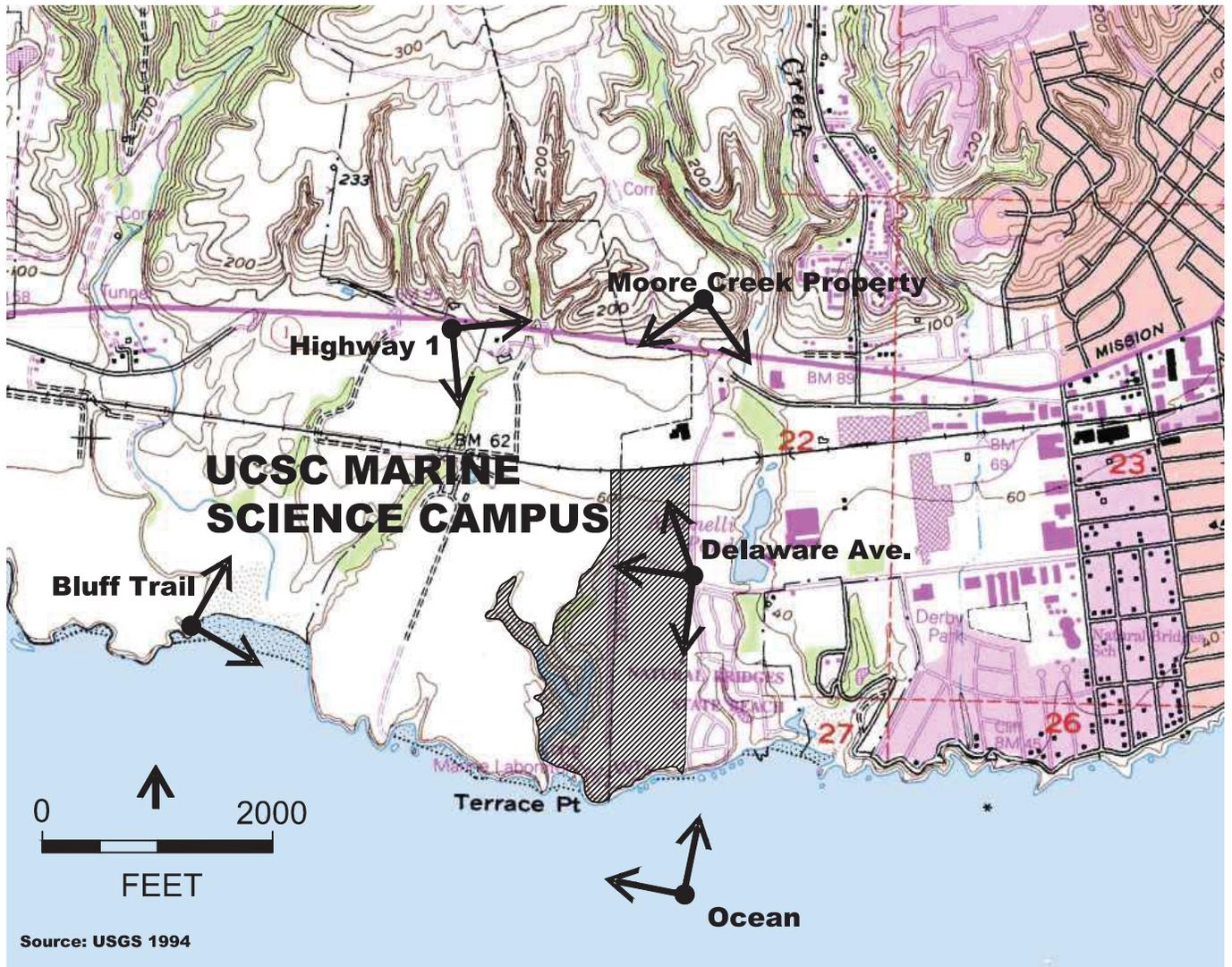
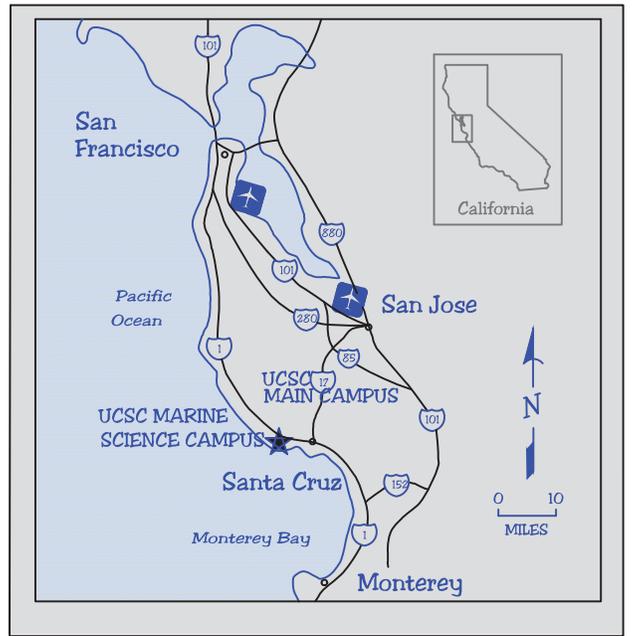
City of Santa Cruz and Soquel Creek Water District. 2010. Notice of Preparation of an Environmental Impact Report, City of Santa Cruz and Soquel Creek Water District (scwd2) Regional Seawater Desalination Project. November 15.

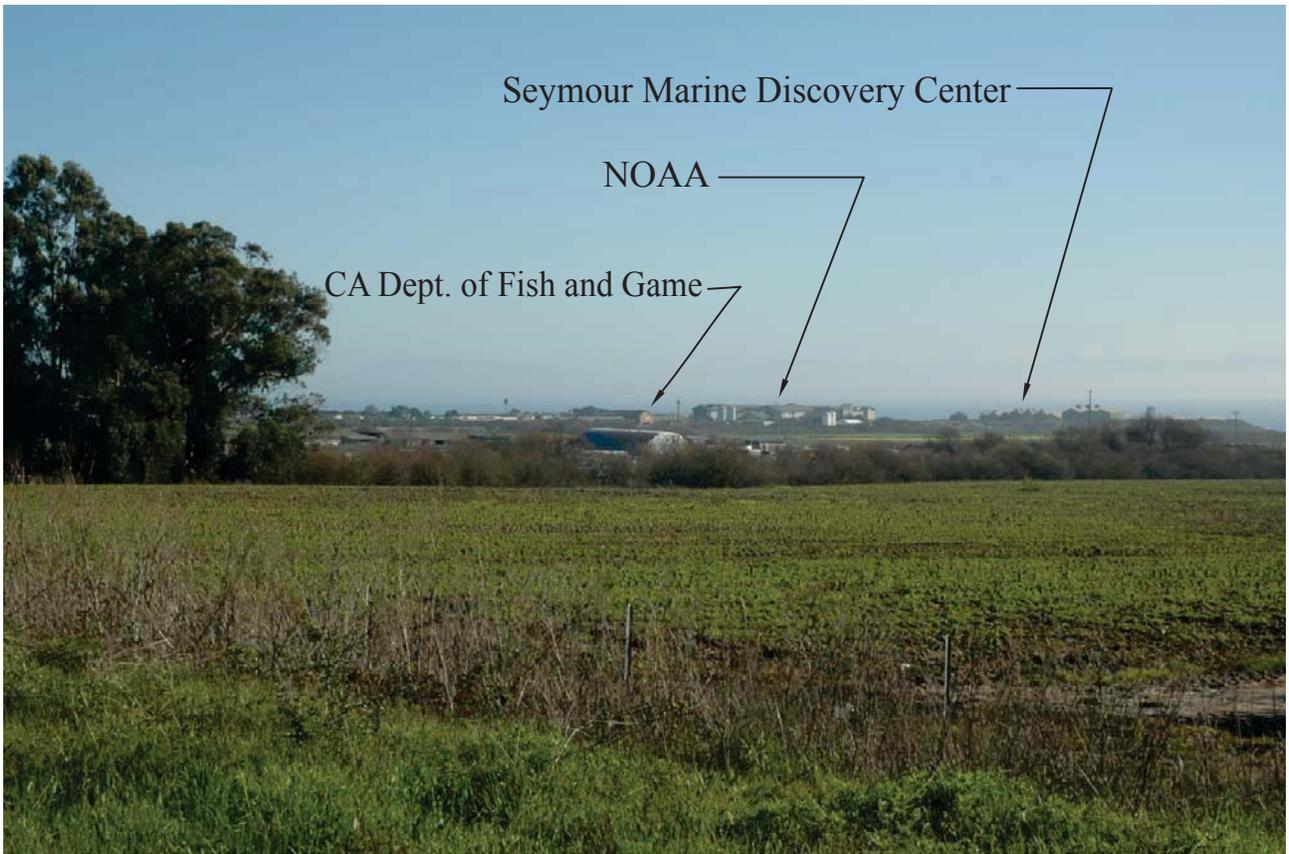
EDAW. 2005. *Santa Cruz Water Department Integrated Water Plan Program EIR*. Prepared for the City of Santa Cruz Water Department. State Clearinghouse #2003102140.

LEGEND

**Delaware Ave.**

Visual Simulation  
Vantage Point



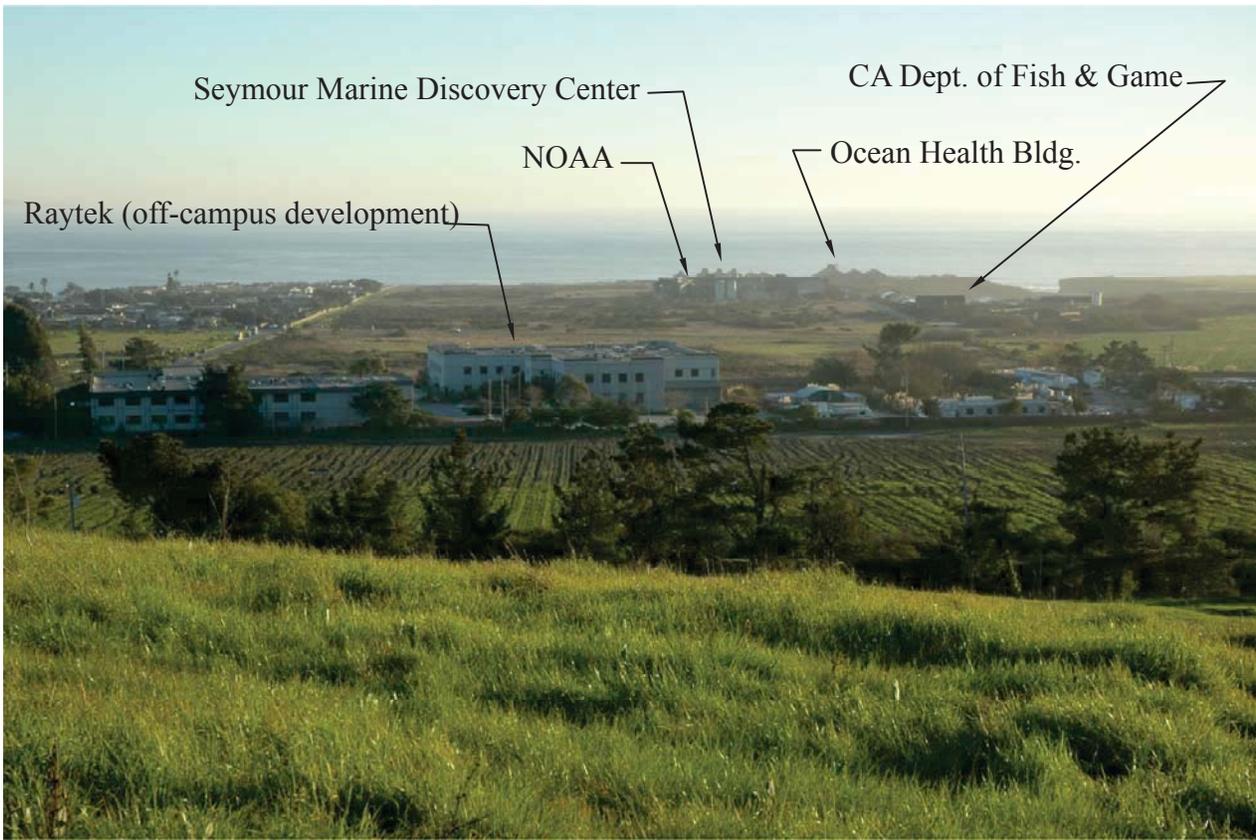


Existing Conditions

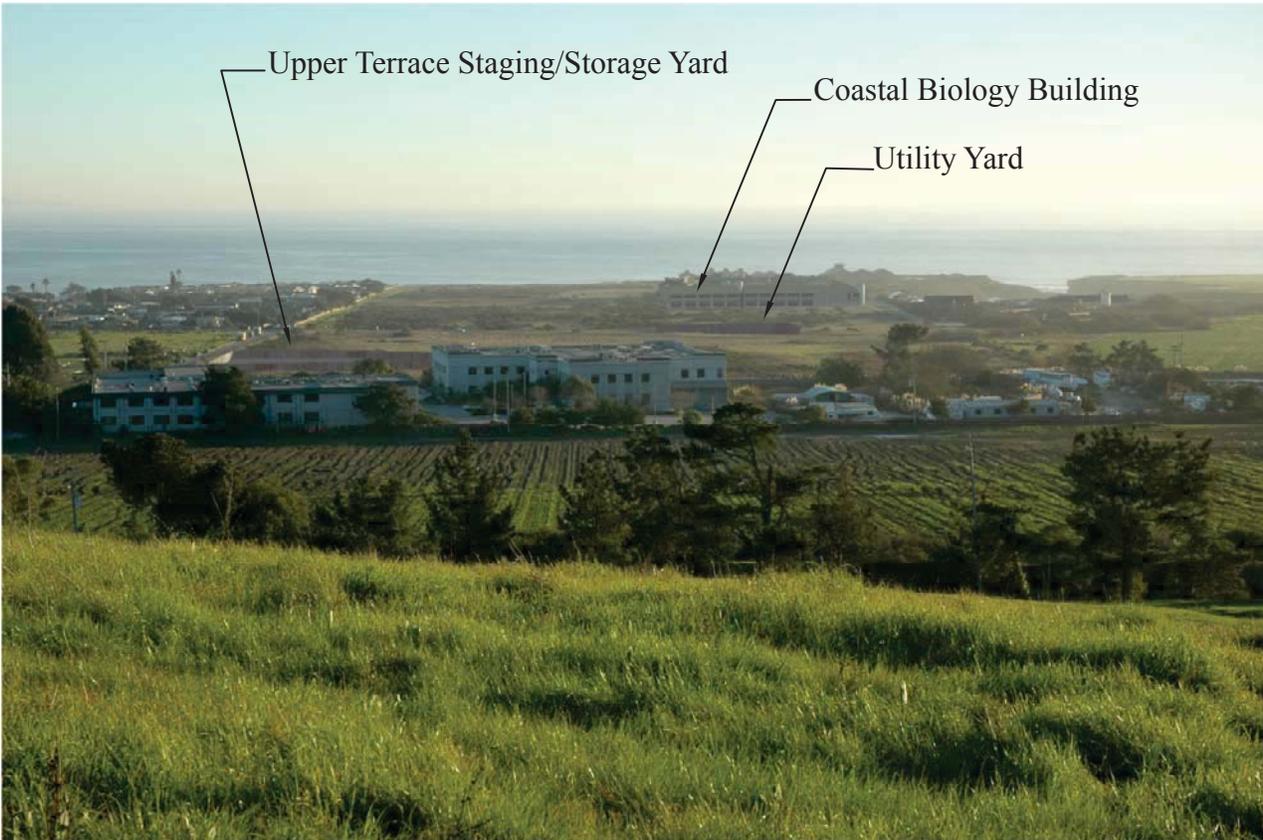


With Project

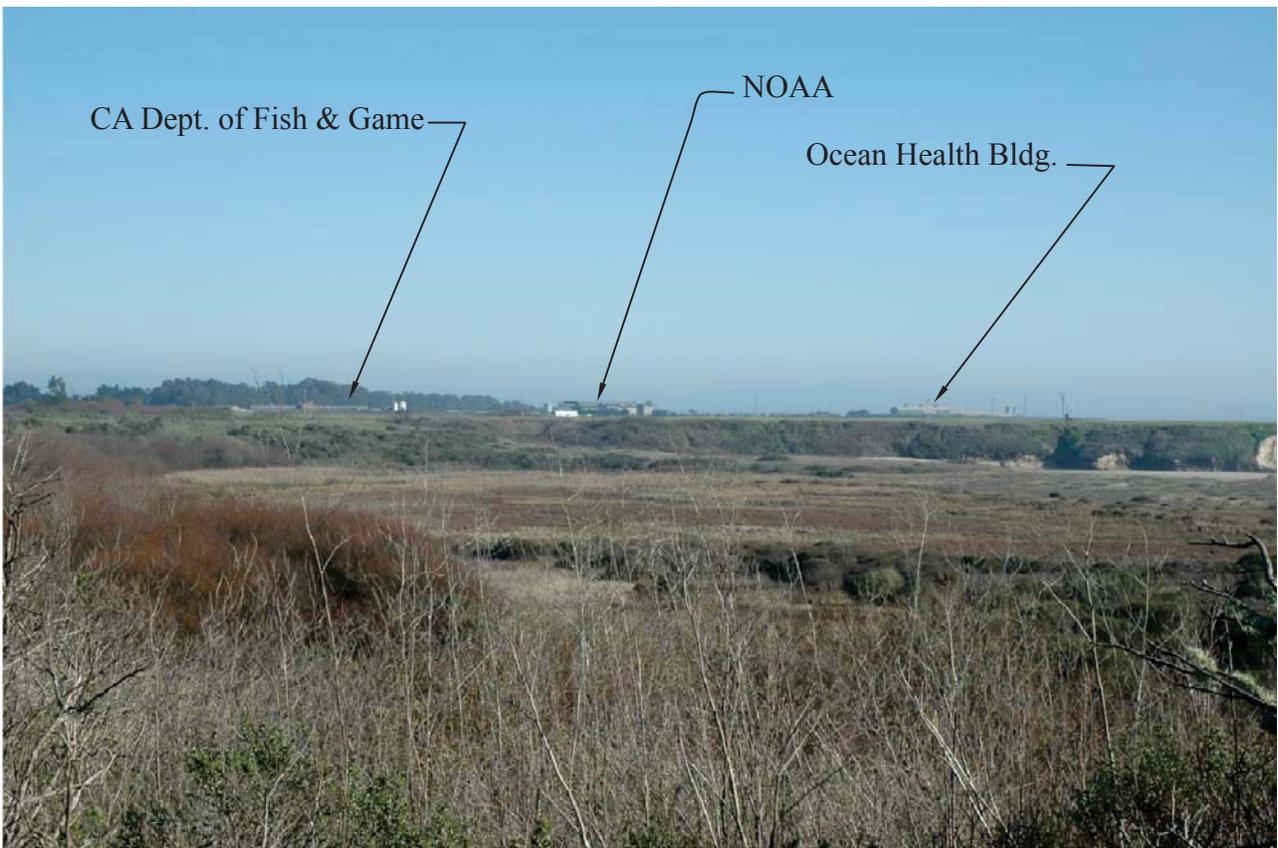
UC Santa Cruz Marine Science Campus Coastal Biology Building and Infrastructure Improvements Final Environmental Impact Report Nov. 2011	Existing and Proposed Views Highway 1	Figure 3.1-2
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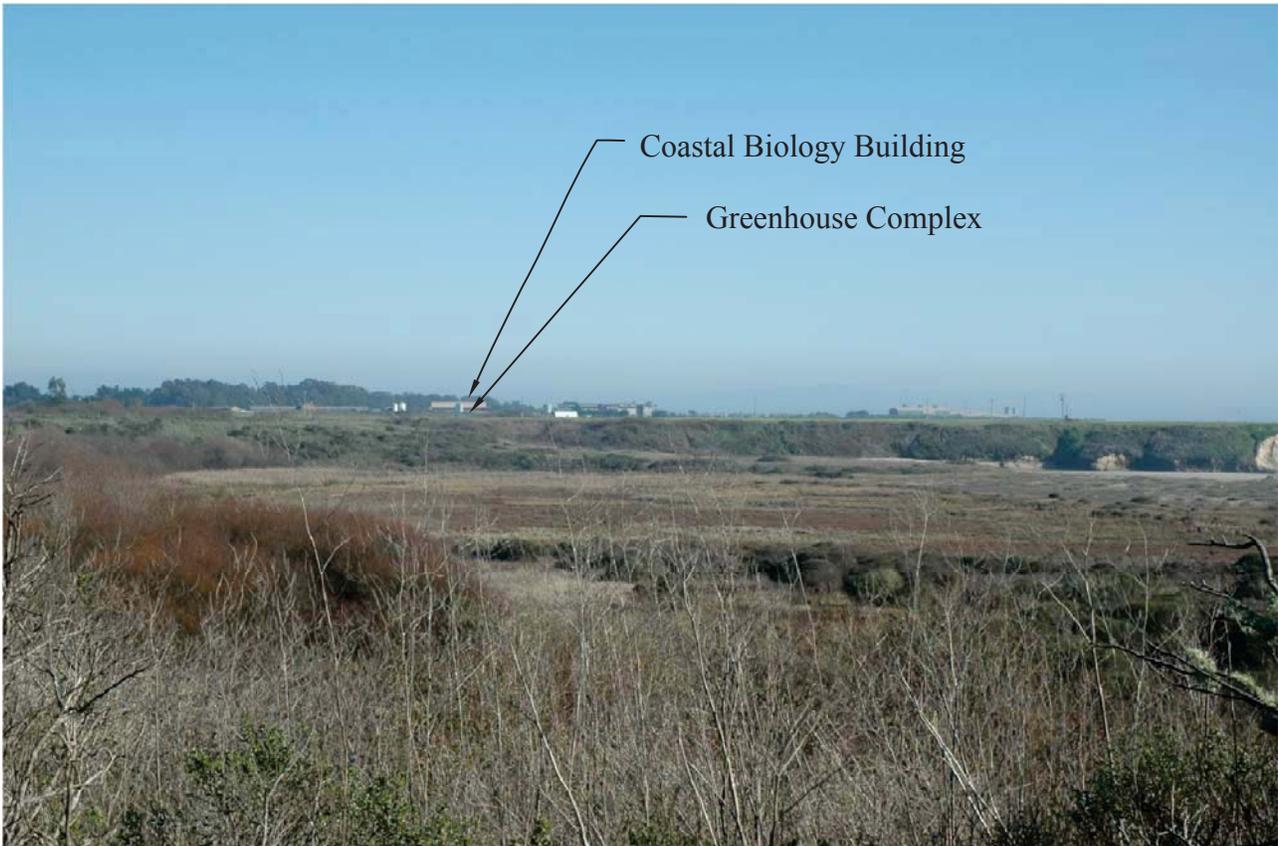
Existing Conditions



With Project



Existing Conditions

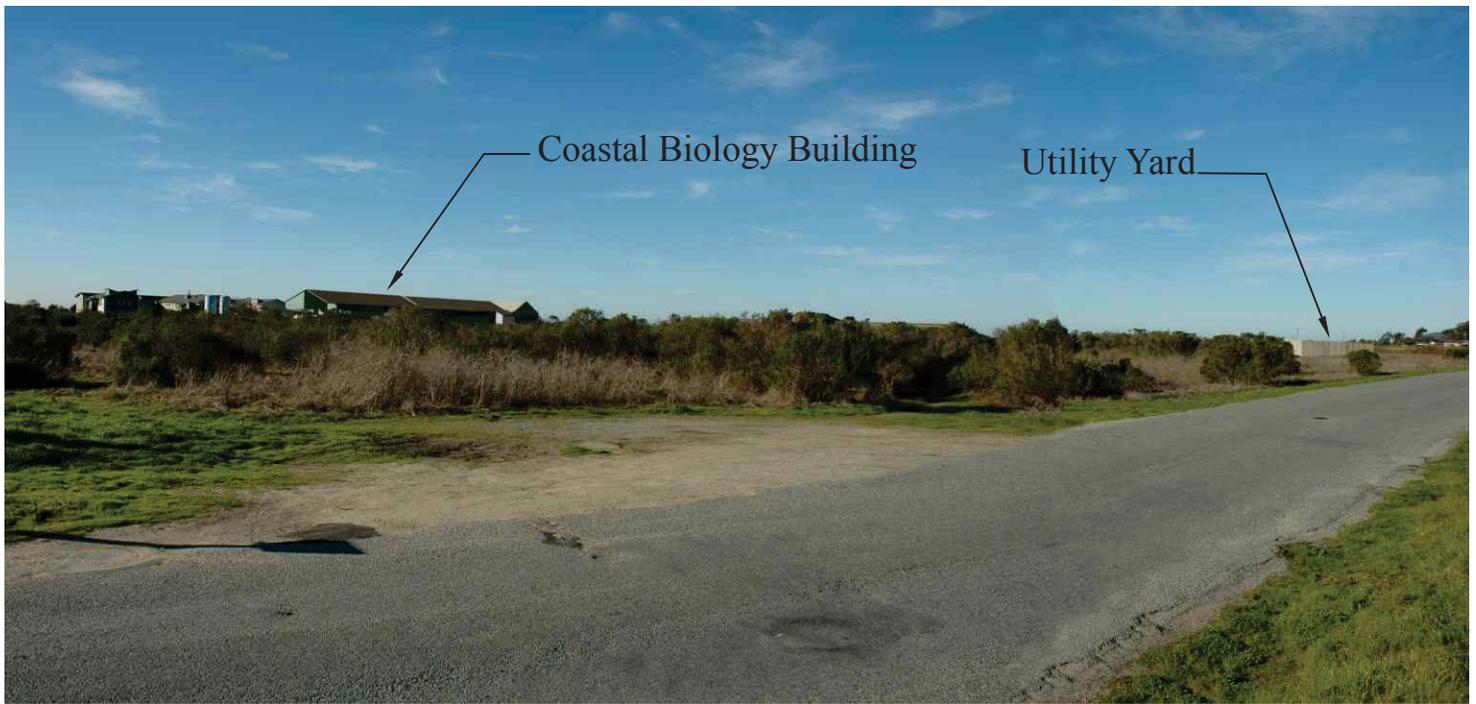


With Project

<p>UC Santa Cruz Marine Science Campus          Coastal Biology Building          and Infrastructure Improvements          Final Environmental Impact Report Nov. 2011</p>	<p>Existing and Proposed Views          Wilder Ranch State Park</p>	<p>Figure          3.1-4</p>
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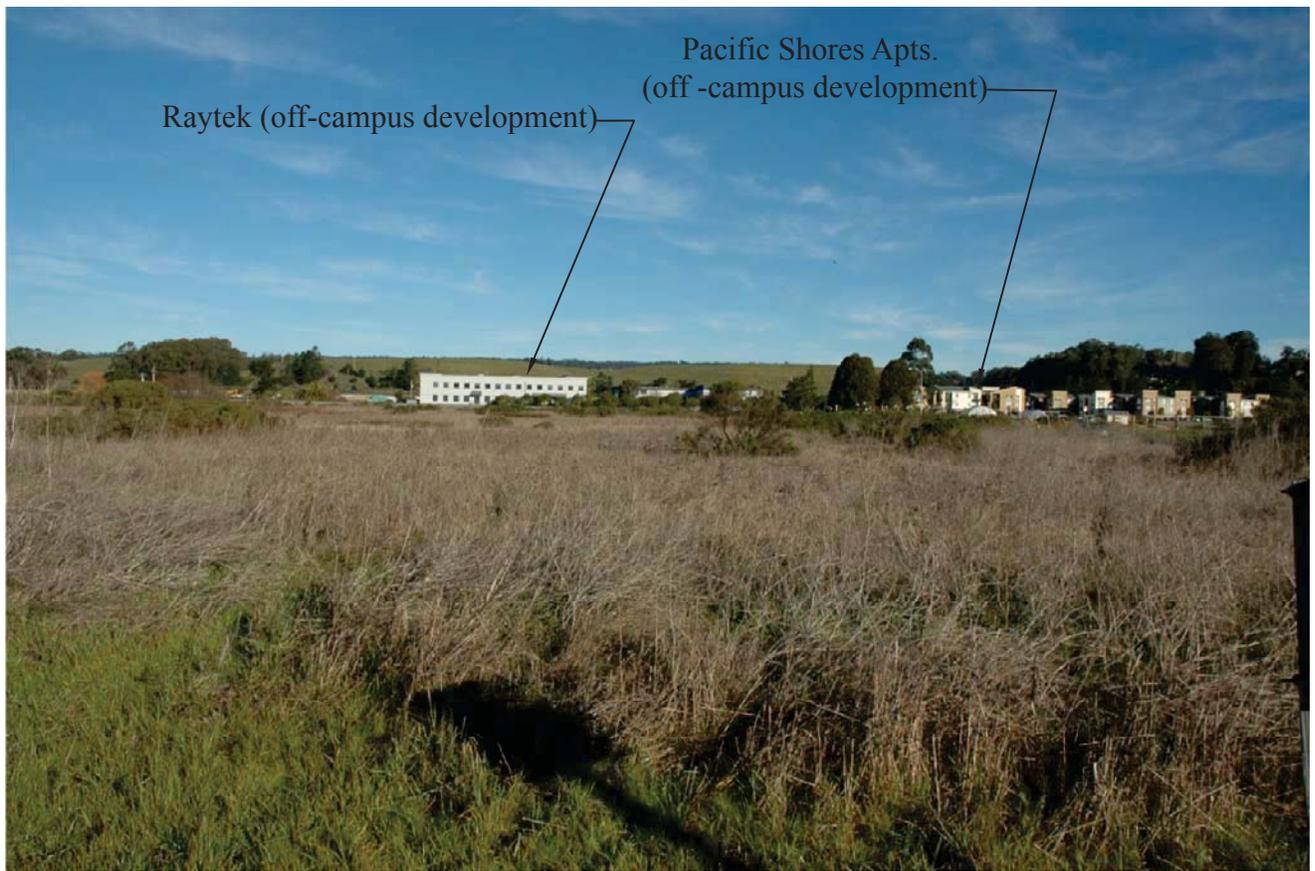


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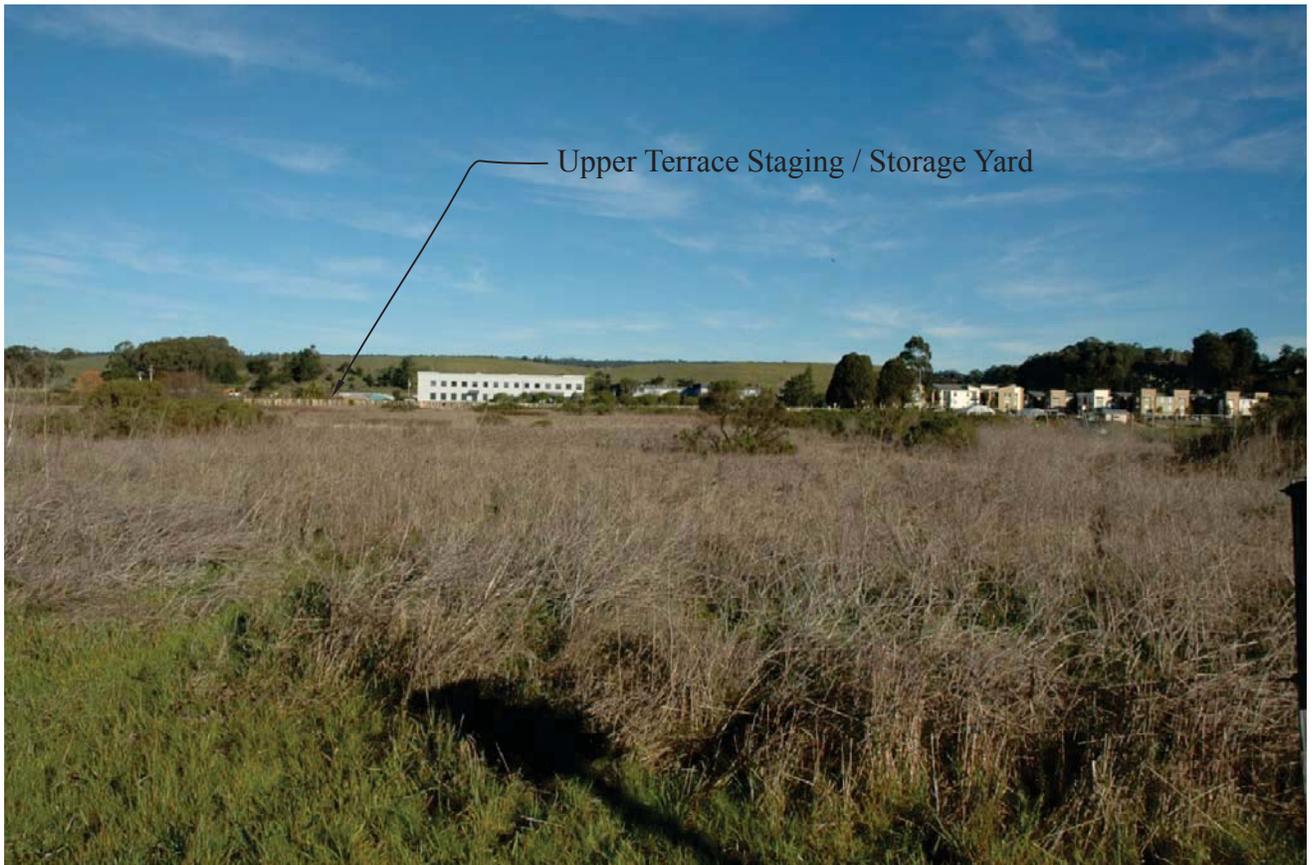


With Project

UC Santa Cruz Marine Science Campus Coastal Biology Building and Infrastructure Improvements Final Environmental Report November 2011	Existing and Proposed Views from Delaware Ave. toward South-Southwest	Figure 3.1-5
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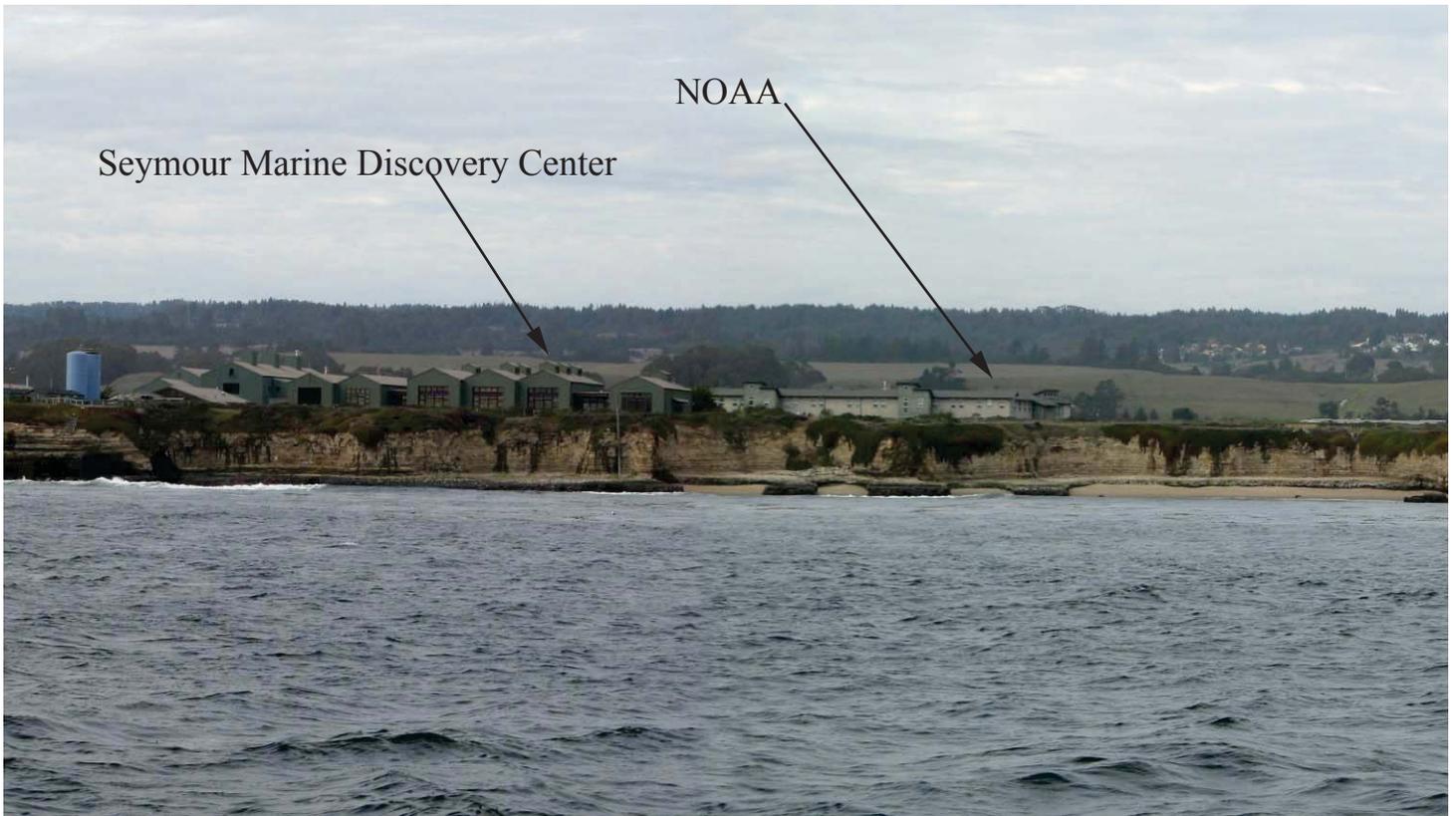


Existing Conditions



With Project

UC Santa Cruz Marine Science Campus Coastal Biology Building and Infrastructure Improvements Final Environmental Impact Report Nov. 2011	Existing and Proposed Views Delaware Ave. toward North	Figure 3.1-6
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Existing Conditions



With Project

<p>UC Santa Cruz Marine Science Campus          Coastal Biology Building and          Infrastructure Improvements          Final Environmental Impact Report November 2011</p>	<p>Existing and Proposed Views          Pacific Ocean</p>	<p>Figure          3.1-7</p>
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## 3.2 AGRICULTURAL AND FORESTRY RESOURCES

3.2.1	Environmental Setting	3.2-1
3.2.1.1	Regulatory Setting	3.2-1
3.2.1.2	Regional and Local Context	3.2-4
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3.2.3	Applicable CLRDP EIR Mitigation Measures	3.2-6
3.2.4	Impacts and Mitigation Measures	3.2-6
3.2.4.1	Standards of Significance	3.2-6
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3.2.5	References	3.2-10

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## 3.2 AGRICULTURAL AND FORESTRY RESOURCES

This section evaluates the potential direct and indirect impacts from development of the proposed Marine Science Campus (MSC) Projects on regional and on-campus agricultural resources (including designated farmland, land zoned for agricultural use, or land under Williamson Act contract) and forestry resources. This section provides project-level analysis and additional detail regarding agricultural resources, and its supplements and augments, pursuant to CEQA Guidelines Section 15152, the analysis provided in Section 4.2 of UC Santa Cruz' CLRDP EIR. The CLRDP EIR did not analyze impacts on forestry resources.

### 3.2.1 Environmental Setting

See CLRDP EIR Section 4.2 (pp. 4.2-1 to 4.2-10) for a comprehensive discussion of the regulatory context and the agricultural resources setting of the MSC.

#### 3.2.1.1 Regulatory Setting

##### *State Programs*

##### Farmland Mapping and Monitoring Program

The California Department of Conservation is charged with developing programs for the protection of the agricultural resources of the state. Based on data from the Natural Resources Conservation Service of the U.S. Department of Agriculture, the California Department of Conservation has developed a Farmland Mapping and Monitoring Program (FMMP) to classify agricultural soil types based on their ability to sustain agricultural crops (CDC 2003). The FMMP was created to assess the location, quality, and quantity of agricultural lands to deal with the loss of important farmland to development. The FMMP produces Important Farmland maps and statistical data for every county in the state that show the amount of land under agricultural and nonagricultural land-use categories. The Department of Conservation defines the following categories for purposes of FMMP Important Farmland maps:

- Prime Farmland is land with the best combination of physical and chemical features for the long-term production of agricultural crops. This land can economically produce sustained high yields when treated and managed according to modern farming methods. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.
  - Farmland of Statewide Importance is land with a good combination of physical and chemical features but with minor shortcomings, such as greater slopes or less ability to hold and store moisture. Crops must have been grown on the land at some time prior to the mapping date.
  - Unique Farmland is land with lesser-quality soils used for the production of the state's leading agricultural cash crops. This land is usually irrigated but may include nonirrigated orchards. Crops must have been grown on the land at some time prior to the mapping date.
  - Farmland of Local Importance is pastureland and other agricultural land identified by the local jurisdiction as being important.
  - Grazing Land is land on which the existing vegetation is suited to the grazing of livestock.
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- Urban and Built-Up is land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel.
- Other Land is land that does not meet the criteria of any other category.
- Land Committed to Nonagricultural Use is existing farm land, grazing land, and vacant areas that have a permanent commitment for development.

The FMMP updates maps every two years. The mapping program is used under CEQA and other state laws (including Government Code Section 65561) to measure the impact of eliminating different kinds of lands on the production of food and other agricultural products. Appendix G of the CEQA Guidelines also recommends the use of FMMP mapping for the evaluation of impacts on agricultural resources.

#### California Land Conservation Act (Williamson Act)

The California Land Conservation Act (LCA), better known as the Williamson Act, allows for property taxation based on agricultural productivity rather than on surrounding urban land values for lands that are under Williamson Act contracts. Due to the specific tax-exempt status of the University of California, land owned by the University is not subject to Williamson Act contracts. The adjacent Younger Ranch is not under Williamson Act contract at this time.<sup>1</sup>

#### California Coastal Act

California Coastal Act Section 30241 requires the maintenance of the maximum amount of prime agricultural land to assure the protection of agricultural economies, but requires the preservation of both prime and non-prime agricultural lands and minimization of conflicts between agricultural and urban land uses. Coastal Act Section 30241.5 identifies specific findings that must be made in order to address the agricultural “viability” of prime lands around the periphery of urban areas that are subject to conversion requests. These findings include an assessment of gross revenues from agricultural products grown in the area and an analysis of operational expenses associated with such production. Subsection (b) specifically requires that such economic feasibility studies be submitted with any Local Coastal Program (LCP) or LCP amendment request (and, by extension, proposed CLRDPs). In addition, the Coastal Act requires that when the University prepares a CLRDP, it must consult and coordinate with local jurisdictions to make the CLRDP consistent to the fullest extent feasible with the LCPs.

The Santa Cruz County General Plan (County of Santa Cruz 1994) includes numerous goals and policies to protect and preserve agricultural resources, including an Agricultural Resource land-use designation. The County zoning code defines a Commercial Agricultural (CA) Zone District for lands that are intended to be maintained exclusively for long-term commercial agricultural land-use designations. The Santa Cruz County LCP provides for a 200-foot buffer between existing agricultural uses and new

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<sup>1</sup> Based on the map of Santa Cruz County Agricultural Preserve Land prepared by the County of Santa Cruz Assessor’s Office in 2003, available on the FMMP website: [ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Map%20and%20PDF/Santa%20Cruz/Santa%20Cruz%20wa%2002\\_03.pdf](ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Map%20and%20PDF/Santa%20Cruz/Santa%20Cruz%20wa%2002_03.pdf), and on the Agricultural and Timber Resources Map on the County of Santa Cruz GIS web site [http://gis.co.santa-cruz.ca.us/gis/map\\_gallery/](http://gis.co.santa-cruz.ca.us/gis/map_gallery/).

developments, with some exception if site-specific analyses support a smaller buffer.

The City of Santa Cruz General Plan Agricultural Element includes as a goal protection of the quality of, and prevention of significant new incursion of, urban development into areas designated as open space or agricultural lands. City Land Use Policy 3.1.3 supports County of Santa Cruz policies and programs aimed at preservation of agricultural/grazing land, and encourages organic farming practices on agricultural lands. The Santa Cruz City LCP does not identify specific required agricultural buffer distances; rather, buffers are to be “appropriate” to the case at hand.

In certifying the CLRDP, the Coastal Commission determined that the CLRDP contains adequate protections for adjacent agriculture, including buffer distances that were developed based on a site-specific analysis of the buffering requirements of the current adjacent agricultural operation.

#### California Department of Food and Agriculture

Under oversight of the California Department of Pesticide Regulation (DPR), the County Agricultural Commissioner is charged with enforcing provisions of the California Food and Agricultural Code, which include the regulation of pesticide use.<sup>2</sup> The DPR designates as restricted materials pesticides deemed to have a relatively high potential to cause harm to public health, farm workers, public health, farm workers, domestic animals, honeybees, the environment, wildlife, or other crops compared to other pesticides. With certain exceptions, restricted materials may be purchased and used only by or under the supervision of a certified commercial or private applicator under a permit issued by the County Agricultural Commissioner. When a farmer applies for a permit to buy or use restricted material, the commissioner is required to evaluate the proposed use to determine if the pesticide can be used safely, particularly in sensitive areas such as near wetlands, schools, or residential neighborhoods.

#### Santa Cruz County Programs

The Santa Cruz County General Plan (County of Santa Cruz 1994) includes numerous goals and policies to protect and preserve agricultural resources, including an Agricultural Resource land-use designation. The County zoning code defines a Commercial Agricultural (CA) Zone District for lands that are intended to be maintained exclusively for long-term commercial agricultural land-use designations. The Santa Cruz County LCP provides for a 200-foot buffer between existing agricultural uses and new developments, with some exception if site-specific analyses support a lesser buffer.

#### City of Santa Cruz Programs

The City of Santa Cruz General Plan Agricultural Element includes the following goal:

- Protect the quality of, and prevent significant new incursion of urban development into areas designated as open space or agricultural lands.

City Land Use Policy 3.1.3 supports County of Santa Cruz policies and programs aimed at preservation of agricultural/grazing land, and encourages organic farming practices on agricultural lands. The Santa Cruz City LCP does not identify specific required agricultural buffer distances; rather, buffers are to be “appropriate” to the case at hand.

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<sup>2</sup> The term “pesticides” may include herbicides, fungicides, and rodenticides.

### CLRDP Policies and Implementation Measures Applicable to the MSC Projects

The following CLRDP Implementation Measures relevant to agricultural resources are applicable to and incorporated into the proposed MSC Projects:

- IM 2.2.1—Setback of Development and Uses from Adjacent Agricultural Uses
- IM 3.8.2—Agreement to Indemnify and Hold Harmless

These measures require clustering of development within the defined development zones; 500-foot agricultural setbacks for any caretaker residences (and 200-foot to 300-foot setbacks for all other development and uses); and hold-harmless and indemnification agreements between UC Santa Cruz and adjacent agricultural operators. The full text of each measure is presented in Appendix C of this EIR, which also explains how each measure is applicable to the MSC Projects.

### 3.2.1.2 Regional and Local Context

#### Regional Context

As reported in the CLRDP EIR (p. 4.2.2), in the year 2000, the gross agricultural production value in Santa Cruz County totaled almost \$352 million, an increase of 16.8 percent over the 1999 value. The top 15 crops grown in Santa Cruz County in 2000, by value, were strawberries, raspberries, head lettuce, landscape plants, other vegetables (such as artichokes, beans, spinach, tomatoes, etc.), miscellaneous plants, field flowers, timber, leaf and romaine lettuce, hybrid tea roses, bushberries, apples, indoor potted plants, Brussels sprouts, and cauliflower. In 2008, the gross agricultural production value in Santa Cruz County had grown to more than \$485 million (Santa Cruz County Agricultural Commissioner 2008).

#### Local Context

The 60-acre Terrace Point property was classified as Unique Farmland on the California Department of Conservation's 1992 Important Farmlands Map. Survey data were collected prior to 1990, about the time of the last farming operation on site. Three soil types occur on the terrace portion of the MSC: Elkhorn sandy loam #132, Elkhorn sandy loam #133, and Watsonville loam #178. Of these three soil types, only Elkhorn sandy loam soils are classified as prime soils by the California Department of Conservation, Division of Land Resource Protection, but only if they are irrigated. California Department of Conservation 2004. This soil type is mapped on an area of about 26 acres of the MSC (none of which has been irrigated since being incorporated in the MSC) on the eastern third of the Upper Terrace and the majority of the Middle Terrace.

Prior to 1976, when the University acquired the area west of McAllister Way, the entire terrace portion of the MSC, including the area west of McAllister Way, was actively farmed. Areas to the west of McAllister Way then were developed, with the exception of the greenhouses that continued to occupy about one-third acre. The area to the east of McAllister Way was used to grow Brussels sprouts until 1988. No other agricultural use has occurred on the remainder of the project site since farming ceased in 1988. There is a complex of 11 greenhouses on the Middle Terrace west of McAllister Way but none of these is currently used for agriculture.

### *Agricultural Suitability of the Site*

An agricultural suitability study was prepared for the 60-acre Terrace Point property in 1995.<sup>3</sup> The report included ten laboratory soil tests to determine soil capability and overall agricultural suitability of the property. The suitability analysis was conducted for the portion of property then not owned by the University, while that property was under prior ownership and proposed for development. The 1995 analysis concluded that 32 acres of the site, including wetlands, 100-foot sea cliff setback buffers, and 30-foot pesticide setback buffers along the access road and adjacent to neighboring urban uses, were unsuitable for agricultural production. It was determined that the suitability of the remaining 28 acres of the site was limited by the lack of a source of irrigation water (after 1988, when an irrigation well collapsed), drainage constraints, and soil erosion. The 1995 report also cited the incompatibility of surrounding uses with agricultural use as a constraint on the agricultural use of the site. Since 1995, the National Oceanic and Atmospheric Administration (NOAA) Fisheries Lab facility and the Seymour Marine Discovery Center have been constructed on those portions of the 60-acre Terrace Point site that had the best soil suitability for farming. The presence and public use of these facilities further limits the agricultural suitability of the remaining 54.5 acres of the terrace lands.

As part of the CLRDP planning process, a determination of agricultural suitability was conducted for the 54.5-acre terrace property following the California Department of Conservation Land Evaluation and Site Assessment (LESA) Model analysis. Five agricultural scenarios ranging from no-restrictions farming to 500-foot pesticide setbacks were evaluated using the LESA Model. In each scenario, the project site was shown to be a less-than-significant agricultural resource. An additional analysis of agricultural viability, comparing anticipated crop production costs and revenues with the water supply and infrastructure costs, was also performed (CLRDP EIR p. 4.2-4). That analysis determined that the project site was not economically viable for agriculture due to high water-related costs. The LESA Analysis and the agricultural viability analysis are included in the CLRDP EIR, Appendix B.

### *Adjacent Agricultural Properties*

Agricultural land uses adjoin the western boundary of the MSC at present. The agricultural uses to the west consist of agricultural production on the Younger Ranch adjoining the site and, approximately 2,000 feet farther west, the Wilder Ranch State Park. The Younger Ranch adjoins the entire northwestern edge of the project site, but is separated from proposed development areas on the southwest by an arm of Younger Lagoon that extends along the southern two-thirds of the western property boundary. The Younger Ranch has produced Brussels sprouts since the early 1950s, and it also includes a horse boarding area. The Wilder Ranch, owned and administered by the California State Parks system, is located more than 2,000 feet to the west of the project site. A tenant farmer on the Wilder Ranch produces Brussels sprouts on approximately 600 acres. Brussels sprouts are the predominant crop on the Wilder Ranch due to cool summer temperatures, although artichokes and peas have also been grown in the past.

Both the Younger Ranch and Wilder Ranch are considered to be prime agricultural land due to their current agricultural production, production history, and soils that are classified as Prime or of Statewide Importance by the California Resources Agency Important Farmlands Mapping Program.

As discussed in detail in the CLRDP EIR (pp. 4.2-6 to 4.2-7), although pesticide use on the Younger Ranch is in compliance with state regulations regarding pesticide use, the Santa Cruz County Agricultural Commissioner's Office has received complaints from the industrial park to the north of the MSC and from the De Anza Santa Cruz residential community residents about Younger Ranch pesticide and

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<sup>3</sup> Ibid.

fertilizer use and odors. The CLRDP EIR reported that the Younger Ranch restricted materials permit specifies setbacks for pesticide application from occupied structures for the following three pesticides:

- VAPAM, a soil fumigant usually applied in April, requires a 50-foot setback if applied on less than 20 acres and a 100-foot setback if applied on areas larger than 20 acres.
- METASYSTOX-R, a plant pesticide that may be applied up to 7 to 21 days prior to harvest, requires a 100-foot setback for ground application and a 150-foot setback if it is applied aerially.
- TELONE II, a soil fumigant usually applied in April, requires a 300-foot setback if it is applied in multiple years (i.e., two or more consecutive years). (Note: The setback may be reduced to 100 feet in the future based on a pending decision by the Environmental Protection Agency.)

### 3.2.2 Relevant Project Characteristics

The proposed Coastal Biology Building (CBB) project includes development of a new, 40,000-gsf lab building, two new parking lots, a greenhouse complex, and associated utilities and stormwater system. The proposed Marine Science Campus Infrastructure (MSCI) Project consists of utility and circulation improvements to serve both the CBB project and future MSC development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage, and outdoor exhibits. Under the proposed Specific Resource Plan, Phase IB (SRP Phase 1B), CLRDP-mandated wetland restoration and habitat improvements would be implemented. The proposed MSC Projects would increase the average daily population at the MSC by approximately 96 employees and 311 students. CLRDP Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the Projects described above. The revisions would clarify CLRDP language, address minor changes to CLRDP language made during the Coastal Commission approval process, and respond to the evolution of the CLRDP Resource Management Plan (under the guidance of the Scientific Advisory Committee that was established to guide YLR restoration efforts, as required by the CLRDP). None of the proposed CLRDP revisions included in Amendment #1 has implications for agricultural resources.

### 3.2.3 Applicable CLRDP EIR Mitigation Measures

The following CLRDP EIR mitigation measure is applicable to the proposed MSC Projects and is included and incorporated as part of the project description:

- General Mitigation 4.2-1—Landscaped fence along Younger Ranch property line.

### 3.2.4 Impacts and Mitigation Measures

#### 3.2.4.1 Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, the Projects would have a significant impact with regard to agricultural resources if they were to:

- Convert to nonagricultural use Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency.

- Involve other changes in the existing environment, which due to their location or nature, could result in conversion of farmland considered Prime, Unique, or of Statewide Importance to nonagricultural use.

The Appendix G standard addressing zoning for agricultural use or a Williamson Act contract is not addressed below. The University of California is not subject to city or county zoning. Due to the specific tax-exempt status of the University, land owned by the University of California is not subject to Williamson Act contracts. Accordingly, the proposed Projects would not conflict with existing zoning or with Williamson Act contracts.

### 3.2.4.2 Analytical Method

As described in the CLRDP EIR (pp. 4.2-4 to 4.2-6) and explained in Section 3.2.1.2 above, agricultural suitability studies were prepared for the original 60-acre Terrace Point property in 1995 (before it was acquired by the University) and by the University in 1999.

### 3.2.4.3 Project Impacts and Mitigation Measures

#### *Conversion of Important Farmland to Nonagricultural Uses*

<b>MSC Projects Impact AG-1:</b>	Development of the proposed CBB, MSCl, and NEF projects would result in conversion of Unique Farmland to non-agricultural uses.
<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB (lab, greenhouses, parking lots) MSCI (roads, trails, roads, parking lots, Utility Yard, Upper Terrace Storage Yard) NEF (paths, parking lot)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.2-12 to 4.2-13) determined that although development under the CLRDP would result in the conversion of Unique Farmland, this would not be a significant impact. Although the 54.5-acre terrace property, acquired by the University in 1999, has been mapped as Unique Farmland, the results of the LESA Model application described above indicate that this land does not have agricultural resources that would be considered significant. Therefore, the impact from the conversion of Unique Farmland due to the proposed Projects would not be significant. Much of the 16 acres of terrace lands west of McAllister Way, which was the original University property, is already developed, and contiguous vacant land usable for agricultural use is not available in this area. The removal of the seven greenhouses as envisioned in the CLRDP, would be a less-than-significant impact although they are underlain by a soil type that is considered prime if irrigated, because the size of the conversion would be small, there is no existing source of irrigation water, the surrounding land is fragmented by existing development, and agricultural uses could conflict with surrounding residential and light industrial uses.

**Project Impact.** The proposed Projects are consistent with the building program and infrastructure development analyzed in the CLRDP EIR, although the project site has been mapped as Unique Farmland, and a portion of the MSC is underlain by a soil type that is considered prime if irrigated, for the reasons given in the CLRDP EIR and summarized above. The analysis in the CLRDP EIR is applicable to the proposed MSC Projects, which are part of the program of development included in the CLRDP. The impact would be less than significant, and no additional mitigation is required.

*Indirect Impacts on Agricultural Lands*

<b>MSC Projects Impact AG-2:</b>	Development of the proposed MSC Projects could constrain use of certain pesticides and generate complaints of nuisance, vandalism/theft, pilferage, and trespass/liability at the Younger Ranch, which could indirectly result in the eventual removal of adjacent land from agricultural use.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	CLRDP General Mitigation 4.2-1 Implementation Measure 2.2.1 - Setback of Development and Uses from Adjacent Agricultural Uses Implementation Measure 3.8.2 - Agreement to Indemnify and Hold Harmless
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab, greenhouses, and parking) MSCI Project (trails, roads, parking lots, Upper Terrace Storage Yard) NEF Project (parking lot, trails, overlooks)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.2-14 to 4.2-15) analyzed the potential that development under the CLRDP could constrain use of certain pesticides and generate complaints of nuisance, vandalism/theft, pilferage, and trespass/liability at the Younger Ranch as a result of increased population and development on the campus. The EIR analyzed whether these pressures could increase costs of operation, impair productivity, and diminish the feasibility of continued agricultural production, possibly resulting in the eventual removal of adjacent land from agricultural use. The CLRDP EIR determined that, with the inclusion of CLRDP policies and implementation measures, including setbacks of development from the western property line, development under the CLRDP would not result in substantial pressures that could lead to the conversion of adjacent farmland to other uses (CLRDP EIR, p. 4.2-14). The CLRDP EIR also concluded that the potential for vandalism/theft of farm equipment and damage to structures, pilferage of crops, trespass/liability, and complaints regarding dust and odors would be low and the impact would be less than significant (CLRDP EIR p. 4.2-15). However, the CLRDP EIR identified General Mitigation 4.2-1 to further ensure that the adjacent agricultural property is not adversely affected. This mitigation requires that the Campus install a landscaped fence along the Younger Ranch property line on the Upper Terrace prior to the groundbreaking of any CLRDP project components.

**Project Impact.** As discussed in this Section 3.12, *Population and Housing*, the population increase associated with the proposed Projects is within the population analyzed in the CLRDP EIR. The Campus is implementing General Mitigation 4.2-1, which requires that the Campus install a landscaped fence along this boundary before breaking ground on any development projects under the CLRDP. The mitigation has been triggered by the Overlooks project, which was approved in February 2011. The Campus has constructed a portion of the fence, and will construct the remainder of the fence during fiscal year 2010-11 as part of the SRP Phase 1A project. YLR staff are in the process of planting vegetation screen. The analysis in the CLRDP EIR adequately addresses the potential indirect impacts of the proposed Projects on agricultural lands. CLRDP EIR General Mitigation 4.2-1, like all applicable CLRDP EIR mitigation measures, will be included in the Mitigation Monitoring and Reporting Programs for each of the MSC Projects. The impact would be less than significant, and no additional mitigation is required.

### 3.2.4.4 Cumulative Impacts and Mitigation Measures

#### *Removal of Adjacent Land from Agricultural Use*

<b>MSC Projects Impact AG-3</b>	Development of the proposed MSC Projects, in conjunction with other growth in the project vicinity, could indirectly result in the eventual removal of adjacent land from agricultural use.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	CLRDP General Mitigation 4.2-1 Implementation Measure 2.2.1 - Setback of Development and Uses from Adjacent Agricultural Uses Implementation Measure 3.8.2 - Agreement to Indemnify and Hold Harmless
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab, greenhouses, and parking) MSCI Project (trails, roads, parking lots, Upper Terrace Storage Yard) NEF Project (parking lot, trails, overlooks)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.2-16 to 4.2-17) determined that although some lands in the west side of Santa Cruz near the MSC may qualify as Farmland under the Department of Conservation classification, there is no existing agricultural production associated with these lands, and establishment of agriculture on these lands would not be viable. Therefore, development of the few remaining parcels in the study area, in conjunction with development under the CLRDP, would not result in a significant cumulative impact associated with conversion of farmland to other uses.

The CLRDP EIR also determined that development on the MSC in conjunction with other regional development would not result in a significant cumulative indirect impact on the agricultural lands to the west of the project site. Land use patterns in the Westside study area are already established; other than the MSC, there is only one small undeveloped parcel within the city and adjacent to the Younger Ranch, where uses incompatible with adjacent agriculture could be developed. Although there are vacant parcels farther east of the project site, these are sufficiently distant that agricultural odors, dust, and other

potential sources of conflict would not be significant problems. Furthermore, implementation of the proposed CLRDP would create a perceived buffer by placing semi-urban UC Santa Cruz research uses between agricultural operations and these vacant parcels and the existing De Anza Santa Cruz residential community. The buffering would be in the form of additional buildings on the MSC site, which would tend to shield the views of agricultural uses to the west. Placement of the fence and landscaping along the MSC's western property line as required by CLRDP EIR General Mitigation Measure 4.2-1 would further serve to protect the agricultural lands compared to existing conditions and would further reduce the less-than-significant impact.

**Project Impact.** As discussed above (Section 3.2.4.2), the proposed Projects would not result in significant project-level direct or indirect impacts on agricultural resources. Since the CLRDP EIR was certified in September 2004, the City has approved a 20-acre mixed-use live-work neighborhood development project at 2120 Delaware Avenue, approximately 1,500 feet east of the project site. The City of Santa Cruz EIR for the 2120 Delaware Avenue Project determined that the 2120 Delaware Avenue Project would not result in any impacts on agricultural resources (City of Santa Cruz 2008). As analyzed in the CLRDP EIR (p. 4.2-17), the 2120 Delaware Avenue site and other vacant parcels on the west side of Santa Cruz are far enough from existing agricultural land that agricultural odors, dust, and other sources of potential conflict would not be significant problems. The proposed MSC Projects, in conjunction with other development in the area, would not result in significant cumulative impacts on agricultural resources and no mitigation measures are required.

### 3.2.5 References

- California Department of Conservation (CDC). 2004. Division of Land Resource Protection, Farmland Mapping and Monitoring Program, Map Categories, Criteria and Uses, [http://www.consrv.ca.gov/dlrp/fmmp/mccu/prime\\_soils.htm](http://www.consrv.ca.gov/dlrp/fmmp/mccu/prime_soils.htm), 2004.
- City of Santa Cruz. 2008. 2120 Delaware Mixed-Use Project, Environmental Impact Report. SCH# 2007012097.
- Santa Cruz County. 1994. General Plan and Local Coastal Program.
- Santa Cruz County Agricultural Commissioner. 2008. 2008 Crop Report.

## 3.2 AGRICULTURAL AND FORESTRY RESOURCES

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## 3.2 AGRICULTURAL AND FORESTRY RESOURCES

This section evaluates the potential direct and indirect impacts from development of the proposed Marine Science Campus (MSC) Projects on regional and on-campus agricultural resources (including designated farmland, land zoned for agricultural use, or land under Williamson Act contract) and forestry resources. This section provides project-level analysis and additional detail regarding agricultural resources, and it supplements and augments, pursuant to CEQA Guidelines Section 15152, the analysis provided in Section 4.2 of UC Santa Cruz' CLRDP EIR. The CLRDP EIR did not analyze impacts on forestry resources.

### 3.2.1 Environmental Setting

See CLRDP EIR Section 4.2 (pp. 4.2-1 to 4.2-10) for a comprehensive discussion of the regulatory context and the agricultural resources setting of the MSC.

#### 3.2.1.1 Regulatory Setting

##### State Programs

##### Farmland Mapping and Monitoring Program

The California Department of Conservation is charged with developing programs for the protection of the agricultural resources of the state. Based on data from the Natural Resources Conservation Service of the U.S. Department of Agriculture, the California Department of Conservation has developed a Farmland Mapping and Monitoring Program (FMMP) to classify agricultural soil types based on their ability to sustain agricultural crops (CDC 2003). The FMMP was created to assess the location, quality, and quantity of agricultural lands to deal with the loss of important farmland to development. The FMMP produces Important Farmland maps and statistical data for every county in the state that show the amount of land under agricultural and nonagricultural land-use categories. The Department of Conservation defines the following categories for purposes of FMMP Important Farmland maps:

- Prime Farmland is land with the best combination of physical and chemical features for the long-term production of agricultural crops. This land can economically produce sustained high yields when treated and managed according to modern farming methods. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.
- Farmland of Statewide Importance is land with a good combination of physical and chemical features but with minor shortcomings, such as greater slopes or less ability to hold and store moisture. Crops must have been grown on the land at some time prior to the mapping date.

- Unique Farmland is land with lesser-quality soils used for the production of the state’s leading agricultural cash crops. This land is usually irrigated but may include nonirrigated orchards. Crops must have been grown on the land at some time prior to the mapping date.
- Farmland of Local Importance is pastureland and other agricultural land identified by the local jurisdiction as being important.
- Grazing Land is land on which the existing vegetation is suited to the grazing of livestock.
- Urban and Built-Up is land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel.
- Other Land is land that does not meet the criteria of any other category.
- Land Committed to Nonagricultural Use is existing farm land, grazing land, and vacant areas that have a permanent commitment for development.

The FMMP updates maps every two years. The mapping program is used under CEQA and other state laws (including Government Code Section 65561) to measure the impact of eliminating different kinds of lands on the production of food and other agricultural products. Appendix G of the CEQA Guidelines also recommends the use of FMMP mapping for the evaluation of impacts on agricultural resources.

#### California Land Conservation Act (Williamson Act)

The California Land Conservation Act (LCA), better known as the Williamson Act, allows for property taxation based on agricultural productivity rather than on surrounding urban land values for lands that are under Williamson Act contracts. Due to the specific tax-exempt status of the University of California, land owned by the University is not subject to Williamson Act contracts. The adjacent Younger Ranch is not under Williamson Act contract at this time.<sup>1</sup>

#### California Coastal Act

California Coastal Act Section 30241 requires the maintenance of the maximum amount of prime agricultural land to assure the protection of agricultural economies, but requires the preservation of both prime and non-prime agricultural lands and minimization of conflicts between agricultural and urban land uses. Coastal Act Section 30241.5 identifies specific findings that must be made in order to address the agricultural “viability” of prime lands around the periphery of urban areas that are subject to conversion requests. These findings include an assessment of gross revenues from agricultural products grown in the area and an analysis of operational expenses associated with such production. Subsection (b) specifically requires that such economic feasibility studies be submitted with any Local Coastal Program (LCP) or

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<sup>1</sup> Based on the map of Santa Cruz County Agricultural Preserve Land prepared by the County of Santa Cruz Assessor’s Office in 2003, available on the FMMP website:  
[ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Map%20and%20PDF/Santa%20Cruz/Santa%20Cruz%20wa%202002\\_03.pdf](ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Map%20and%20PDF/Santa%20Cruz/Santa%20Cruz%20wa%202002_03.pdf),  
 and on the Agricultural and Timber Resources Map on the County of Santa Cruz GIS web site  
[http://gis.co.santa-cruz.ca.us/gis/map\\_gallery/](http://gis.co.santa-cruz.ca.us/gis/map_gallery/).

LCP amendment request (and, by extension, proposed CLRDPs). In addition, the Coastal Act requires that when the University prepares a CLRDP, it must consult and coordinate with local jurisdictions to make the CLRDP consistent to the fullest extent feasible with the LCPs.

The Santa Cruz County General Plan (County of Santa Cruz 1994) includes numerous goals and policies to protect and preserve agricultural resources, including an Agricultural Resource land-use designation. The County zoning code defines a Commercial Agricultural (CA) Zone District for lands that are intended to be maintained exclusively for long-term commercial agricultural land-use designations. The Santa Cruz County LCP provides for a 200-foot buffer between existing agricultural uses and new developments, with some exception if site-specific analyses support a smaller buffer.

The City of Santa Cruz General Plan Agricultural Element includes as a goal protection of the quality of, and prevention of significant new incursion of, urban development into areas designated as open space or agricultural lands. City Land Use Policy 3.1.3 supports County of Santa Cruz policies and programs aimed at preservation of agricultural/grazing land, and encourages organic farming practices on agricultural lands. The Santa Cruz City LCP does not identify specific required agricultural buffer distances; rather, buffers are to be “appropriate” to the case at hand.

In certifying the CLRDP, the Coastal Commission determined that the CLRDP contains adequate protections for adjacent agriculture, including buffer distances that were developed based on a site-specific analysis of the buffering requirements of the current adjacent agricultural operation.

#### California Department of Food and Agriculture

Under oversight of the California Department of Pesticide Regulation (DPR), the County Agricultural Commissioner is charged with enforcing provisions of the California Food and Agricultural Code, which include the regulation of pesticide use.<sup>2</sup> The DPR designates as restricted materials pesticides deemed to have a relatively high potential to cause harm to public health, farm workers, public health, farm workers, domestic animals, honeybees, the environment, wildlife, or other crops compared to other pesticides. With certain exceptions, restricted materials may be purchased and used only by or under the supervision of a certified commercial or private applicator under a permit issued by the County Agricultural Commissioner. When a farmer applies for a permit to buy or use restricted material, the commissioner is required to evaluate the proposed use to determine if the pesticide can be used safely, particularly in sensitive areas such as near wetlands, schools, or residential neighborhoods.

#### *Santa Cruz County Programs*

The Santa Cruz County General Plan (County of Santa Cruz 1994) includes numerous goals and policies to protect and preserve agricultural resources, including an Agricultural Resource land-use designation. The County zoning code defines a Commercial Agricultural (CA) Zone District for lands that are intended to be maintained exclusively for long-term commercial agricultural land-use designations. The Santa Cruz County LCP provides for a 200-foot buffer between existing agricultural uses and new developments, with some exception if site-specific analyses support a lesser buffer.

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<sup>2</sup> The term “pesticides” may include herbicides, fungicides, and rodenticides.

### City of Santa Cruz Programs

The City of Santa Cruz General Plan Agricultural Element includes the following goal:

- Protect the quality of, and prevent significant new incursion of urban development into areas designated as open space or agricultural lands.

City Land Use Policy 3.1.3 supports County of Santa Cruz policies and programs aimed at preservation of agricultural/grazing land, and encourages organic farming practices on agricultural lands. The Santa Cruz City LCP does not identify specific required agricultural buffer distances; rather, buffers are to be “appropriate” to the case at hand.

### CLRDP Policies and Implementation Measures Applicable to the MSC Projects

The following CLRDP Implementation Measures relevant to agricultural resources are applicable to and incorporated into the proposed MSC Projects:

- IM 2.2.1—Setback of Development and Uses from Adjacent Agricultural Uses
- IM 3.8.2—Agreement to Indemnify and Hold Harmless

These measures require clustering of development within the defined development zones; 500-foot agricultural setbacks for any caretaker residences (and 200-foot to 300-foot setbacks for all other development and uses); and hold-harmless and indemnification agreements between UC Santa Cruz and adjacent agricultural operators. The full text of each measure is presented in Appendix C of this EIR, which also explains how each measure is applicable to the MSC Projects.

## 3.2.1.2 Regional and Local Context

### Regional Context

As reported in the CLRDP EIR (p. 4.2.2), in the year 2000, the gross agricultural production value in Santa Cruz County totaled almost \$352 million, an increase of 16.8 percent over the 1999 value. The top 15 crops grown in Santa Cruz County in 2000, by value, were strawberries, raspberries, head lettuce, landscape plants, other vegetables (such as artichokes, beans, spinach, tomatoes, etc.), miscellaneous plants, field flowers, timber, leaf and romaine lettuce, hybrid tea roses, bushberries, apples, indoor potted plants, Brussels sprouts, and cauliflower. In 2008, the gross agricultural production value in Santa Cruz County had grown to more than \$485 million (Santa Cruz County Agricultural Commissioner 2008).

### Local Context

The 60-acre Terrace Point property was classified as Unique Farmland on the California Department of Conservation’s 1992 Important Farmlands Map. Survey data were collected prior to 1990, about the time of the last farming operation on site. Three soil types occur on the terrace portion of the MSC: Elkhorn sandy loam #132, Elkhorn sandy loam #133, and Watsonville loam #178. Of these three soil types, only Elkhorn sandy loam soils are classified as prime soils by the California Department of Conservation, Division of Land Resource Protection, but only if they are irrigated. California Department of Conservation 2004. This soil type is mapped on an area of about 26 acres of the MSC (none of which has

been irrigated since being incorporated in the MSC) on the eastern third of the Upper Terrace and the majority of the Middle Terrace.

Prior to 1976, when the University acquired the area west of McAllister Way, the entire terrace portion of the MSC, including the area west of McAllister Way, was actively farmed. Areas to the west of McAllister Way then were developed, with the exception of the greenhouses that continued to occupy about one-third acre. The area to the east of McAllister Way was used to grow Brussels sprouts until 1988. No other agricultural use has occurred on the remainder of the project site since farming ceased in 1988. There is a complex of 11 greenhouses on the Middle Terrace west of McAllister Way but none of these is currently used for agriculture.

#### *Agricultural Suitability of the Site*

An agricultural suitability study was prepared for the 60-acre Terrace Point property in 1995.<sup>3</sup> The report included ten laboratory soil tests to determine soil capability and overall agricultural suitability of the property. The suitability analysis was conducted for the portion of property then not owned by the University, while that property was under prior ownership and proposed for development. The 1995 analysis concluded that 32 acres of the site, including wetlands, 100-foot sea cliff setback buffers, and 30-foot pesticide setback buffers along the access road and adjacent to neighboring urban uses, were unsuitable for agricultural production. It was determined that the suitability of the remaining 28 acres of the site was limited by the lack of a source of irrigation water (after 1988, when an irrigation well collapsed), drainage constraints, and soil erosion. The 1995 report also cited the incompatibility of surrounding uses with agricultural use as a constraint on the agricultural use of the site. Since 1995, the National Oceanic and Atmospheric Administration (NOAA) Fisheries Lab facility and the Seymour Marine Discovery Center have been constructed on those portions of the 60-acre Terrace Point site that had the best soil suitability for farming. The presence and public use of these facilities further limits the agricultural suitability of the remaining 54.5 acres of the terrace lands.

As part of the CLRDP planning process, a determination of agricultural suitability was conducted for the 54.5-acre terrace property following the California Department of Conservation Land Evaluation and Site Assessment (LESA) Model analysis. Five agricultural scenarios ranging from no-restrictions farming to 500-foot pesticide setbacks were evaluated using the LESA Model. In each scenario, the project site was shown to be a less-than-significant agricultural resource. An additional analysis of agricultural viability, comparing anticipated crop production costs and revenues with the water supply and infrastructure costs, was also performed (CLRDP EIR p. 4.2-4). That analysis determined that the project site was not economically viable for agriculture due to high water-related costs. The LESA Analysis and the agricultural viability analysis are included in the CLRDP EIR, Appendix B.

#### *Adjacent Agricultural Properties*

Agricultural land uses adjoin the western boundary of the MSC at present. The agricultural uses to the west consist of agricultural production on the Younger Ranch adjoining the site and, approximately 2,000 feet farther west, the Wilder Ranch State Park. The Younger Ranch adjoins the entire northwestern edge

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<sup>3</sup> Ibid.

of the project site, but is separated from proposed development areas on the southwest by an arm of Younger Lagoon that extends along the southern two-thirds of the western property boundary. The Younger Ranch has produced Brussels sprouts since the early 1950s, and it also includes a horse boarding area. The Wilder Ranch, owned and administered by the California State Parks system, is located more than 2,000 feet to the west of the project site. A tenant farmer on the Wilder Ranch produces Brussels sprouts on approximately 600 acres. Brussels sprouts are the predominant crop on the Wilder Ranch due to cool summer temperatures, although artichokes and peas have also been grown in the past.

Both the Younger Ranch and Wilder Ranch are considered to be prime agricultural land due to their current agricultural production, production history, and soils that are classified as Prime or of Statewide Importance by the California Resources Agency Important Farmlands Mapping Program.

As discussed in detail in the CLRDP EIR (pp. 4.2-6 to 4.2-7), although pesticide use on the Younger Ranch is in compliance with state regulations regarding pesticide use, the Santa Cruz County Agricultural Commissioner's Office has received complaints from the industrial park to the north of the MSC and from the De Anza Santa Cruz residential community residents about Younger Ranch pesticide and fertilizer use and odors. The CLRDP EIR reported that the Younger Ranch restricted materials permit specifies setbacks for pesticide application from occupied structures for the following three pesticides:

- VAPAM, a soil fumigant usually applied in April, requires a 50-foot setback if applied on less than 20 acres and a 100-foot setback if applied on areas larger than 20 acres.
- METASYSTOX-R, a plant pesticide that may be applied up to 7 to 21 days prior to harvest, requires a 100-foot setback for ground application and a 150-foot setback if it is applied aerially.
- TELONE II, a soil fumigant usually applied in April, requires a 300-foot setback if it is applied in multiple years (i.e., two or more consecutive years). (Note: The setback may be reduced to 100 feet in the future based on a pending decision by the Environmental Protection Agency.)

### 3.2.2 Relevant Project Characteristics

The proposed Coastal Biology Building (CBB) project includes development of a new, 40,000-gsf lab building, two new parking lots, a greenhouse complex, and associated utilities and stormwater system. The proposed Marine Science Campus Infrastructure (MSCI) Project consists of utility and circulation improvements to serve both the CBB project and future MSC development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage, and outdoor exhibits. Under the proposed Specific Resource Plan, Phase IB (SRP Phase 1B), CLRDP-mandated wetland restoration and habitat improvements would be implemented. The proposed MSC Projects would increase the average daily population at the MSC by approximately 96 employees and 311 students. CLRDP Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the Projects described above. The revisions would clarify CLRDP language, address minor changes to CLRDP language made during the Coastal Commission approval process, and respond to the evolution of the CLRDP Resource Management Plan (under the guidance of the Scientific Advisory Committee that was established to guide

YLR restoration efforts, as required by the CLRDP). None of the proposed CLRDP revisions included in Amendment #1 has implications for agricultural resources.

### 3.2.3 Applicable CLRDP EIR Mitigation Measures

The following CLRDP EIR mitigation measure is applicable to the proposed MSC Projects and is included and incorporated as part of the project description:

- General Mitigation 4.2-1—Landscaped fence along Younger Ranch property line.

### 3.2.4 Impacts and Mitigation Measures

#### 3.2.4.1 Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, the Projects would have a significant impact with regard to agricultural resources if they were to:

- Convert to nonagricultural use Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency.
- Involve other changes in the existing environment, which due to their location or nature, could result in conversion of farmland considered Prime, Unique, or of Statewide Importance to nonagricultural use.

The Appendix G standard addressing zoning for agricultural use or a Williamson Act contract is not addressed below. The University of California is not subject to city or county zoning. Due to the specific tax-exempt status of the University, land owned by the University of California is not subject to Williamson Act contracts. Accordingly, the proposed Projects would not conflict with existing zoning or with Williamson Act contracts.

#### 3.2.4.2 Analytical Method

As described in the CLRDP EIR (pp. 4.2-4 to 4.2-6) and explained in Section 3.2.1.2 above, agricultural suitability studies were prepared for the original 60-acre Terrace Point property in 1995 (before it was acquired by the University) and by the University in 1999.

#### 3.2.4.3 Project Impacts and Mitigation Measures

##### *Conversion of Important Farmland to Nonagricultural Uses*

<b>MSC Projects Impact AG-1:</b>	Development of the proposed CBB, MSCI, and NEF projects would result in conversion of Unique Farmland to non-agricultural uses.
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<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	None
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<b>Applicable Projects/ Project Elements</b>	CBB (lab, greenhouses, parking lots) MSCI (roads, trails, roads, parking lots, Utility Yard, Upper Terrace Storage Yard) NEF (paths, parking lot)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.2-12 to 4.2-13) determined that although development under the CLRDP would result in the conversion of Unique Farmland, this would not be a significant impact. Although the 54.5-acre terrace property, acquired by the University in 1999, has been mapped as Unique Farmland, the results of the LESA Model application described above indicate that this land does not have agricultural resources that would be considered significant. Therefore, the impact from the conversion of Unique Farmland due to the proposed Projects would not be significant. Much of the 16 acres of terrace lands west of McAllister Way, which was the original University property, is already developed, and contiguous vacant land usable for agricultural use is not available in this area. The removal of the seven greenhouses as envisioned in the CLRDP, would be a less-than-significant impact although they are underlain by a soil type that is considered prime if irrigated, because the size of the conversion would be small, there is no existing source of irrigation water, the surrounding land is fragmented by existing development, and agricultural uses could conflict with surrounding residential and light industrial uses.

**Project Impact.** The proposed Projects are consistent with the building program and infrastructure development analyzed in the CLRDP EIR, although the project site has been mapped as Unique Farmland, and a portion of the MSC is underlain by a soil type that is considered prime if irrigated, for the reasons given in the CLRDP EIR and summarized above. The analysis in the CLRDP EIR is applicable to the proposed MSC Projects, which are part of the program of development included in the CLRDP. The impact would be less than significant, and no additional mitigation is required.

*Indirect Impacts on Agricultural Lands*

<b>MSC Projects Impact AG-2:</b>	Development of the proposed MSC Projects could constrain use of certain pesticides and generate complaints of nuisance, vandalism/theft, pilferage, and trespass/liability at the Younger Ranch, which could indirectly result in the eventual removal of adjacent land from agricultural use.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	CLRDP General Mitigation 4.2-1 Implementation Measure 2.2.1 - Setback of Development and Uses from Adjacent Agricultural Uses Implementation Measure 3.8.2 - Agreement to Indemnify and Hold Harmless
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab, greenhouses, and parking) MSCI Project (trails, roads, parking lots, Upper Terrace Storage Yard) NEF Project (parking lot, trails, overlooks)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.2-14 to 4.2-15) analyzed the potential that development under the CLRDP could constrain use of certain pesticides and generate complaints of nuisance, vandalism/theft, pilferage, and trespass/liability at the Younger Ranch as a result of increased population and development on the campus. The EIR analyzed whether these pressures could increase costs of operation, impair productivity, and diminish the feasibility of continued agricultural production, possibly resulting in the eventual removal of adjacent land from agricultural use. The CLRDP EIR determined that, with the inclusion of CLRDP policies and implementation measures, including setbacks of development from the western property line, development under the CLRDP would not result in substantial pressures that could lead to the conversion of adjacent farmland to other uses (CLRDP EIR, p. 4.2-14). The CLRDP EIR also concluded that the potential for vandalism/theft of farm equipment and damage to structures, pilferage of crops, trespass/liability, and complaints regarding dust and odors would be low and the impact would be less than significant (CLRDP EIR p. 4.2-15). However, the CLRDP EIR identified General Mitigation 4.2-1 to further ensure that the adjacent agricultural property is not adversely affected. This mitigation requires that the Campus install a landscaped fence along the Younger Ranch property line on the Upper Terrace prior to the groundbreaking of any CLRDP project components.

**Project Impact.** As discussed in this Section 3.12, *Population and Housing*, the population increase associated with the proposed Projects is within the population analyzed in the CLRDP EIR. The Campus is implementing General Mitigation 4.2-1, which requires that the Campus install a landscaped fence along this boundary before breaking ground on any development projects under the CLRDP. The mitigation has been triggered by the Overlooks project, which was approved in February 2011. The Campus has constructed a portion of the fence, and will construct the remainder of the fence during fiscal year 2010-11 as part of the SRP Phase 1A project. YLR staff are in the process of planting vegetation screen. The analysis in the CLRDP EIR adequately addresses the potential indirect impacts of the proposed Projects on agricultural lands. CLRDP EIR General Mitigation 4.2-1, like all applicable CLRDP EIR mitigation measures, will be included in the Mitigation Monitoring and Reporting Programs for each of the MSC Projects. The impact would be less than significant, and no additional mitigation is required.

### 3.2.4.4 Cumulative Impacts and Mitigation Measures

#### *Removal of Adjacent Land from Agricultural Use*

<b>MSC Projects Impact AG-3</b>	Development of the proposed MSC Projects, in conjunction with other growth in the project vicinity, could indirectly result in the eventual removal of adjacent land from agricultural use.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	CLRDP General Mitigation 4.2-1 Implementation Measure 2.2.1 - Setback of Development and Uses from Adjacent Agricultural Uses Implementation Measure 3.8.2 - Agreement to Indemnify and Hold Harmless
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab, greenhouses, and parking) MSCI Project (trails, roads, parking lots, Upper Terrace Storage Yard) NEF Project (parking lot, trails, overlooks)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.2-16 to 4.2-17) determined that although some lands in the west side of Santa Cruz near the MSC may qualify as Farmland under the Department of Conservation classification, there is no existing agricultural production associated with these lands, and establishment of agriculture on these lands would not be viable. Therefore, development of the few remaining parcels in the study area, in conjunction with development under the CLRDP, would not result in a significant cumulative impact associated with conversion of farmland to other uses.

The CLRDP EIR also determined that development on the MSC in conjunction with other regional development would not result in a significant cumulative indirect impact on the agricultural lands to the west of the project site. Land use patterns in the Westside study area are already established; other than the MSC, there is only one small undeveloped parcel within the city and adjacent to the Younger Ranch, where uses incompatible with adjacent agriculture could be developed. Although there are vacant parcels farther east of the project site, these are sufficiently distant that agricultural odors, dust, and other potential sources of conflict would not be significant problems. Furthermore, implementation of the proposed CLRDP would create a perceived buffer by placing semi-urban UC Santa Cruz research uses between agricultural operations and these vacant parcels and the existing De Anza Santa Cruz residential community. The buffering would be in the form of additional buildings on the MSC site, which would tend to shield the views of agricultural uses to the west. Placement of the fence and landscaping along the MSC's western property line as required by CLRDP EIR General Mitigation Measure 4.2-1 would further serve to protect the agricultural lands compared to existing conditions and would further reduce the less-than-significant impact.

**Project Impact.** As discussed above (Section 3.2.4.2), the proposed Projects would not result in significant project-level direct or indirect impacts on agricultural resources. Since the CLRDP EIR was certified in September 2004, the City has approved a 20-acre mixed-use live-work neighborhood development project at 2120 Delaware Avenue, approximately 1,500 feet east of the project site. The City of Santa Cruz EIR for the 2120 Delaware Avenue Project determined that the 2120 Delaware Avenue Project would not result in any impacts on agricultural resources (City of Santa Cruz 2008). As analyzed in the CLRDP EIR (p. 4.2-17), the 2120 Delaware Avenue site and other vacant parcels on the west side of Santa Cruz are far enough from existing agricultural land that agricultural odors, dust, and other sources of potential conflict would not be significant problems. The proposed MSC Projects, in conjunction with other development in the area, would not result in significant cumulative impacts on agricultural resources and no mitigation measures are required.

### 3.2.5 References

- California Department of Conservation (CDC). 2004. Division of Land Resource Protection, Farmland Mapping and Monitoring Program, Map Categories, Criteria and Uses, [http://www.consrv.ca.gov/dlrp/fmmp/mccu/prime\\_soils.htm](http://www.consrv.ca.gov/dlrp/fmmp/mccu/prime_soils.htm), 2004.
- City of Santa Cruz. 2008. 2120 Delaware Mixed-Use Project, Environmental Impact Report. SCH# 2007012097.
- Santa Cruz County. 1994. General Plan and Local Coastal Program.
- Santa Cruz County Agricultural Commissioner. 2008. 2008 Crop Report.

**3.3 AIR QUALITY**

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## 3.3 AIR QUALITY

The section characterizes existing air quality in the project area and evaluates the potential effects of the proposed MSC Projects on regional and local air quality. This section provides project-level analysis and additional detail, and it supplements and augments, pursuant to CEQA Guidelines Section 15142, the analysis set forth in the CLRDP EIR Section 4.3.

Public comments in response to the Notice of Preparation of this EIR requested that the following issues be addressed in the EIR:

- Project’s localized air quality impact on carbon monoxide levels.
- Potential for impacts with respect to odors, nuisances and sensitive receptors, if project includes a land-use redesignation that would place incompatible uses in proximity to one another.
- Evaluation of project air quality impacts in relation to the significance thresholds established by the Monterey Bay Unified Air Pollution Control District (MBUAPCD).
- Need for mitigation measures for any significant impacts on air quality.
- Air pollution impacts resulting from traffic.
- Air quality impacts associated with fugitive dust from construction.
- Potential release of asbestos-containing material from demolition of existing greenhouses.
- MBUAPCD permitting requirements for wastewater and sewage treatment facilities, whose requirements may apply to the sewer lines that would be part of the MSC Project.
- Effects of fugitive dust from construction and of laboratory fumehood emissions on De Anza Santa Cruz residential community, taking into account the prevailing winds.

All of these issues are addressed in this section, except the potential release of asbestos-containing materials from demolition of the existing greenhouses, which is addressed in Section 3.8, *Hazards and Hazardous Materials*.

### 3.3.1 Environmental Setting

See CLRDP EIR Section 4.3 for a comprehensive discussion of the air quality setting of the campus.

#### 3.3.1.1 Study Area

The proposed MSC Projects are located in the City and County of Santa Cruz and is within the North Central Coast Air Basin (“Basin”). The Basin includes Santa Cruz, Monterey, and San Benito counties.

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. While some of the air pollutants that are emitted need to be

examined at the local level, others are predominately an issue at the regional level. For instance, ozone (O<sub>3</sub>) is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen (NO<sub>x</sub>) and reactive organic gases, also referred to as volatile organic compounds (VOCs). Because these reactions are broad-scale in effects, ozone is typically analyzed at the regional level (i.e., in the Basin) rather than the local level. On the other hand, air pollutants such as sulfur dioxide (SO<sub>2</sub>), respirable particulate matter (PM<sub>10</sub>), fine particulate matter (PM<sub>2.5</sub>), carbon monoxide (CO), lead (Pb), and toxic air contaminants (TACs) are a potential concern in the immediate vicinity of the pollutant source. Therefore, the study area for emissions of SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, Pb, and TACs is the local area nearest the source, such as in the vicinity of congested intersections, whereas the study area for regional pollutants such as NO<sub>x</sub> and ROG is the entire Basin.

### 3.3.1.2 Climate and Topography

Air quality in the Basin is affected by topographical and meteorological features that influence the migration of pollutants. The Basin is located along the central coast of California, with the northwest portion of the basin dominated by the Santa Cruz Mountains and the northeast bounded by the Diablo Range. San Benito Valley, a southern extension of the Santa Clara Valley, runs northwest-southeast and lies in the eastern portion of the basin. In the summer, a high-pressure system over the eastern Pacific generally results in persistent west and northwest winds along the coast. The northwest-southeast orientation of the mountains also restricts and channels onshore air currents in summer.

Winter winds from the north and east tend to transport pollutants from the San Francisco Bay area and the Central Valley into the Santa Cruz region. Less frequent inversion layers along with storms and the influence of the coastal mountains on atmospheric circulation generally result in good air quality in the Santa Cruz region during the winter.

In addition to winds, precipitation also impacts air quality. For example, rains can help wash out particulate matter from the atmosphere. Table 3.3-1 shows that the average monthly rainfall in Santa Cruz historically has been heaviest in January and lightest in July. Annual average rainfall ranges between about 30 to 45 inches in the Santa Cruz area, with the higher rainfall levels at higher elevations away from the coast.

**Table 3.3-1  
Historical Monthly Average Precipitation in the Santa Cruz Vicinity**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Inches of Rain</b>	6.20	5.42	4.37	1.92	0.81	0.23	0.06	0.07	0.43	1.35	3.35	5.24

Source: Western Regional Climate Center, Santa Cruz, California Station. 1893-2007 (<http://www.wrcc.dri.edu>, accessed August 18, 2008)

### 3.3.1.3 Regulatory Setting and Existing Air Quality

The project area is subject to air quality planning programs by both the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA). Both the federal and State statutes provide for ambient air quality standards to protect public health, timetables for progressing toward achieving and maintaining ambient standards, and the development of plans to guide the air quality improvement efforts of State and local agencies. Within the project vicinity, air quality is monitored, evaluated, and controlled by the US Environmental Protection Agency (US EPA), the California Air Resources Board (CARB), and the Monterey Bay Unified Air Pollution Control District (MBUAPCD).

The CARB regulates mobile emissions sources, oversees the activities of county and regional Air Pollution Control Districts and Air Quality Management Districts, and implements the CCAA. CARB regulates local air quality indirectly by establishing State ambient air quality standards and vehicle emission standards, by conducting research activities, and through its planning and coordinating activities.

The MBUAPCD is one of 35 districts established to protect air quality in the State. The MBUAPCD has jurisdiction over air quality in Monterey, Santa Cruz, and San Benito Counties, including the proposed project area. The MBUAPCD regulates most air pollutant sources in the Basin, with the exception of motor vehicles, aircraft, and agricultural equipment, which are regulated by the CARB or the US EPA. State and local government projects, as well as projects proposed by the private sector, are subject to requirements of the local air district and the CCAA. In addition, the MBUAPCD and the CARB maintain ambient air quality monitoring stations at numerous locations throughout the Basin. The MBUAPCD's "CEQA Air Quality Guidelines" (MBUAPCD 2008b) contains guidance for analysis of the impacts on air quality of land development projects. These guidelines include thresholds above which a project's air emissions contributions are considered significant (see Section 3.3.4.1, below, for a summary of these significance thresholds).

Among the MBUAPCD rules applicable to the proposed MSC Projects are Rule 403 (Particulate Matter) and Rule 439 (Building Removal). Rule 403 limits the emissions of particulate matter for sources operating within the MBUAPCD. Rule 439 limits particulate emissions from the removal of buildings within the MBUAPCD through the application of mitigation measures provided in the rule. Other applicable MBUAPCD rules include Rule 402 (Nuisances), and Rule 424 (National Emission Standards for Hazardous Air Pollutants [NESHAP]).

Air pollutants typically are categorized as either criteria pollutants or toxic air contaminants (TACs). The criteria pollutants are those regulated at the federal level by the US EPA and at the State level by the CARB. These include O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, and Pb. While volatile organic compounds (VOCs), such as hydrocarbon vapors emitted from vehicle tailpipes, are not considered to be criteria pollutants, they are widely emitted from land-use development projects and are involved in photochemical reactions in the atmosphere to form O<sub>3</sub>; therefore, VOCs are relevant to the proposed MSC

Projects and are of concern in the NCCAB. TACs are airborne pollutants that are known to have adverse human health effects, but for which there are no ambient air quality standards.

### Regulation of Criteria Pollutants

The federal and State governments have established separate ambient air quality standards. The US EPA has established primary and secondary National Ambient Air Quality Standards (NAAQS) that specify allowable ambient concentrations for criteria pollutants under the provisions of the Clean Air Act (CAA). Primary NAAQS are established at levels necessary, with an adequate margin of safety, to protect the public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Healthy adults can generally tolerate periodic exposure to air pollution levels somewhat above these standards before adverse health effects are observed. Secondary NAAQS specify the levels of air quality determined appropriate to protect the public welfare from any known or anticipated indirect adverse effects associated with air pollutants, such as damage to farm crops and vegetation, and damage to buildings. Allowable ambient concentrations have been established for O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, and Pb. Table 3.3-2 summarizes the NAAQS for these pollutants.

In California, the CARB, which is part of the California Environmental Protection Agency, has promulgated ambient air quality standards for O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, and Pb that are more stringent than US EPA's standards, as shown in Table 3.3-2, below. The CARB has also developed standards for annual PM<sub>2.5</sub>, and for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

Counties and metropolitan areas are classified as being in attainment, nonattainment, or unclassified with respect to these federal and State ambient pollutant standards. The State also has a designation of nonattainment-transitional for areas that are in nonattainment with State standards but are close to attaining these standards. Areas are designated unclassified if they do not have adequate air quality data available to ascertain a nonattainment or attainment designation.<sup>1</sup> Maintenance areas are those that were previously in nonattainment but have been redesignated as attainment. An area's classification is determined by comparing actual monitored air pollutant concentrations with federal and State standards. More than 200 air-monitoring stations located in California are part of the State and Local Air Monitoring Network. These stations are operated by the CARB, local APCDs or AQMDs, private contractors, and the National Park Service. Based on pollutant concentrations measured at monitoring stations within the Basin, the Basin is in attainment or unclassifiable for all standards except for the State O<sub>3</sub> and PM<sub>10</sub> standards (see Table 3.3-3, below). The Basin previously exceeded the federal standards for O<sub>3</sub>, and therefore is identified as a maintenance area for this pollutant (Table 3.3-3). The MBUAPCD tracks emissions of ozone precursors, VOCs, and NO<sub>x</sub>, to ensure the region continues to meet the standard.

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<sup>1</sup> According to the MBUAPCD, EPA generally designates an area as either nonattainment or unclassified/attainment and does not officially distinguish between unclassified and attainment. From a planning perspective, "unclassified" and "attainment" have the same implications, i.e., an Air Quality Plan for the pollutant thus classified is not needed.

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For areas designated as nonattainment, the 1990 Clean Air Act Amendments (CAAA) require that each State have an air pollution control plan called the State Implementation Plan (SIP). The SIP includes

**Table 3.3-2**  
**State and Federal Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards <sup>1</sup>	National Standards <sup>2</sup>	
		Concentrations <sup>3</sup>	Primary <sup>3,4</sup>	Secondary <sup>3,5</sup>
Ozone (O <sub>3</sub> )	8-hour	0.070 ppm	0.075 ppm	Same as Primary
	1-hour	0.09 ppm	--	Same as Primary
Respirable Particulate Matter (PM <sub>10</sub> )	Annual Mean	20 µg/m <sup>3</sup>	--	Same as Primary
	24-hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Same as Primary
Fine Particulate Matter (PM <sub>2.5</sub> )	Annual Mean	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	Same as Primary
	24-hour	--	35 µg/m <sup>3</sup>	Same as Primary
Carbon Monoxide (CO)	8-hour	9.0 ppm	9 ppm	None
	1-hour	20.0 ppm	35 ppm	None
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Mean	--	0.053 ppm	Same as Primary
	1-hour	0.25 ppm	<u>0.100 ppm</u>	<u>None</u>
Sulfur Dioxide (SO <sub>2</sub> )	Annual Mean	--	0.03 ppm	--
	24-hour	0.04 ppm	0.14 ppm	--
	3-hour	--	--	0.5 ppm
	1-hour	0.25 ppm	--	--
Lead (Pb)	30 Day Average	1.5 µg/m <sup>3</sup>	--	--
	Calendar Quarter	--	1.5 µg/m <sup>3</sup>	Same as Primary
	<u>Rolling 3-Month Average</u>	--	<u>0.15 µg/m<sup>3</sup></u>	<u>Same as Primary</u>
Visibility Reducing Particles	8-hour	Extinction Coefficient of 0.23 per kilometer-visibility of ten miles or more due to particles when relative humidity is less than 70 percent	None	None
Sulfates	24-hour	25 µg/m <sup>3</sup>	None	None
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m <sup>3</sup> )	None	None
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m <sup>3</sup> )	None	None

Source: California Air Resources Board air quality standards. <http://www.arb.ca.gov/aqs/aaqs2.pdf>  
<http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>

Notes: (ppm = parts per million, µg/m<sup>3</sup> = micrograms per cubic meter)

<sup>1</sup> California standards for O<sub>3</sub>, CO, SO<sub>2</sub> (1 and 24 hour), NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are not to be exceeded. All others are not to be equaled or exceeded.

<sup>2</sup> Other than O<sub>3</sub>, PM<sub>2.5</sub> and PM<sub>10</sub>, and those standards based on annual averages, national standards (NAAQS) are not to be exceeded more than once a year. The 1-hour O<sub>3</sub> standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one. The 8-hour O<sub>3</sub> standard is attained when the 3-year average of the annual fourth highest daily maximum concentration is less than the standard. The 24-hour PM<sub>10</sub> standard is attained when the expected number of days per calendar year with a 24-hour average concentration above the standard is equal to or less than one. The 24-hour PM<sub>2.5</sub> standard is attained when the 98th percentile of 24-hour PM<sub>2.5</sub> concentrations in a year, averaged over 3 years, at the population-oriented monitoring site with the highest measured values in the area, is equal to or less than the standard. The annual average PM<sub>2.5</sub> standard is attained when the 3-year average of the annual arithmetic mean PM<sub>2.5</sub> concentrations, from single or multiple community-oriented monitors, is less than or equal to the standard.

<sup>3</sup> All measurements of air quality are to be corrected to a reference temperature of 25° C and a reference pressure of 760 mm of mercury (Hg) (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

<sup>4</sup> National Primary Standards: The levels of air quality deemed necessary by the federal government, with an adequate margin of safety, to protect the public health.

<sup>5</sup> National Secondary Standards: The levels of air quality deemed necessary by the federal government to protect the public welfare from any known or anticipated adverse effects of a pollutant.

**Table 3.3-3**

**Attainment Status for the North Central Coast Air Basin**

<b>Pollutant</b>	<b>State</b>	<b>Federal</b>
<b>Ozone (O<sub>3</sub>)</b>	Nonattainment <sup>1</sup>	Attainment <sup>2</sup>
<b>Inhalable Particulate (PM10)</b>	Nonattainment	Attainment
<b>Fine Particulates (PM2.5)</b>	Attainment	Unclassified/Attainment <sup>3</sup>
<b>Carbon Monoxide (CO)</b>	Attainment/Unclassified	Attainment
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>	Attainment	Attainment
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>	Attainment	Attainment
<b>Lead (Pb)</b>	Attainment	Attainment/Unclassified <sup>4</sup>
<b>Visibility Reducing Particles</b>	Unclassified	No standard
<b>Sulfates</b>	Attainment	No standard
<b>Hydrogen Sulfide</b>	Unclassified	No standard
<b>Vinyl Chloride</b>	Unclassified	No standard

**Sources:**

Monterey Bay Unified Air Pollution Control District, *2008 Air Quality Management Plan*, (2008a).

California Air Resources Board, "Area Designations Maps/State and National," <http://www.arb.ca.gov/desig/adm/adm.htm>. 2010.

**Notes:**

<sup>1</sup> Effective July 26, 2007, CARB designated the NCCAB a nonattainment area for the State ozone standard, which was revised in 2006 to include an 8-hour standard of 0.070 ppm.

<sup>2</sup> On March 12, 2008, EPA adopted a new 8-hour ozone standard of 0.075 ppm, while temporarily retaining the existing 8-hour standard of 0.08 ppm. EPA is expected to issue new designations by March 2010.

<sup>3</sup> In 2006, the federal 24-hour standard for PM2.5 was revised from 65 to 35 µg/m<sup>3</sup>. Although final designations have yet to be made, it is expected that the NCCAB will be designated attainment/unclassified.

<sup>4</sup> On October 15, 2008 EPA substantially strengthened the national ambient air quality standard for lead by lowering the level of the primary standard from 1.5 µg/m<sup>3</sup> to 0.15 µg/m<sup>3</sup>. Initial recommendations for designations are to be made by October 2009 with final designations by January 2012.

strategies and control measures to attain the NAAQS by deadlines established by the CAA. The US EPA reviews the SIPs to determine whether the plans would conform to the CAAA and achieve the air quality goals. The US EPA may prepare a Federal Implementation Plan for a nonattainment area if the EPA determines a SIP to be inadequate. The MBUAPCD prepared a 2007 Federal Maintenance Plan, which was approved by the U.S. EPA in November 2009.

The CCAA requires that air districts design a plan to achieve an annual reduction in district wide emissions of 5 percent or more for each nonattainment criteria pollutant or its precursor(s). These plans include the following: emission control standards that require local districts to stringently control emissions through stationary and mobile source control programs; application of additional control measures if a regional AQMD or unified APCD contributes to downwind nonattainment areas; cost-effectiveness estimates for all proposed emission control measures; and development and implementation of transportation controls for cities and counties to enforce. The AQMP for the Basin was developed by MBUAPCD in 1991 and has been updated every three years. The latest update was in 2008 (MBUAPCD 2008a).

The 1990 CAAA also require emission controls on factories, businesses, and automobiles to reduce criteria pollutant emissions. The CAAA regulate automobiles by lowering the permissible limits on VOC and NO<sub>x</sub> emissions, requiring the phasing-in of alternative-fuel cars, requiring on-board canisters to capture vapors during refueling, and extending emission-control warranties.

### Local Air Quality

The MSC vicinity is characterized by residential, commercial, agricultural, and light industrial (research and development) uses, as well as public open space. Emissions sources include stationary activities, such as space heating, cooking, and water heating; and mobile activities, such as automotive traffic, trains, and agricultural operations. Motor vehicles are the primary sources of air pollutants. Wind generally blows air across the MSC from west to east. This results in some of the best air quality in the NCCAB because clean air from the ocean flows across the site under most conditions.

The Santa Cruz monitoring station on Soquel Avenue is the closest designated monitoring station to the MSC, located about 5.7 miles to the northeast. This station monitors ozone and PM<sub>10</sub> levels. Table 3.3-4 summarizes measured criteria pollutant concentrations over the past five years at this station.

**Table 3.3-4  
Ambient Pollutant Concentrations Registered at the Soquel Avenue Monitoring Station**

Pollutant	Standards <sup>1</sup>	2007	2008	2009
<b>Ozone (O<sub>3</sub>)</b>				
Maximum 1-hour concentration monitored (ppm)		0.072	0.086	0.073
Maximum 8-hour concentration monitored (ppm)		0.066	0.066	0.061
Number of days exceeding State 1-hour standard	0.09 ppm	0	0	0
Number of days exceeding State 8-hour standard	0.070 ppm	0	0	0
Number of days exceeding federal 8-hour standard <sup>2</sup>	0.075 ppm	0	0	0
<b>Carbon Monoxide (CO)<sup>3</sup></b>				
Maximum 1-hour concentration monitored (ppm)		1.7	7.6	n/a
Maximum 8-hour concentration monitored (ppm)		1.0	1.3	n/a
Number of days exceeding 1-hour standard	20 ppm	0	0	n/a
Number of days exceeding 8-hour standard	9.0 ppm	0	0	n/a
<b>Inhalable Particulate Matter (PM<sub>10</sub>)</b>				
Maximum 24-hour concentration monitored (µg/m <sup>3</sup> )		34	45	36
Annual average concentration monitored (µg/m <sup>3</sup> )		18.0	18.8	16.4
Number of samples exceeding State standard	50 µg/m <sup>3</sup>	0	0	0
Number of samples exceeding federal standard	150 µg/m <sup>3</sup>	0	0	0

**Sources:**

California Air Resources Board, "Air Quality Data Statistics," <http://www.arb.ca.gov/adam/>. 2010.

US Environmental Protection Agency, "AirData," <http://www.epa.gov/oar/data/>. 2010.

**Notes:** (n/a = not available)

<sup>1</sup> Parts by volume per million of air (ppm), micrograms per cubic meter of air (µg/m<sup>3</sup>), or annual arithmetic mean (aam).

<sup>2</sup> The 8-hour federal O<sub>3</sub> standard was revised from 0.08 ppm to 0.075 ppm in March 2008. Statistics shown based on the 0.075 ppm standard.

<sup>3</sup> The nearest monitor measuring CO concentrations is on Center St. in the unincorporated community of Davenport (Santa Cruz County).

The following paragraphs describe the characteristics, health effects, and local measured concentrations of O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>2</sub>, and SO<sub>2</sub>. Sulfates, Pb, and hydrogen sulfide are the pollutants of least concern in this project area because recorded levels are well below State and federal standards and no major sources of these pollutants exist in the project area.

#### Ozone

O<sub>3</sub> is a colorless gas that has a pungent odor and causes eye and lung irritation, visibility reduction, chemical deterioration of various materials, and crop damage. A primary constituent of smog, O<sub>3</sub> is a secondary pollutant formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving NO<sub>x</sub> and VOCs. Because these reactions occur on a regional scale, ozone is considered a regional air pollutant. Motor vehicles are primary sources of NO<sub>x</sub> and VOCs.

As shown in Table 3.3-4, O<sub>3</sub> concentrations did not exceed federal and State ambient air quality standards at the nearby monitoring station in 2007–2009 (the most recent years for which complete data are available) although the Basin as a whole is considered to be a nonattainment-transitional area for the State O<sub>3</sub> standard.

#### Particulate Matter

Particulate matter is generally composed of particles in the air such as dust, soot, aerosols, fumes, and mists. Of particular concern are inhalable particulates, which have aerodynamic diameters of 10 micrometers or less (PM<sub>10</sub>). PM<sub>10</sub> is generated by sources such as windblown dust from agricultural fields, soil disturbance for grading and excavation associated with construction, and dust from vehicular traffic on unpaved roads. These emissions generally are localized, since fugitive dust tends to settle out of the air over relatively short distances. PM<sub>10</sub> affects breathing and the respiratory system and, in particular, can damage lung tissue and contribute to cancer and premature death. Other effects include visibility reduction, and also corrosion and soiling of structures, which has economic effects.

A subgroup of PM<sub>10</sub> is fine particulates, PM<sub>2.5</sub>. These are particles with aerodynamic diameters less than 2.5 micrometers. PM<sub>2.5</sub> has different characteristics, sources, and potential health effects from PM<sub>10</sub> as a whole. PM<sub>2.5</sub> is generally emitted from sources such as industrial combustion, vehicle exhaust, and residential wood-burning stoves and fireplaces. PM<sub>2.5</sub> is also formed in the atmosphere when gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds emitted by combustion activities are transformed by chemical reactions in the air. Separate standards for PM<sub>2.5</sub> were established in 1997 because these smaller particles can penetrate deep into the respiratory tract and cause unique adverse health effects.

Measured concentrations at the monitoring stations near UC Santa Cruz did not exceed federal or State PM<sub>10</sub> or PM<sub>2.5</sub> standards in 2007–2009. However, the Basin as a whole has been designated as nonattainment for the State PM<sub>10</sub> standard due to readings at other monitoring stations in the Basin (the Pinnacles, Hollister, and Scotts Valley). The Basin is designated as unclassified/attainment and

unclassified for federal and State PM<sub>25</sub> standards, respectively. Fugitive dust is identified as a major source of PM<sub>10</sub> in the Basin. The MBUAPCD has prepared a report on attainment of the California PM standards that focuses on reducing fugitive dust (MBUAPCD 2005). In addition, as directed by the SB 656 legislation, priority is also given to reducing emissions of diesel exhaust, which has been identified as a toxic air contaminant by CARB.

#### Carbon Monoxide

CO is an odorless, colorless gas that can impair the transport of oxygen in the bloodstream, aggravate cardiovascular disease, and cause fatigue, headache, confusion, and dizziness. CO forms through incomplete combustion of fuels in vehicles, wood stoves, industrial operations, and fireplaces. In Santa Cruz County, vehicular exhaust is a major source of CO. CO tends to dissipate rapidly into the atmosphere and consequently is a concern primarily at the local level, at locations such as major road intersections during peak hour traffic conditions.

Table 3.3-4 shows that the nearby monitoring station has measured CO concentrations well below the federal and State standards. The Basin is designated as unclassified/attainment for the federal and State CO standards.

#### Nitrogen Dioxide

NO<sub>2</sub> is a brownish, highly reactive gas that can irritate the lungs, cause pneumonia, and lower resistance to respiratory infections. Chronic exposure to oxides of nitrogen (or NO<sub>x</sub>, which include NO<sub>2</sub>) may lead to irritation of eyes and mucus membranes along with pulmonary dysfunction. Airborne NO<sub>x</sub> can also impair visibility. NO<sub>x</sub> is a key precursor to O<sub>3</sub> and acid rain. NO<sub>x</sub> forms when fuel is burned at high temperatures, and principally comes from motor vehicles and stationary fuel combustion sources such as electric utilities and industrial boilers. With similar trends throughout the region (and State), the Basin is well within federal and State NO<sub>2</sub> standards.

#### Sulfur Dioxide

SO<sub>2</sub> is a colorless acidic gas with a strong odor. High concentrations of SO<sub>2</sub> affect breathing and may aggravate existing respiratory and cardiovascular disease. SO<sub>2</sub> is also a primary contributor to acid deposition, which causes acidification of lakes and streams and can damage trees, crops, building materials, and statues. In addition, sulfur compounds in the air can contribute to visibility impairment. The major source category for SO<sub>2</sub> is equipment that burns sulfur-containing fossil fuels, such as coal-burning power plants. The Basin as a whole is designated as attainment for the State SO<sub>2</sub> standard and unclassified for the federal SO<sub>2</sub> standard.

#### Other State-Regulated Pollutants

In addition to the criteria pollutants discussed above that are regulated by both the State and federal governments, four pollutants are regulated by the State only: sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These other pollutants are not a major concern in the Basin.

The State of California has instituted a visibility standard to monitor visibility impairment due to regional haze caused by particulate matter present in air. Visibility is affected by the absorption of light by dark particles in the air (such as soot), and by light-scattering particles, particularly those that are greater than or equal to the size of the visible spectrum wavelength. The standard is defined in terms of the extinction coefficient, which is a measure of how much light is being scattered or absorbed. The standard is exceeded if sufficient particulates are present in the air to result in an extinction coefficient higher than 0.23 per kilometer (equal to having a visibility of less than 10 miles when relative humidity is less than 70 percent). Sources of visibility-reducing particles include motor vehicles, industrial processes, power plants, and naturally occurring particles (such as dust). The area is designated as unclassified for this standard.

### Toxic Air Contaminants

Toxic air contaminants (TACs) are a category of airborne pollutants that have been shown to have an impact on human health but are not classified as criteria pollutants. Some examples of TACs are certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. Adverse health effects of toxic air contaminants can be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. TACs are generated by a variety 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 and within the MSC include diesel buses and trucks, laboratory fume hoods, boilers, emergency generators, and painting operations.

At the federal level, air toxics are identified as hazardous air pollutants (HAPs). HAPs have been regulated at the federal level since the CAA of 1977. Under the 1990 CAAA, 189 substances were identified as HAPs and slated for regulation. The program requires certain facilities to control toxic air emissions by the installation of Maximum Achievable Control Technology (MACT), which is implemented and enforced in the MBUAPCD through Rule 218, *Title V: Federal Operating Permits*, which administers the federal operating permits program established by the 1990 CAAA.

California's TAC control program began in 1983 with the passage of the Toxic Air Contaminant Identification and Control Act, better known as Assembly Bill 1807 (AB 1807) or the Tanner Bill. The Tanner Bill established a regulatory process for the scientific and public review of individual toxic compounds. For each compound listed as a TAC under the Tanner process, the CARB normally establishes minimum statewide emission control measures, which are then adopted by local air pollution control districts.

The CARB formally identified particulate matter emitted by diesel-fueled engines as a TAC in 1998 (CARB 1998). In September 2000, the CARB approved the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, which outlines a program to develop, over several years, new technology requirements or emission standards to reduce diesel PM emissions from new and existing on-road vehicles (e.g., heavy-duty trucks and buses), off-road equipment (e.g., graders,

tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps), and stationary engines (e.g., stand-by power generators).

In compliance with federal law, MBUAPCD Rule 218 implements federal NESHAP and MACT requirements through the federal operating permit program. The MBUAPCD has also developed various rules for specific source categories pursuant to the Tanner process under MBUAPCD Regulation IV, *Prohibitions*. Dust from construction and demolition activities is addressed by MBUAPCD Rule 402, *Nuisances*, which States that sources cannot emit air contaminants that cause nuisances to “any considerable number of persons or to the public.” The MBUAPCD’s permitting program also includes a “Best Control Technology” (BCT) review under MBUAPCD Rule 1000, *Permit Guidelines and Requirements for Sources Emitting Toxic Air Contaminants*.

#### 3.3.1.4 Sensitive Receptors

Some groups of people are 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. Schools, childcare centers, hospitals, and nursing homes are all considered sensitive receptors because persons who are likely to be sensitive to air pollutants are more likely to be present for sustained periods of time. Residential areas are also considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, which may result in sustained exposure to any pollutants present. Industrial and commercial districts are considered to be less sensitive as receptors of poor air quality, because exposure periods are limited to working hours. The predominant existing sensitive receptors on or near the MSC are the existing caretakers’ residences on the site and the De Anza Santa Cruz residential community immediately east of the site. The nearest grade school to the MSC is Ark Alternative School (public elementary), located at 313 Swift Street approximately 0.7 mile east of the site. Flutterby Preschool is located at 210 Natural Bridges Drive approximately 1,500 feet (0.28 mile) northeast of the campus entrance. There are no hospitals or churches within one mile of the MSC.

#### 3.3.2 Relevant Project Characteristics

The proposed Coastal Biology Building (CBB) Project includes development of a new 40,000-gsf lab building, two new parking lots, a greenhouse complex, and associated utilities and storm water system. The proposed Marine Science Campus Infrastructure (MSCI) Project consists of campus utility and circulation improvements to serve both the CBB Project and future campus development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage, and outdoor exhibits. Under the proposed SRP 1B Project, CLRDP-mandated wetland restoration and habitat improvements would be implemented. CLRDP Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the projects

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described above, to clarify CLRDP language, to address minor changes to CLRDP language made during the Coastal Commission approval process, and to respond to the evolution of the CLRDP Resource Management Plan under the guidance of the Scientific Advisory Committee that was established to guide YLR restoration efforts, as required by the CLRDP.

Operation of the proposed MSCI and SRB 1B Projects would not generate air pollutant emissions. CLRDP Amendment #1 does not have implications for air quality.

The CBB Project would include new natural-gas fueled boilers for heating and domestic hot water in the new lab building and the Greenhouse Complex, as well as new emergency and standby generators. The emergency generator would be fueled by natural gas with propane as a backup fuel; the standby generator would be fueled with natural gas.

CBB Project operations would generate an estimated 505 daily motor vehicle trips and the NEF Project (Parking Lot A) would generate about 40 daily motor vehicle trips (see Section 4.15, *Transportation and Traffic*).

The total area of disturbance for all project components would be approximately 13.3 acres, including 3.1 acres for the CBB Project; 3.5 acres for the MSCI Project Phase A and the trail improvements and parking lot included in the NEF Project; 1.2 acres for MSCI Phase B; and 5.5 acres for SRP Phase 1B. Construction for the CBB, MSCI, and NEF Projects would take place concurrently and would require a total of approximately 21 months. Most of the MSCI (Phases A and B) and NEF Project work would be completed in the first seven months; this would include removal of the existing road, trenching, installation of utilities, and compaction and paving of the new roadway and sidewalk. The new trails and the associated landscaping would be installed over a period of four months during this seven-month period (see Table 2-3, Chapter 2 of this EIR).

Demolition of the existing greenhouses and rough grading for the CBB lab building and greenhouse complex, and drilling for the lab building foundation piers, would coincide with the first three months of MSCI Project construction. Building construction would begin in approximately the fourth month and would take about 13 months. The final phase of construction, consisting of landscaping, parking lot grading and paving, grading and planting of the stormwater swales, and site work finishes such as lighting and benches would take about five months.

SRP Phase 1B Project is a program of habitat restoration that covers the initial seven years of the anticipated 20-year program described in the CLRDP. For this reason, the work described for this project likely would be spread over at least several years. Most project elements would be carried out by hand or with hand-held equipment by a small crew of laborers and minimal equipment support. Only the work to reconnect wetlands 1 and 2/3 would entail grading. This work would require a small grader/excavator. The wetland work likely would be iterative, with fine adjustments made in grading as the success of the reconnection strategy is evaluated over a several year period.

### 3.3.3 Applicable CLRDP EIR Mitigation Measures

The following CLRDP EIR mitigation measure related to air quality is applicable to and is included and incorporated as part of the description of each of the MSC Projects:

- Mitigation Measure 4.3-1—Construction dust abatement

### 3.3.4 Impacts and Mitigation Measures

#### 3.3.4.1 Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines and significance thresholds recommended by the MBUAPCD in its 2008 CEQA Air Quality Guidelines.

##### Criteria Pollutants

For the purposes of this EIR, an impact is considered significant if the implementation of the proposed Projects would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

To determine the significance of an air quality impact, the following thresholds recommended by the MBUAPCD are used in this EIR:

- During construction, PM<sub>10</sub> emissions of 82 pounds per day (lb/day) or more.
- During operations, increase in emissions of:
  - 137 lb/day or more of volatile organic compounds (VOCs) or NO<sub>x</sub> (from direct and indirect sources).
  - 82 lb/day or more of PM<sub>10</sub> (on-site).
  - 550 lb/day or more of CO (direct).
  - 150 lb/day or more of sulfur oxides (SO<sub>x</sub>) (from direct sources).

Direct emissions are those emitted on-site. Indirect emissions come from mobile sources on- and off-site.

In addition, according to the MBUAPCD CEQA Guidelines, indirect sources that would significantly affect levels of service (LOS) at intersections or road segments could cause or substantially contribute to violation of State or federal CO standards. If these screening thresholds are met, modeling should be undertaken to determine if the project would cause or substantially contribute (550 lb/day) to exceedance of CO air quality standards. If not, the project would not have a significant impact.

#### Toxic Air Contaminants

An impact would be considered significant if the implementation of the proposed project would:

- Contribute to the probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeding the AB 2588 threshold of 10 in 1 million.
- Result in a noncarcinogenic (chronic and acute) health hazard index greater than the AB 2588 threshold of 1.0.

In general, operational equipment or processes would not result in significant air quality impacts if they would comply with MBUAPCD Rule 1000 (Permit Guidelines and Requirements for Sources Emitting Toxic Air Contaminants). Equipment or processes not subject to Rule 1000 that emit non-carcinogenic TACs could result in significant impacts if emissions would exceed the threshold that is based on the best available data or exceed the lifetime cancer incidence threshold.

#### Objectionable Odors

According to the MBUAPCD CEQA Guidelines, projects that would emit pollutants associated with objectionable odors in substantial concentrations could result in significant impacts if odor would cause injury, nuisance, or annoyance to a considerable number of persons or would endanger the comfort, health, or safety of the public.

#### Cumulative Impacts

In accordance with MBUAPCD CEQA Guidelines, the analysis of cumulative impacts on air quality focuses on localized PM<sub>10</sub> emissions and localized CO emissions, as well as whether the project is found to be consistent with the 2008 AQMP. The MBUAPCD CEQA Guidelines require that the methodology used in analyzing cumulative effects of PM<sub>10</sub> emissions and CO emissions be the same as that used in evaluating project-level impacts. Assessment of consistency with the 2008 AQMP is based on whether the project is within the growth projections contained in the AQMP.

### 3.3.4.2 Analytical Method

#### Criteria Pollutant Emissions from Construction Activities

Construction emissions are generated from projects as a result of heavy-duty off road equipment and motor vehicles, disturbance of soil, and application of architectural coatings and asphalt paving. Construction associated with the development of the proposed projects would generate fugitive dust (PM<sub>10</sub> and PM<sub>2.5</sub>). Fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. The URBEMIS2007 model was used to quantify construction emissions generated during each phase of project construction: demolition, grading/excavation, trenching, building construction, architectural coating, and paving. URBEMIS2007 is a land-use and transportation-based computer model designed to estimate regional air emissions from new development projects. The model accounts for meteorological conditions that characterize each of the air basins in California.

The model estimates construction equipment usage and worker trips based on the project acreage and building square footage. PM<sub>10</sub> emissions from fugitive dust, equipment exhaust, and worker vehicle exhaust were totaled and compared with the threshold of 82 pounds per day to evaluate the level of significance of construction activities. The emission calculations assume the implementation of CLRDP EIR Project Specific Mitigation Measure 4.3-1. This mitigation measure requires the use of standard dust control practices recommended by the MBUAPCD. Specifically, the calculations assumed that exposed surfaces and unpaved roads would be watered twice a day, and soil stabilization measures would be applied. These measures are estimated to reduce fugitive dust emissions (both PM<sub>10</sub> and PM<sub>2.5</sub>) by up to 55 percent. The results of this analysis are described under Section 3.3.4.3, *Project Impacts and Mitigation Measures*, below.

According to the MBUAPCD CEQA Guidelines, construction projects using typical construction equipment such as dump trucks, scrapers, bulldozers, compactors and front-end loaders that temporarily emit precursors of ozone (i.e., VOCs or NOX) are accommodated in the emission inventories of State- and federally-required air plans and would not have a significant impact on the attainment and maintenance of the ozone standards.

#### Criteria Pollutant Emissions from Project Operations

URBEMIS2007 was also used to estimate emissions from project operations, including:

- Space and water heating from boilers fueled by natural gas
- The emergency generators fueled by natural gas and propane
- Motor vehicle trips that would be generated by the project

The emissions from stationary, area, and mobile sources were added together and compared to the emission thresholds identified in Section 3.3.4.1, *Standards of Significance*, above.

Local Carbon Monoxide Concentrations

MBUAPCD CEQA Guidelines identify the following situations in which detailed modeling may be required to evaluate whether traffic emissions at an intersection may exceed CO standards:

- Intersections or road segments that operate at LOS D or better that would operate at LOS E or F with the project’s traffic,
- Intersections or road segments that operate at LOS E or F where the volume-to-capacity (V/C) ratio would increase 0.05 or more with the project’s traffic, or
- Intersections that operate at LOS E or F where delay would increase by 10 seconds or more with the project’s traffic.

As part of the CLRDP EIR’s analysis of the impacts on air quality, five intersections were selected from the 24 analyzed in the traffic analysis for the CLRDP EIR, for the potential to exceed CO standards based on the criteria in the MPUAPCD *CEQA Air Quality Guidelines*.<sup>2</sup> These five intersections are the ones that either would experience the highest traffic volumes or would experience the greatest increase in delay due to CLRDP development, and therefore would be the locations with the greatest potential for exceedance of CO standards as a result of CLRDP-related vehicle trips. The potential for project-related traffic to cause CO exceedances at study area intersections was examined based on the traffic study prepared for the proposed project and the CO analysis conducted for the CLRDP EIR (CLRDP EIR, p. 4.3-22).

Toxic Air Contaminant Emissions

The boilers and emergency generators that would be installed as part of the CBB Project would generate TACs. Since there are no ambient standards for toxic air contaminants, evaluation of impacts is based upon a health risk assessment. An air toxics health risk assessment that assessed total campus health risks associated with full development under the CLRDP was prepared as part of the CLRDP EIR air quality analysis. The analysis of the potential for project TAC emissions to create a significant health risk is based on the health risk assessment prepared for the CLRDP EIR.

3.3.4.3 Project Impacts and Mitigation Measures

Construction Emissions of Criteria Pollutants

<b>MSC Projects Impact AIR-1</b>	Construction activities under the proposed MSC Projects would result in emissions of PM <sub>10</sub> on a short-term basis.
<b>Applicable CLRDP Mitigation/Implementation</b>	CLRDP General Mitigation Measure 4.3-1

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<sup>2</sup> The intersections analyzed in the CLRDP EIR were Mission St./Bay St., SR 1/Chestnut St./Mission St., Western Dr./Empire Grade Rd./High St., Bay St./Escalona Dr., and Empire Grade/Heller Dr.

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<b>Measures</b>	
<b>Applicable Projects/ Project Elements</b>	Construction activities for all projects.
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	<p>None</p> <p><b>MSC Projects Mitigation Measure AIR-1:</b> The University shall revise CLRDP General Mitigation 4.3-1 as shown below:</p> <p><b>CLRDP EIR Mitigation Measure 4.3-1:</b> The University shall require construction contractors to implement a dust abatement program to reduce the contribution of project construction to local respirable particulate matter concentrations. Elements of this program shall include the following as appropriate for each project:</p> <ul style="list-style-type: none"> <li>• <u>Water all active construction areas at least twice times daily <i>and at least three times daily during the months of February through November. Frequency shall be based on the type of operation, soil, and wind exposure.</i></u></li> <li>• <u>Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).</u></li> <li>• <u>Pave, apply water two times daily, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and construction staging areas.</u></li> <li>• <u>Sweep daily with water sweepers any paved access roads, parking areas, and staging areas at construction sites.</u></li> <li>• <u>Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.</u></li> <li>• <u>Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas or previously graded areas left inactive for ten days or more.</u></li> <li>• <u>Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).</u></li> <li>• <u>Limit traffic speeds on unpaved roads to 15 miles per hour.</u></li> <li>• <u>Install sandbags or other erosion control measures to prevent silt runoff to public roadways.</u></li> <li>• <u>Replant vegetation in disturbed areas as quickly as possible.</u></li> <li>• <u>In the event that grading and excavation at two or more large project sites is proposed to occur concurrently (large sites defined as involving more than 2 acres), install wheel washers at</u></li> </ul>

	<p><u>the entrance of the construction sites.</u></p> <ul style="list-style-type: none"> <li>• <u>Phase construction projects in such a manner that minimizes the area of surface disturbance (e.g., grading, excavation) and the number of vehicle trips on unpaved surfaces.</u></li> <li>• <u><i>Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402.</i></u></li> </ul>
<b>Residual Significance</b>	Not applicable

During construction, air pollutants are generated as a result of heavy-duty off-road equipment and motor vehicle operation, disturbance of soil, and application of architectural coatings and asphalt paving. Construction associated with the development of the proposed MSC Projects would generate fugitive dust (PM<sub>10</sub> and PM<sub>2.5</sub>). Fugitive dust emissions would vary from day to day, depending on the level and type of activity, the silt content of the soil, and the weather. Construction projects using typical construction equipment such as dump trucks, scrapers, bulldozers, compactors and front-end loaders that temporarily emit precursors of ozone (i.e., VOCs or NO<sub>x</sub>) are accommodated in the emission inventories of State- and federally-required air plans and would not have a significant impact on the attainment and maintenance of the ozone standards.

**Previous Analysis.** The CLRDP EIR (pp. 4.3-15 to 4.3-17) determined that construction activities associated with development under the CLRDP could generate substantial amounts of fugitive dust, which would result in potential health and nuisance impacts in the immediate vicinity of the MSC. This would be a potentially significant impact that would be reduced to a less than significant level with implementation of CLRDP EIR Mitigation 4.3-1, which requires the use of a variety of dust control measures recommended by the MBUAPCD.

**Project Impact.** As discussed above, construction emissions of PM<sub>10</sub> were estimated using the URBEMIS2007 model, and assumed the implementation of standard dust control measures such as those included in CLRDP EIR Mitigation 4.3-1.

The estimated emissions of PM<sub>10</sub> from MSC Projects construction are presented in Table 3.3-5, Estimated Construction PM<sub>10</sub> Emissions. The “maximum” emissions shown in Table 3.3-5 represent the worst-case scenario, which would occur if grading for all of the projects is underway simultaneously. As shown in Table 3.3-5, construction PM<sub>10</sub> emissions from the proposed MSC Projects would not exceed the MBUAPCD thresholds of significance. Therefore, PM<sub>10</sub> emissions resulting from the construction of the proposed MSC Projects would have a less than significant impact on air quality. However, as recommended by MBUAPCD, MSC Projects Mitigation Measure AIR-1 has been added to this EIR. AIR-1 would add to the previously-incorporated CLRDP Mitigation Measure 4.3-1 to further increase the effectiveness of the CLRDP fugitive dust control program under the windy conditions often experienced

at the MSC. The identified dust control measures for windy conditions are added to the previously-adopted list of dust control measures that would be applied to all CLRDP development. Also added to the measure is a requirement to provide a mechanism for any dust complaints to be registered. The implementation of these measures on the MSC Projects and all future earth-moving projects on the MSC will further reduce the less-than-significant impact of the MSC Projects and of CLRDP development overall with respect to fugitive dust.

**Table 3.3-5**  
**Estimated Construction PM<sub>10</sub> Emissions**

Construction Year	Maximum PM <sub>10</sub> Emissions in Pounds per Day <sup>1</sup>
2012 Coastal Biology Bldg.	45.84
2012 MSCI and NEF	15.31
2012 Specific Resource Plan	8.02
<b>2012 Total</b>	<b>69.17</b>
2013 Coastal Biology Bldg.	0.79
2013 MSCI and NEF	2.53
<b>2013 Total</b>	<b>2.32</b>
<b>2014 Total (Only CBB)<sup>2</sup></b>	<b>1.17</b>
<b>Maximum pounds per day:</b>	<b>69.17</b>
<b>MBUAPCD Threshold:</b>	<b>82</b>
<b>Exceeds Threshold?</b>	<b>NO</b>

Source: Impact Sciences, Inc., 2011. Notes:

<sup>1</sup> Totals in table may not appear to add exactly due to rounding in the computer model calculations.

<sup>2</sup> Only the Coastal Biology Building portion of the project is scheduled to be under construction in 2014.

#### *Construction TAC Emissions*

<b>MSC Projects Impact AIR-2</b>	Construction activities under the proposed MSC Projects would result in emissions of toxic air contaminants on a short-term basis.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	Construction activities for all projects.
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** Emissions of TACs during construction at the MSC could occur from fugitive dust during clearing and grading operations, because the soil contains residual pesticides, nickel and arsenic as a result of past agricultural uses. TAC emissions in the form of diesel particulate matter would also occur from diesel engines that would be used during construction.

The CLRDP EIR (pp. 4.3-17 to 4.3-19) assessed both carcinogenic and non-carcinogenic health effects from worst-case emissions of construction-related TAC. The technical report on the TAC modeling is presented in Appendix C of the CLRDP EIR. The worst-case scenario assumed that three projects with a total of 6.32 acres of disturbance would be under construction simultaneously in one year, and that clearing and grading operations would occur at each site for 12 hours per day, six days per week over a two-month period. These assumptions set forth a highly-conservative worst case, as construction typically would occur for no more than 8 hours per day, five days per week. Emissions were modeled for the grading and clearing phase of construction. This is the phase of construction that would result in the highest level of TAC emissions, because these activities would disturb soil that may contain pesticides, heavy metals, and diesel particulate matter. The maximum anticipated non-carcinogenic exposure to pesticides, arsenic, and nickel (i.e., during grading and clearing) would be 3.8E-06 micrograms per square meter ( $\mu\text{g}/\text{m}^2$ ), 1.2E-04  $\mu\text{g}/\text{m}^2$ , and 1.5E-04  $\mu\text{g}/\text{m}^2$ , respectively.<sup>3</sup> The thresholds for these compounds are 10.0  $\mu\text{g}/\text{m}^2$ , 0.19  $\mu\text{g}/\text{m}^2$ , and 6.0  $\mu\text{g}/\text{m}^2$ , respectively. As a result, the non-carcinogenic impacts would be well below the significance thresholds and are therefore considered a less than significant impact (CLRDP EIR, p. 4.3-18).

The maximum incremental carcinogenic risk from exposure to diesel particulate matter, arsenic, nickel, and lead from development under the CLRDP was estimated at 2.1 in one million. This risk would be well below the significance threshold of 10 in one million and was therefore considered a less than significant impact of implementation of the CLRDP (CLRDP EIR, p. 4.13-18).

**Project Impact.** Construction of the CBB, MSCI and NEF projects would disturb a total of approximately 7.8 acres. This is slightly greater than the maximum simultaneous area of disturbance assumed in the CLRDP EIR health risk analysis, which was 6.32 acres. Although the SRP Phase 1B Project would affect an additional 5.5 acres, most of the work for that project would be done by hand and mechanical grading would occur over the course of two or three days and may not take place for several years. Therefore, emissions from this work therefore likely would not cumulate with the other emissions from grading. For both carcinogenic and non-carcinogenic risks, grading and clearing operations would result in the worst-case impact because that is the period in which most soil disturbance and the highest emissions of diesel PM<sub>10</sub>, as well as fugitive dust that may contain residual pesticides and heavy metals, would occur. Given the conservatism of the CLRDP EIR analysis and that the non-carcinogenic risk estimated for the CLRDP was several orders of magnitude lower than the significance threshold for each type of contaminant, it is not anticipated that the increased emissions associated with the additional 1.5 acres of disturbance would cause the risk to exceed any of the thresholds. Therefore, construction of the MSC Projects would not result in a significant non-carcinogenic health risk.

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<sup>3</sup> Values are written in scientific notation (e.g., 3.8E-06 is equivalent to 0.0000038).

The method used in the CLRDP EIR analysis to calculate carcinogenic risks assume that a person would be exposed to the modeled (maximum) concentration of diesel particulate matter over a lifetime exposure (two months per year for 70 years). With this conservative approach, the estimated incremental risk was 2.1 in one million compared with the significance threshold of 10 in one million. Therefore, even with the additional 1.5 acres of disturbance over the amount of simultaneous grading assumed in the CLRDP EIR, soil grading and construction for the MSC Projects is not expected to result in a significant carcinogenic health risk.

*Project Operational Emissions of Criteria Pollutants*

<b>MSC Projects Impact AIR-3</b>	Operation of the CBB lab building and greenhouses and vehicle trips associated with these facilities would generate emissions of criteria air pollutants.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building and greenhouses) NEF Project (parking lot)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

The MSC and SRP 1B Projects would not generate operational emissions of criteria pollutants. Normal day-to-day activity associated with the new CBB lab building and greenhouses would generate emissions of criteria pollutants. The pollutants would be generated by area, stationary, and mobile sources. Area sources consist of smaller-size facilities that release relatively small quantities of pollutants into the air. Though emissions from individual area sources are often relatively small, collectively their emissions can be of concern—particularly where large numbers of sources are located in heavily populated areas. Area and stationary source emissions would be generated by the consumption of natural gas for space and water heating and by emergency and stand-by generators; the operation of landscape maintenance equipment; and the use of consumer products. Mobile emissions would be generated by motor vehicles traveling to and from the CBB facilities. NEF Project Parking Lot A would generate a small portion of the motor vehicle trips to the MSC but would not generate other operational emissions.

**Previous Analysis.** The CLRDP EIR (pp. 4.3-19 to 4.3-20) estimated operational emissions of criteria pollutants from development under the CLRDP URBEMIS2001. The estimates were based on 3,128 daily vehicle trips (an increase over the existing 1,000 average daily trips at the MSC). The CLRDP EIR concluded that emissions of VOCs, NO<sub>x</sub>, PM<sub>10</sub>, and SO<sub>2</sub> generated by CLRDP development through the year 2020 would remain below their respective significance thresholds and would not result in a

significant air quality impact, as shown in Table 3.3-6, below. The estimated increase in CO emissions from CLRDP development through 2020 is 562 pounds/day, which would exceed the 550-pound-per-day screening threshold. As discussed below, under *Vehicle CO Emissions*, modeling consistent with the MBUAPCD *CEQA Air Quality Guidelines* was performed to determine whether the CO concentrations produced by the CLRDP development program would violate the State Ambient Air Quality Standard of 9 parts per million (8 hour average) or 20 parts per million (1 hour average) (CLRDP EIR, p. 4.3-19). Table 3.3-6 shows the estimated operational emissions of criteria pollutants that would result from implementation of the CLRDP.

**Table 3.3-6  
Estimated CLRDP Operational Emissions of Criteria Pollutants**

Pollutant	VOCs	NO <sub>x</sub>	PM <sub>10</sub>	SO <sub>2</sub>	CO
<b>Emissions in pounds per day</b>	55	73	27	0.3	562
<b>MBUAPCD Threshold</b>	137 (direct + indirect)	137 (direct + indirect)	82 (onsite)	150 (direct)	550 (direct) <sup>d</sup>

Source: CLRDP EIR, p. 4.3-20.

<sup>a</sup>All daily estimates are for wintertime conditions, which were higher than estimates calculated for summertime conditions for all five criteria pollutants.

<sup>b</sup>Further modeling can be used to determine whether the CO concentrations produced by the project violate the State Ambient Air Quality Standard of 9 parts per million (8 hour average) or 20 parts per million (1 hour average).

<sup>c</sup>Projects for which mobile source CO emissions exceed 550 pounds per day do not necessarily have a significant air quality impact, but are required to estimate localized CO concentrations. Refer to analysis of localized CO concentrations below.

**Project Impact.** URBEMIS2007 was used to quantify emissions of VOCs, NO<sub>x</sub>, CO, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> from mobile sources, landscape equipment, and architectural coatings associated with the proposed MSC Projects (Impact Sciences 2011). The estimated emissions are presented in Table 3.3-7, below.

**Table 3.3-7  
Estimated CBB Project Operational Emissions of Criteria Pollutants**

Emissions Source	Emissions in Pounds per Day					
	VOCs	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Summertime Emissions<sup>1</sup></b>						
Proposed Project Emissions						
Operational (Mobile) Sources	3.84	5.29	41.64	0.03	6.52	1.30
Area Sources	0.39	0.37	1.84	0.00	0.04	0.04
Stationary Sources	7.24	24.64	10.27	3.25	0.37	0.37
Summertime Emissions Total	11.47	30.30	53.75	3.28	6.93	1.710
MBUAPCD Threshold	137	137	550	150	82 (On-site)	—
Exceeds Threshold?	NO	NO	NO	NO	NO	—
<b>Wintertime Emissions<sup>2</sup></b>						
Proposed Project Emissions						
Operational (Mobile) Sources	4.47	6.48	46.62	0.03	6.52	1.30
Area Sources	0.27	0.35	0.29	0.00	0.03	0.03

Emissions Source	Emissions in Pounds per Day					
	VOCs	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Stationary Sources	7.24	24.64	10.27	3.25	0.37	0.37
Wintertime Emissions Total	11.98	31.47	57.18	3.28	6.92	1.7
MBUAPCD Threshold	137	137	550	150	82 (On-site)	—
Exceeds Threshold?	NO	NO	NO	NO	NO	—

Source: Impact Sciences, Inc., 2011.

Notes: (Totals in table may not appear to add exactly due to rounding in the computer model calculations.)

<sup>1</sup>“Summertime Emissions” are representative of the conditions that may occur during the ozone season (May 1 to October 31).

<sup>2</sup>“Wintertime Emissions” are representative of the conditions that may occur during the balance of the year (November 1 to April 30).

As shown in Table 3.3-7, criteria pollutant emissions from CBB and NEF projects operations would not exceed MBUAPCD thresholds and the impact of the MSC Projects would be less than significant.

#### Vehicle CO Emissions

<b>MSC Projects Impact AIR-4</b>	Vehicle trips associated with operation of the CBB and NEF projects would result in an increase in carbon monoxide levels at area intersections.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building and greenhouses) NEF Project (Parking Lot A)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

Emissions of carbon dioxide would primarily be generated by motor vehicles traveling to and from the site. Roadways and intersections with congested traffic have the potential to generate localized high levels of CO because it is produced in greatest quantities from idling vehicles. Localized areas where ambient concentrations exceed State and/or federal standards are termed CO “hotspots.” Such hot spots are defined as locations where the ambient CO concentrations exceed the State ambient air quality standards

**Previous Analysis.** As described above, the CLRDP EIR (pp. 4.3-21 to 4.3-22) assessed CO impacts by using the MBUAPCD CO screening model to evaluate CO concentrations at the intersections most affected by development under the CLRDP in conjunction with other regional development. The analysis demonstrated that CO concentrations at these intersections would remain below State and federal ambient standards. The CLRDP EIR therefore determined that CO emissions associated with development under the CLRDP would not result in a significant air quality impact (CLRDP EIR, p. 4.3-22).

**Project Impact.** As discussed in Section 3.15, *Transportation and Traffic*, the 545 new vehicle trips generated by the proposed CBB and NEF projects would be within the number of vehicle trips projected for campus development under the CLRDP. Therefore, CO emissions associated with the proposed MSC Projects would not exceed CO standards and the impact would be less than significant.

*Consistency with Air Quality Management Plan*

The MBUAPCD considers any project that is not consistent with the AQMP to be cumulatively significant.

**Previous Analysis.** As discussed in the CLRDP EIR (p. 4.3-27), AMBAG determined that the CLRDP was consistent with the AQMP. Therefore, the CLRDP EIR determined that the CLRDP would not have a significant cumulative impact on regional air quality.

**Project Impact.** As Stated in the CLRDP EIR, AMBAG found growth under the CLRDP to be consistent with the growth factors used by the MBUAPCD in the 2000 AQMP. Therefore, the proposed MSC Projects, which are within and consistent with the program of development included in the CLRDP and analyzed in the CLRDP EIR, are consistent with the AQMP and would not have an impact with respect to consistency of the AQMP.

*Operational Emissions of TACs*

<b>MSC Projects Impact AIR-5</b>	Operation of the CBB lab building and greenhouses would generate emissions of toxic air contaminants, which could increase health risks for the campus population and nearby residents.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building and greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** As part of the CLRDP EIR, a health risk assessment (HRA) was conducted to assess the potential health risks from TAC emissions from facilities that would be developed under the CLRDP. The HRA technical report is presented in Appendix C of the CLRDP EIR. The HRA took into account emissions from laboratory fumehoods, diesel trucks, and buses that would serve facilities that would be developed under the CLRDP, and also emissions from diesel-fueled emergency generators that would be included in future projects. The maximum off site concentrations of toxic air contaminants from the

laboratory emissions and from the diesel equipment were calculated using dispersion modeling.<sup>4</sup> The specific chemicals that would be used in new laboratories were unknown; therefore, the HRA analyzed a selection of chemicals based on chemical inventories of then-existing labs on the MSC and the Main Campus. The HRA assumed that the emergency generators would be located near each of the clusters of buildings anticipated under the CLRDP and also that the generators would run on diesel fuel and would be tested for 10 hours per year. Emissions from delivery truck and buses that would serve the facilities that would be developed under the CLRDP were estimated using an earlier version of URBEMIS2007 (URBEMIS2001), for baseline year 2010. It was assumed that truck and bus traffic would travel from the campus entrance at Delaware Avenue/Shaffer Road, along McAllister Way on the Middle Terrace, to the southwest portion of the campus.

The HRA estimated that the incremental increase of contracting cancer at the maximum impact receptor would be 5.4 in a million, with the major contribution from the mobile sources. The maximum incremental risk from all proposed research laboratories within the CLRDP was estimated to be 0.1 in a million. Therefore, the maximum incremental cancer risk resulting from TAC emissions from development under the CLRDP would be less than the significance threshold of 10 in a million (CLRDP EIR, p. 4.3-23).

The HRA also assessed noncarcinogenic health effects resulting from TAC emissions from development under the CLRDP. The maximum chronic hazard index from diesel exhaust is estimated to be  $3.6 \times 10^{-3}$ . For the laboratory chemicals, the Hazard Index is estimated to be less than  $1 \times 10^{-4}$ , and the total Hazard Index (laboratory chemicals and diesel exhaust) is estimated to be  $3.7 \times 10^{-3}$ . This maximum level is well below the significance threshold of 1.0. Because the estimated carcinogenic and noncarcinogenic health risks would be less than the applicable significance thresholds, the CLRDP EIR determined that TAC emissions from development under the CLRDP would not create a significant impact (CLRDP EIR, p. 4.3-22 to 4.3-24)

**Project Impact.** The proposed CBB Project would have the potential to increase emissions of TACs. TACs would be generated by laboratory fumehoods and emergency and standby generators associated with the CBB, and by diesel trucks servicing the MSC.

The CLRDP EIR HRA assumed that three new diesel generators, each operating at 388 hp (thereby generating about 725 kW of electricity), would be installed under the CLRDP. The proposed CBB Project includes two 200 kW standby generators and one 40 kW emergency generator that would run on natural gas and propane instead of diesel fuel. Combustion of these natural gas and propane produces fewer polluting emissions than current formulations of diesel fuel (Cal/EPA 2011). Therefore, the CBB generators would contribute smaller amounts of TACs than assumed for the diesel emergency generators in the CLRDP EIR. In addition, if the HRA were performed today, delivery truck and bus emissions for the proposed Projects would be estimated using the updated health risk assessment model, URBEMIS2007. URBEMIS2007 contains updated emission factors that take into account the cleaner

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<sup>4</sup> Dispersion modeling is the mathematical simulation of how air pollutants disperse in the ambient atmosphere.

technologies and less polluting vehicles now in use. Given that the proposed CBB Projects' emergency generators are smaller than the generators used in the CLRDP calculations, and the proposed CBB Project would be serviced by less polluting vehicles than assumed in the CLRDP, the proposed MSC Projects would not produce greater TAC emissions than those analyzed in the certified CLRDP EIR. Therefore, the proposed MSC Projects would not have a significant impact with respect to this criterion, and no mitigation is required.

Odors

**Previous Analysis.** The CLRDP EIR (p. 4.3-22) stated that implementation of the CLRDP is not expected to result in the emission of pollutants associated with objectionable odors.

**Project Impact.** As previously discussed, none of the proposed four MSC Projects would emit criteria pollutants or TACs that exceed the respective significance thresholds. Therefore, it is unlikely that any of the projects would result in substantial emissions of pollutants associated with objectionable odors.

Any unforeseen odors generated by campus operations would be controlled in accordance with MBUAPCD Rule 402 (Nuisances). Rule 402 prohibits the discharge of air contaminants that cause “injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.” Failure to comply with Rule 402 could subject the offending facility to possible fines and/or operational limitations in an approved odor control or odor abatement plan. Adherence to Rule 402 would mitigate unforeseen odors to a less than significant impact. Therefore, the proposed Projects would have a less than significant impact with respect to this criterion.

### 3.3.5 Cumulative Impacts and Mitigation Measures

Criteria Pollutants

<b>MSC Projects Impact AIR-6</b>	Construction of the MSC Projects and operation of the CBB lab building and greenhouses, in conjunction with other development in the region would result in an increase in emissions of criteria air pollutants.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	General Mitigation Measure <del>3.2-1</del> <u>4.3-1</u>
<b>Applicable Projects/ Project Elements</b>	All projects (construction activities) CBB Project (lab building and greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	<del>None</del> Implement MSC Projects Mitigation Measure AIR-1.

<b>Residual Significance</b>	Not applicable
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**Previous Analysis.** The CLRDP EIR (pp. 4.3-16 to 4.3-7) analyzed PM<sub>10</sub> emissions from ongoing construction activities on the MSC, consisting of five construction projects covering a total area of 5.2 acres of major grading and 1.1 acres per day of minor grading, resulting in PM<sub>10</sub> emissions of 209 lbs/day. The CLRDP EIR concluded that construction PM<sub>10</sub> emissions under this hypothetical scenario would constitute a significant temporary impact but that the impact would be reduced to a less than significant level with implementation of CLRDP EIR Mitigation Measure 4.3-1.

**Project Impact.** As discussed in Section 3.3.4.3, above, construction of the proposed MSC Projects could result in PM<sub>10</sub> emissions of up to 69.17 lbs/day with implementation of CLRDP Mitigation 4.3-1. Construction of the proposed MSC Projects could overlap with one other project on the MSC, the Ocean Health Building Expansion. That project, which was analyzed at the project level in the CLRDP EIR, would involve minor grading of the 0.41-acre building site. If the entire site were graded in one day (a highly unlikely worst case), this minor grading would result in up to 4.1 lbs/day of PM<sub>10</sub> without mitigation.<sup>5</sup> Therefore, construction of the MSC Projects, in conjunction with the Ocean Health Building Expansion, would result in emissions of up to 73.3 lbs/day, which would not exceed the significance threshold of 82 lbs/day. The MSC Projects would not contribute to a significant impact with respect to construction emissions of PM<sub>10</sub>. Nonetheless, as identified for fugitive dust emissions at the project level, under MSC Projects Impact AIR-1, above, MSC Projects Mitigation Measure AIR-1 is included in the MSC Projects for all project construction to further reduce the less-than-significant dust emissions impact. The measure would amend CLRDP EIR Mitigation Measure 4.3-1 to include additional dust control best management practices to address the windy conditions prevalent at the site, and also would provide a mechanism for the campus to receive and address any fugitive dust complaints.

The analysis of CO concentrations provided in Section 3.3.4.3, *Project Impacts and Mitigation Measures*, above, is based on the CO screening performed for the CLRDP EIR, which analyzed a cumulative CO impact, which is less than significant. Operation of the CBB Project would not contribute to a cumulative CO impact.

#### Toxic Air Contaminants

<b>MSC Projects Impact AIR-7</b>	Operation of the CBB lab building and greenhouses, in conjunction with other regional development, would generate emissions of toxic air contaminants, which could increase health risks for the campus population and nearby residents.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None

<sup>5</sup> This estimate is based on the MBUAPCD CEQA Guidelines, which state that minor grading can result in PM<sub>10</sub> emissions of 10lbs/acre/day.

<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building and greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The HRA performed for the CLRDP EIR, which analyzed TAC emissions associated with development of the entire CLRDP building program, also took into account estimated emissions from the former Texas Instruments facility at 2300 Delaware Avenue<sup>6</sup>, the only other stationary source of TACs within one-half mile of the MSC. TAC emissions from the previous use of the Texas Instruments building were obtained from MBUAPCD. The HRA estimated the maximum incremental carcinogenic risk from the cumulative source at the former Texas Instruments site to be 1.2 in one million. The CLRDP EIR determined that the cumulative TAC emissions would not result in a significant health risk, and that the cumulative impact would be less than significant (CLRDP EIR p. 4.3-26).

**Project Impact.** According to MBUAPCD CEQA Guidelines, “A consistency analysis and determination serve as the project’s analysis of cumulative impacts on regional air quality. Project emissions which are not consistent with the AQMP are not accommodated in the AQMP and will have a significant cumulative impact unless offset.” As discussed above under *Consistency with Air Quality Management Plan*, the MBUAPCD has indicated that the proposed Projects are consistent with the AQMP, and therefore would not result in a cumulatively considerable contribution of ozone precursors to the regional air basin.

The TAC emissions associated with operations of the proposed MSC Projects are within the total emissions projected in the CLRDP EIR, because the Projects would implement development included in the CLRDP. There are two planned or approved industrial development projects in the Westside study area that are considered in the cumulative development scenario: the City’s planned desalination plant; and UC Santa Cruz’ previously-approved 2300 Delaware Avenue Project, which will redevelop the former Texas Instruments facility as research laboratories. The proposed desalination plant is not expected to include any stationary sources of TAC emissions. The UC Santa Cruz 2005 LRDP EIR (Volume 3, Section 4.4.3.2) analyzed the potential impacts from TAC emissions from the proposed research laboratories at 2300 Delaware using the California Air Resources Board (CARB) Hotspots Analysis and Reporting Program (HARP) software. The model predicts cancer risk and non-cancer chronic and acute hazard indices based on the total emissions and source geometry. The analysis assumed that chemical use in the new labs would be similar to that in existing labs on the UC Santa Cruz Main Campus. The HRA estimated the carcinogenic risk from UC Santa Cruz’ 2300 Delaware Avenue facility

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<sup>6</sup> The Texas Instruments facility closed in 2003. The property and facilities at this site are now owned by the University of California. UC Santa Cruz analyzed the future redevelopment of this facility as offices and research labs in its 2005 LRDP EIR.

at 0.055 in 1 million, which would be less than estimated for that facility in the CLRDP EIR. Therefore, the cumulative level of risk would be less than was identified in the CLRDP EIR and the cumulative impact would be less than significant.

### 3.3.6 References

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**3.4 BIOLOGICAL RESOURCES**

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Table 3.4-1	Special-Status Plants with Potential to Occur on UCSC MSC and Study Area.
Table 3.4-2.	Habitat Assessment for Special-Status Vertebrates on the MSC, Santa Cruz County, California

**FIGURES**

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Figure 3.4-1	Wetlands on and near the Campus, and CRLF Locations on the Campus
Figure 3.4-2	Maximum Area of Project Disturbance

### 3.4 BIOLOGICAL RESOURCES

This section of the EIR presents a description of existing conditions for biological resources in the project area and analyzes potential physical environmental effects of the proposed project related to the following:

- Special-status plant and animal species and their habitats.
- Sensitive natural communities including riparian habitat and wetlands protected under federal or State law or the California Coastal Act.
- Wildlife movement corridors and migration.
- Wildlife nesting and breeding.
- Consistency with the relevant implementation measures of the campus' CLRDP EIR.

This section provides project-level analysis and updates data on biological resources conditions on the MSC (MSC), and supplements and augments the analysis provided in Section 4.4 of the CLRDP EIR, pursuant to CEQA Guidelines Section 15152. See CLRDP EIR Section 4.4 for an overview of the biotic setting of the Santa Cruz region and a comprehensive discussion of the biological resources of the MSC as described and assessed in 2002.

Public comments related to biological resources received during the scoping period of this EIR requested that the EIR address and take into account the following issues:

- Potential effects to campus wetlands and wetland buffers, including: whether the proposed public trails might be sited within wetland buffers; potential effects of development of the Utility Yard on adjacent wetlands; whether the proposed abandonment and restoration of the existing entry road could affect the integrity of adjacent wetlands; whether the project assessment would rely on the existing wetlands studies or a new wetlands study would be conducted for the project; and how campus wetlands and their buffers would be delineated, given that they are seasonal, ephemeral, and change in extent from year to year.
- Potential noise effects of generators in the Utility Yard on adjacent designated Environmentally Sensitive Habitat Areas (ESHAs).
- Whether biological studies for the project would be conducted internally by UCSC or by a consultant.
- Potential biological impacts of construction and project development of various project elements with respect to: wildlife, including California red-legged frogs, Western pond turtles and birds of prey; habitat connectivity; local biodiversity; wildlife corridors; and habitat fragmentation.
- EIR should include a complete assessment of habitats, flora, and fauna within and adjacent to the project area, including special-status and locally unique species and sensitive habitats.
- A California Endangered Species Act (CESA) permit will be required if the project has the potential to result in take of CESA-listed species. The permit may require mitigation measures and significant

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modification of the project. Early consultation with California Department of Fish and Game (CDFG) is recommended.

- If the project would result in changes to a stream, streambed, channel, bank, or flow, CDFG may require a Lake and Streambed Alteration Agreement. The CDFG then would be a Responsible Agency for the CEQA document. The EIR should fully identify potential impacts to stream or riparian resources and provide adequate avoidance, mitigation, monitoring, and reporting commitments.
- Number and types of organisms dependent on the seawater system, maximum limit for new additional creatures, and measures included in the project to safeguard existing and additional marine organisms in the seawater tanks (addressed in CBB Project Description, Section 2).
- Sustainable development of the site should include measures to improve its biodiversity.

These issues are addressed in the Project Description (Section 2.0) or in the analysis provided in this section.

### **3.4.1 Environmental Setting**

#### **3.4.1.1 Biological Setting of the MSC**

The MSC (MSC) is located on Terrace Point, an elevated, nearly level marine terrace on the coast of Monterey Bay, at the western margin of the City of Santa Cruz. Much of the land to the west and north of City boundaries is used for agriculture, including cattle grazing and the production of row crops. Younger Lagoon, a brackish tidal body, lies in a declivity immediately west of the campus. The lagoon is surrounded by sand dunes, and the steep banks of its canyon are vegetated in dense coastal scrub. To the east of the campus, separated from the northern part of the campus by a large vacant lot, is Antonelli Pond, a large artificial (but now naturalized) pond created by historic modifications to Moore Creek. The channel of Moore Creek, an intermittent stream, is less than 0.1 mile from the eastern boundary of the campus. The closest perennial stream to the site is Wilder Creek, located just under a mile west of the MSC. Natural Bridges State Beach, about one-half mile east of the campus, includes brackish ponded water near the mouth of Moore Creek. A small freshwater pool at the northern boundary of the MSC is fed by seasonal runoff and holds water for most of the year. There also are extensive seasonal wetlands and wetland vegetation areas on the campus (Figure 3.4-1).

The lands that now comprise the MSC were farmed for a century or more, until 1987, most recently in row crops. The fields to the west of Younger Lagoon are still actively farmed. During the farming era on the MSC, an agricultural ditch channelized runoff at the site and probably drained the campus wetlands. This ditch, described in the CLRDP EIR as wetland W1, still carries runoff from the campus' Upper Terrace toward Younger Lagoon. With the cessation of agricultural activity and active drainage management on the MSC, the extensive undeveloped areas of the campus terrace lands have reverted to ruderal grassland (composed primarily of non-native species), seasonal wetlands, and open coastal scrub, as detailed below.

One important change at the MSC since certification of the CLRDP EIR is that the Younger Lagoon Reserve (YLR), as discussed in the CLRDP Draft EIR, included only Younger Lagoon and the bluffs immediately surrounding it, and did not include the coastal terraces of the MSC. In 2008, in compliance with a CLRDP requirement, all areas on the campus terrace lands that are outside of zones designated for development under the final CLRDP were incorporated into UC's Natural Reserve System. All of the wetlands and other Environmentally Sensitive Habitat Areas (ESHAs, as designated under the Coastal Act) on the MSC and their surrounding buffers are therefore now part of the YLR. The YLR as discussed in this EIR therefore includes both the original YLR around Younger Lagoon and also those areas of the terrace lands incorporated in the YLR under the final CLRDP. These lands will be protected in perpetuity from development and managed for habitat enhancement, research, and educational purposes.

The project area is shown on Figure 2, in the Introduction to this EIR, and all proposed project elements are delineated on Figures 2-2a through 2-2d, 2-3a, 2-3b, and 2-6 (see Section 2.0, *Project Description*). The Study Area for the proposed Projects is the "terrace lands" of the MSC; that is, the level marine terraces of Terrace Point, including both the areas designated for development under the CLRDP and the adjoining areas that are included in the YLR, which includes all of the area of the terrace lands that are not developed or included in the development area designated by the CLRDP. The project area includes all areas of the campus that would be affected by the proposed MSC Projects, including the footprints of disturbance for the proposed Coastal Biology Building lab and Greenhouse Complex; associated storm water control features; utility corridors; three parking lots; a new Utility Yard; a new Upper Terrace Storage Yard; roadways and trails; staging areas; and wetland areas that would be affected by proposed wetland reconnection and restoration under the SRP Phase 1B project. The areas where ground disturbance or other project construction activity would occur are shown on Figure 3.4-2.

### **3.4.1.2 Biological Resources of the MSC**

Biological resources information presented in the CLRDP EIR was drawn from biological surveys and assessments of the campus by Ecosystems West (2002). The review and update of biological conditions and resources at the campus presented below was drawn from technical reports prepared by Biosearch Associates for wildlife assessment; Coast Range Biological LLC for botanical assessment (Biosearch Associates and Coast Range Biological LLC 2011); and Huffman-Broadway Group (2011) for wetlands. The wildlife biologists, botanists, and wetlands specialists who prepared these reports conducted records searches and field surveys, in summer and fall 2010 and the subsequent winter, to provide the data for these reports. This section also includes wetland and special-status species data collected by Ecosystems West in annual surveys that began in 2008 (EcoSystems West Consulting Group 2009A, 2009B, and 2011). The technical reports on which this section is based are available for review at the offices of UCSC Physical Planning and Construction.

#### **Vegetation Communities in the Study Area**

##### **Upper Terrace**

The Upper Terrace of the MSC—the area of the campus north of the current entry road—presently is undeveloped. Much of the Upper Terrace area is comprised of ESHAs that are state and federal

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jurisdictional wetlands, primarily seasonal in nature. These ESHA and 100-foot to 150-foot-radius buffers around them are protected from development under the CLRDP. Under the proposed project, development on the Upper Terrace would include a laydown yard/ staging area, a visitor's parking lot and a pedestrian trail, all adjacent to the MSC's eastern margin along Shaffer Road, and conversion/restoration of the existing entry road as a pedestrian trail.

Wetland W1 (see Figure 3.4-1) on the Upper Terrace, is a former agricultural ditch that runs along the western border of the campus. An earthen berm separates it from the more expansive wetlands W2 and W3, adjacent to the east. Under the SRP Phase 1B Project, one of the projects assessed in this EIR, wetland W1 would be reconnected to wetland W2, as part of the habitat restoration required by the CLRDP.

A portion of the Upper Terrace area has been moderately disturbed in the past by tire tracks and footpaths. The area previously was mapped as Coyote Brush Scrub-Grassland<sup>1</sup> (Ecosystems West 2002), which is consistent with currently existing conditions. Dominant species include coyote brush (*Baccharis pilularis*) and marsh baccharis (*Baccharis douglasii*), with openings in the scrub canopy dominated by non-native grasses and forbs including rattail fescue (*Vulpia myuros* var. *myuros*), Italian thistle (*Carduus pycnocephalus*), poison hemlock (*Conium maculatum*), Italian ryegrass (*Lolium multiflorum*), wild radish (*Raphanus sativus*), wild oats (*Avena* spp.) and bristly ox-tongue (*Picris echioides*). Plant species observed in the study area are listed on Table 3-1, at the end of this chapter.

### **Middle Terrace**

“Middle Terrace” designates the portion of the MSC from the campus entry road southward to and encompassing the existing NOAA facility. The proposed CBB, parking lot, Greenhouse Complex, Parking Lots C and D, storm-water detention basin, Utility Yard, new utility and road infrastructure, and a trail network are proposed for development in the Middle Terrace area under the proposed MSC Projects. Existing Middle Terrace facilities include the CDFG Oiled Seabird and Predatory Bird Facility (CDFG facility), NOAA Fisheries Lab (NOAA facility), and associated parking; a complex of mostly derelict greenhouses; several office trailers; and existing campus roadway and utility infrastructure.

The area of the project footprint on the Middle Terrace was previously mapped as four habitat types: Coyote Brush Scrub-Grassland, Non-native Grassland, Ruderal, and Developed/Ruderal (Ecosystems West 2002). Coyote Brush Scrub-Grassland is described above. Non-native Grassland is dominated by non-native grasses and forbs including rattail fescue, Italian thistle, wild radish, wild oats, bristly ox-tongue, bull thistle (*Cirsium vulgare*), ripgut brome (*Bromus diandrus*), prickly lettuce (*Lactuca serriola*) and conyza (*Conyza* sp.), with occasional native species such as slender tarweed (*Madia gracilis*), marsh baccharis, and California poppy (*Eschscholzia californica*). Coyote brush also is present.

Ruderal habitat consists of heavily disturbed areas dominated by non-native grasses and forbs. Since the previous mapping (which is the basis for biotic description provided in the CLRDP EIR), much of the Ruderal habitat on the Middle Terrace has been colonized with species characteristic of Non-native Grassland, and the species mix and vegetation structure are generally indistinguishable from adjacent

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<sup>1</sup> Vegetation nomenclature follows EcoSystems West (2002), which follows several recognized vegetation classifications.

Non-native Grassland and Coyote Brush Scrub-Grassland. In addition, since 2002 the density of coyote brush has increased due to plant succession in the previously disturbed utility corridor that runs northward from the NOAA facility along the central part of the Middle Terrace. Developed/Ruderal habitat consists of Ruderal habitat plus developed areas such as buildings, parking areas and landscaping.

### **Lower Terrace**

The Lower Terrace of the campus lies between the existing NOAA facility and the ocean bluff, and encompasses most of the campus' existing facilities, including the Seymour Center, the facilities of the Long Marine Lab, the Ocean Health Building, and associated parking and interpretive facilities. The proposed MSC Projects include trail and interpretive improvements for the Lower Terrace. Much of the undeveloped area of the Lower Terrace consists of wetlands that are protected from development. Vegetation in areas proposed for trail improvements was previously mapped as Non-native Grassland, Coyote Brush Scrub-Grassland, Coastal Scrub, and Coastal Bluff-ice plant phase. Over the past year, Younger Lagoon Reserve staff and volunteers have been carrying out habitat restoration along the coastal bluff and in the grasslands of the Lower Terrace, consistent with the requirements of the CLRDP and previously-approved Specific Resource Plan, Phase 1A. Work has consisted of extirpation of non-native plants, including removal of extensive areas of invasive ice plant along the bluff, and replanting with native grasses and forbs.

Non-native Grassland and Coyote Brush Scrub-Grassland are described above. Coastal Scrub on the Lower Terrace consists of a dense shrubland dominated by native brush species, including coyote brush, lizard tail (*Eriophyllum stachaeifolium*), California sagebrush (*Artemisia californica*) and poison oak (*Toxicodendron diversilobum*), with occasional sticky monkeyflower (*Mimulus aurantiacus*) and California rose (*Rosa californica*). Open areas in the scrub consist of native and non-native grasses and forbs including rattail fescue, wild radish, slender tarweed, yarrow (*Achillea millefolium*), soap plant (*Chlorogalum pomeridianum*), and creeping wild rye (*Leymus triticoides*).

The coastal bluff was previously mapped as Coastal Bluff-ice plant phase but, as noted above, the majority of ice plant on the bluff has been removed. The area is being planted with native coastal bluff species including yarrow, dudleya (*Dudleya caespitosa*), and seaside daisy (*Erigeron glaucus*) under previously-approved SRP Phase 1A. On the bluff edge, some remnant native species are present including lizard tail, yellow bush lupine (*Lupinus arboreus*), and salt grass (*Distichlis spicata*), which might represent a highly degraded phase of Northern Coastal Bluff Scrub. The coastal bluff and adjacent areas are located within the buffer zone of Beach habitat, which is designated as an ESHA in the CLRDP. Non-native Grassland on the southernmost portion of the Lower Terrace has been mowed and also is currently being replanted with native species.

### ***Special-Status Plants***

Thirty-two special-status plant species have the potential to occur on the MSC (Ecosystems West 2002; CDFG 2010; CNPS 2010). There are some suitable habitat components within and adjacent to the study area for 28 of these species (see Table 3.4-1, at the end of this section). However, despite numerous botanical surveys of the MSC in the past, no special-status plant species have been observed. Reconnaissance-level surveys conducted for the proposed MSC Projects (Biosearch Associates and Coast

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Range Biological LLC 2011) also did not identify any special-status plants, and the lack of documented special-status plant occurrences on the study area, along with the extensive disturbance history, makes the presence of special-status plants on the study area unlikely. However, since the 2010 survey was performed outside of the blooming season for special-status plants; and because of the presence of suitable habitat components for some special-status plants, documented special-status plant occurrences within three miles of the study area (CDFG 2010), and the nine years since focused plant surveys were last conducted, focused surveys during the appropriate blooming season would be needed to determine definitively whether special-status plants are present.

### ***Special-Status Wildlife***

The special-status species data presented here are drawn from the technical report on campus biological resources prepared by Biosearch Associates and Coast Range Biological (2011), which includes full citations of data sources. This section also reports changes in regulatory status and distributional information for regional special-status wildlife since the 2004 publication of the CLRDP EIR.

To assess the project site for the potential presence of wildlife species, Biosearch Associates reviewed the results of Ecosystems West's 2002 survey, developed a comprehensive list of all special-status species known to occur in the region, and refined the list to remove animals that were not expected to occur on the project site due to range limitation, extirpation, or the absence of suitable habitat (see Table 3.4-2 at the end of this section).

The status of several special-status wildlife species has changed since the last comprehensive analysis of biological resources on the campus. The grasshopper sparrow (*Ammodramus savannarum*) and Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*) were designated by CDFG as Species of Special Concern in 2008. Several avian species that had special status at the time of the 2002 analysis have been removed from the list of CDFG Species of Special Concern and are no longer considered special-status species. These include double-crested cormorant (*Phalacrocorax auritus*), great blue heron (*Ardea herodias*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), merlin (*Falco columbarius*), California gull (*Larus californicus*) and California horned lark (*Eremophila alpestris actia*). Previous assessments included the saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), a CDFG Species of Special Concern. However, CDFG now considers the project site to be outside the range of the subspecies, so this species also is not considered in the present analysis.

Five special-status wildlife species—the California red-legged frog (*Rana draytonii*), western pond turtle (*Actinemys marmorata*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), and Western burrowing owl (*Athene cunicularia*) have recently been reported on the campus by other biologists and/or were observed during the reconnaissance-level site visits for the current project. Potential habitat is present on the project site for 14 other special-status wildlife species. Many of these are discussed in the CLRDP EIR. The text below summarizes and updates pertinent information about each species. For several species listed in Table 3.4-2 as occurring in the region, appropriate habitat is not present on site (as noted in the table), so these species are not discussed in detail here.

**California Red-legged Frog (*Rana draytonii*)**

The California red-legged frog (CRLF) is a large, primarily nocturnal species. During the breeding season (December through April), it requires still or slow-moving water. Metamorphosis generally occurs between June and September. At seasonal ponds, dispersal occurs in response to receding water; mass emigration from perennial ponds also may be initiated with the first rains each fall. Radio-telemetry data indicate that individuals often engage in straight-line movements irrespective of riparian corridors and can move up to two miles. During the non-breeding season, CRLF may take refuge in small mammal burrows, leaf litter, or other moist areas during periods of inactivity or whenever it is necessary to avoid desiccation. The United States Fish and Wildlife Service (USFWS) listed the CRLF as Threatened in 1996, and it is also listed as a State Species of Special Concern.

**Local Occurrences.** As reported in the CLRDP EIR, adult and sub-adult CRLF were identified in a ponded area in wetland W1 in 2002 and were suspected to travel along wet areas in the adjacent railroad corridor. CRLF have been observed annually on the campus during focused surveys since 2008 (Ecosystems West 2009A, 2009B; K. Glinka, pers. comm.) (Figure 3.4-1). Most of the observations have been at the small ponded area (depression “D3”, in the Ecosystems West report) in wetland W1 on the campus Upper Terrace, where CRLF were first reported in 1997. In 2009–10, CRLF also were noted in a ponded area, depression “D1”, in the riparian corridor downstream of wetland W6, on the slope of Younger Lagoon adjacent to the western edge of the Middle Terrace. In August 2010, a road-killed subadult or small adult was found on the access road near the northwest corner of the Seymour Center. To the north and northeast of the campus, CRLF have been found in the Moore Creek drainage from near the north end of Antonelli Pond northward up to the UCSC main campus, where they breed at the Arboretum Pond and have been found upstream along Moore Creek. To the northwest and west, they have been observed at Jade Ranch and in Wilder Creek, and high quality habitat is present in the marsh near the outlet of Wilder Creek south of Jade Ranch. To the east, CRLF were reported in a pond in Natural Bridges State Beach in the 1990s but there are no recent records of their occurrence at this location (CDFG 2010).

**Habitat Assessment.** There is no breeding habitat for the CRLF in the study area due to the short seasonal duration of inundation in campus wetlands in most years. CRLF are known to use foraging and sheltering habitat on both the campus’ Upper Terrace and, more recently, the Middle Terrace, as noted above, especially when standing water or moist, dense vegetation is present. Other areas that hold water seasonally for a period of days or weeks also provide foraging or sheltering habitat, although no frogs have been found to date in other wet areas on campus. Based on the road kill noted in August 2010, CRLF may move overland around the project area during any time of year; some individuals may find cover in water traps (such as drain holes) or elsewhere within developed areas, particularly where there are patches of dense vegetation or persistent moisture.

**Western Pond Turtle (*Actinemys marmorata*)**

The western pond turtle primarily inhabits permanent fresh water sources, such as ponds, streams and rivers. Although it is primarily an aquatic species, it may move across land in response to fluctuating water levels, an apparent adaptation to the variable rainfall and unpredictable flows that occur in many coastal California drainage basins. During dispersal, pond turtles can move up to 2 kilometers in search of

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suitable habitat and can tolerate weeks without water. In spring or summer, females travel from aquatic sites into open, grassy areas to lay eggs at night in a shallow nest, which is buried and abandoned, and generally very difficult to detect. Nest sites may be 500 meters or more from a water body, although the average distance is about 30 meters. The young typically hatch and begin to make their way back to water sources between September and December. The western pond turtle is designated as state Species of Special Concern and a protected species under the California Code of Regulations.

**Local Occurrences.** The CLRDP EIR reported that western pond turtle potentially could occur on the campus, but none had been reported as of 2002. In a wildlife survey in May 2010 (Ecosystems West 2010), a gravid western pond turtle was found at campus wetland W6 in the wet depression designated as D1 by Ecosystems West (see Figure 3.4-1). On May 21, 2008, a dead gravid female pond turtle was found at the same location partially buried in the mud (Ecosystems West 2009A). Western pond turtles are known from Wilder Creek, approximately 1 mile west of the study area, at Natural Bridge State Park, 0.5 miles east, and in at least one lagoon on Wilder Ranch State Park, about 1.5 miles west of the study area. They also inhabit the Moore Creek drainage, approximately 0.5 miles northeast of the study area (CNDDDB 2010). Potential habitat is present in Antonelli Pond, about 0.25 miles to the east, at least for adult pond turtles, despite the presence of non-native aquatic predators.

**Habitat Assessment.** No perennial aquatic habitat for western pond turtles is present on the MSC. However, potential nesting habitat is present throughout the upland grasslands and open coyote brush scrub of the campus terraces in the project area. Clearly the aquatic habitat at wetland W6 (D1), despite relatively short hydro-periods, has attracted turtles for periods of time, including gravid females that may be attempting to nest in the surrounding uplands.

### **Ferruginous Hawk (*Buteo regalis*)**

The ferruginous hawk is a large raptor that inhabits open habitats in the Great Basin and northern Great Plains during the breeding season and winters throughout arid and semi-arid areas of California. It prefers open grasslands for foraging and will use some agricultural areas. The prey of the ferruginous hawk includes rabbits and ground squirrels, although birds and reptiles are also eaten. The species often perches on the ground, using sit-and-wait tactics to capture prey. Ferruginous hawks arrive in California between September and October, and depart between February and April. They typically congregate in grasslands where mammalian prey is abundant. The ferruginous hawk (wintering) is designated as a Bird of Conservation Concern by USFWS.

**Local Occurrences.** Although considered rare in Santa Cruz County, the species is regularly found in low numbers in localized areas. One or two individual ferruginous hawks typically winter along north coastal Santa Cruz County in the vicinity of Wilder Ranch State Park.

**Habitat Assessment.** Potential wintering habitat for ferruginous hawks is present throughout much of the study area. Their preferred prey, the California ground squirrel (*Spermophilus beecheyi*), is present in relatively low numbers on the MSC terraces in localized areas where the grassland is less dense.

### **Northern Harrier (*Circus cyaneus*)**

The northern harrier inhabits open wetland habitats, including freshwater marshes, wet meadows, freshwater and brackish marshes, as well as upland habitats including grasslands, prairies and cropland.

Nests are typically placed on the ground in dense vegetation. The nesting season is typically April through August. Hunting tends to be concentrated in the cooler morning and evening hours, but may occur throughout the day. Northern harriers feed primarily on voles and other small mammals, birds, frogs and insects. The species has decreased in numbers due to conversion of marsh habitat for human uses. The northern harrier is designated as a State Species of Special Concern by CDFG.

**Local Occurrences.** The northern harrier is an uncommon nesting species in Santa Cruz County. One of the few known nesting locales is at Wilder Creek Marsh, approximately 0.7 miles west of the study area. Northern harriers are regularly seen foraging on the MSC, especially during migration and in the winter. A female was sighted on campus during the biological reconnaissance survey for this project in September 2010.

**Habitat Assessment.** There is suitable nesting habitat for northern harriers throughout the tall grasslands on the project site, especially on the Upper Terrace. Other areas of the MSC that may be visited regularly by humans with dogs are less likely to be used for nesting at this time. Despite daily human activity, northern harriers are expected to forage regularly on the MSC.

#### **White-tailed Kite (*Elanus leucurus*)**

The white-tailed kite is a medium-sized raptor that occupies low-elevation grassland, agricultural, wetland, oak woodland, and oak savanna habitats throughout the coastal foothills and valleys. It nests in a wide variety of trees and shrubs, either isolated or part of larger stands. Typically, nesting season extends from about mid-January through about the end of April. During the non-breeding season, the species roosts communally. Nearby open areas are required for foraging, and the species will use certain types of agricultural fields. Voles make up a large proportion of the diet, although other small mammals, birds and insects are also eaten. The species hunts during the day primarily by hovering and searching for prey. White-tailed kites in California are generally resident, although they may occupy different areas during the non-breeding and breeding seasons. The species underwent a dramatic reduction in numbers due to habitat loss and hunting, and was extirpated throughout much of its range in the early 1900s. Between the 1940s and early 1980s, the population recovered and its range expanded. More recently, population declines have again been noted, possibly as a result of the conversion of agricultural lands to urban uses. In California, the white-tailed kite is listed as "Fully Protected" in the California Fish and Game Code and, federally, as a Bird of Conservation Concern by the USFWS.

**Local Occurrences.** White-tailed kites are considered to be uncommon breeders in Santa Cruz County. The nearest known likely nesting record was reported from the UCSC Main Campus in May 2004 and they have also been known to nest in the Pogonip City Park east of UCSC. The species is regularly observed foraging on the MSC and one was sighted during the reconnaissance-level biological survey for this project in September 2010.

**Habitat Assessment.** Low-quality nesting habitat is present adjacent to the campus terraces, in the lagoon portion of the YLR. Suitable foraging habitat is present throughout the site, which supports high numbers of California voles (*Microtus californicus*), a key prey item.

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### **Burrowing Owl (*Athene cunicularia*)**

The burrowing owl is primarily a resident of grassland and desert scrub communities. This small, ground-dwelling owl feeds opportunistically on insects, small mammals, birds, amphibians, and reptiles. It occupies dens excavated by burrowing mammals including ground squirrels and badgers. It is also able to utilize man-made sites such as culverts and artificial dens. In open habitats, the species prefers areas where the grass height is relatively short, including grasslands grazed by livestock. The species shows a strong site fidelity from year to year. Habitat conversion and secondary poisoning resulting from ground squirrel control efforts have caused declines throughout much of its range. The burrowing owl is designated as a State Species of Special Concern by CDFG and as a Bird of Conservation Concern by USFWS.

**Local Occurrences.** In November 2009, a dead burrowing owl was positively identified by Dr. Dave Casper, UCSC Veterinarian, after it was recovered by a woman walking her dog in the study area. The carcass was not fresh but still readily identifiable. The individual was presumed to be a migrant or wintering owl. In November 2010, a burrowing owl was observed overwintering on the YLR dunes in an abandoned ground squirrel den. The owl was observed on the Younger Lagoon beach through February 2011. Burrowing owls no longer breed in Santa Cruz County, although a small wintering population is known from the grasslands of the lower main UCSC campus and nearby lands. Burrowing owls are periodically observed on and near the study area during migration or in the winter.

**Habitat Assessment.** Potential wintering habitat is present for burrowing owls in localized areas and around the margins of the study area in areas with open grassland, often where California ground squirrels are present. Much of the grassland on the project site is currently dense and tall, and thus is not suitable habitat for burrowing owls.

### **American peregrine falcon (*Falco peregrinus*)**

The peregrine falcon historically ranged throughout North America and much of the rest of the world. Numbers were never large, as each pair requires a large feeding territory around a suitable nesting site. Its diet consists primarily of medium-sized birds. It nests on cliff edges and also on tall man-made structures. The peregrine falcon resides year round on the central California coast. The species population was reduced substantially in the 19th century, in part as a result of eggshell thinning related to the pesticide, DDT, and was federally listed as endangered under the federal Endangered Species Act. However, due to substantial recovery of populations throughout much of its range, the species was delisted by USFWS in 1999. It is still listed as endangered under the California ESA.

**Local Occurrences.** Peregrine falcons are present in the Monterey Bay area, and are sometimes observed hunting around Younger Lagoon during the winter. None have been reported nesting on or near the MSC.

**Habitat Assessment.** Younger Lagoon is suitable winter hunting habitat for peregrine falcons and they also may hunt the grassy terraces of the MSC. There is no suitable nesting habitat on the project site.

### **Black Swift (*Cypseloides niger*)**

Black swifts are rare to uncommon summer residents in Santa Cruz. During the breeding season, black swifts are found in mountainous country and along the coast, where they nest in shaded, moist microclimates on sea bluffs and steep cliff faces. Black swifts forage aerially and widely over various

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terrain, taking insects on the fly. In California, breeding birds begin arriving in May. Nest site fidelity appears to be strong as traditional nest sites are reused in successive years. Because suitable nest sites are limited, swifts often nest singly but, where multiple sites are available, they will nest semi-colonially. On the coast, nests are usually built in sea caves. Breeding populations in Santa Cruz County have disappeared in recent years. The black swift is designated as a State Species of Special Concern by CDFG and as a Bird of Conservation Concern by the USFWS.

**Local Occurrences.** Black swift nesting has not been confirmed in Santa Cruz County since 1994. The species is regularly seen in low numbers along the coast during migration.

**Site Assessment.** Potential nesting habitat is present along the coastal bluffs of the study area and nearby although, as noted above, black swifts are not currently known to nest in the County. There is at least one sea cave just outside the Project area but within the original YLR. The study area provides potential foraging habitat.

#### **Vaux's Swift (*Chaetura vauxi*)**

The highest densities of Vaux's swift in the state are found along the narrow coastal zone of northern and central California. In northwestern California, the species nests and roosts primarily in redwood tree cavities but will also sometimes use chimneys. During migration, large numbers will roost colonially. The Vaux's swift is designated as a State Species of Special Concern by CDFG.

**Local Occurrences.** Low numbers of Vaux's swifts are known to periodically nest in chimneys on the west side of the City of Santa Cruz. The species is considered to be uncommon to fairly common in Santa Cruz County in localized areas with appropriate habitat.

**Site Assessment.** Potential nesting habitat is present on the existing buildings on site. The study area provides potential foraging habitat.

#### **Loggerhead Shrike (*Lanius ludovicianus*)**

The loggerhead shrike (*Lanius ludovicianus*) is a wide-ranging species that occupies open habitats including grassland, scrub and open woodland communities, and is resident in California year round. The species typically nests in densely vegetated, isolated trees and shrubs and occasionally in man-made structures. It is regularly observed perched on telephone wires, fence posts and prominent shrubs. Loggerhead shrikes feed on a variety of small animals including arthropods, mammals, amphibians, reptiles, and birds. Although the population appears to be relatively stable in the open habitats of California, habitat modification has led to documented population fluctuations in many parts of the species' range. The loggerhead shrike is designated as a State Species of Special Concern by CDFG and as a Bird of Conservation Concern by the USFWS.

**Local Occurrences.** The loggerhead shrike is considered to be a rare, localized breeder primarily restricted to the Pajaro Valley in south Santa Cruz County. However, the species is periodically observed along the north coast, especially in the winter.

**Habitat Assessment.** Suitable nesting and foraging habitat is present for loggerhead shrike within the study area. Dense coyote brush provides the appropriate structure and cover for nesting.

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### **Grasshopper Sparrow (*Ammodramus savannarum*)**

The grasshopper sparrow is a small- to medium-sized sparrow, generally associated with short to middle-height grasslands with little to no shrub cover, pastures, and certain agricultural fields. It feeds primarily on insects but also eats a significant amount of vegetation including seeds. Grasshopper sparrows nest on the ground between April and July. They are thought to be loosely colonial during the breeding season although numbers in any one area may change over time. Due to the widespread conversion of grasslands, populations in California have declined drastically in recent years. It is designated as a Species of Special Concern by CDFG.

**Local Occurrences.** In 2008, a pair of grasshopper sparrows was seen during the breeding season in the Upper Terrace of the MSC, but it could not be determined whether nesting was successful (Biosearch Associates et al. 2011). The species is considered to be a fairly common regular breeder in Santa Cruz County and four to six pairs generally breed on the Moore Creek Preserve situated less than 0.5 mile north of the study area.

**Habitat Assessment.** Appropriate foraging and nesting habitat is present throughout the grassland habitat in the Project area. However, much of the grass is tall and dense, which reduces habitat quality. Future restoration efforts may improve habitat quality and increase the likelihood of colonization.

### **Bryant's Savannah Sparrow (*Passerculus sandwichensis alaudinus*)**

Bryant's savannah sparrow prefers tidally influenced habitats, often with pickleweed, as well as moist grasslands often near swales and sometimes drier grasslands. It builds open-cup nests on the ground or within 10 cm of the ground usually in dense grassy clumps or under matted grasses or forbs. Bryant's savannah sparrow is designated as a Species of Special Concern by CDFG.

**Local Occurrences.** Bryant's savannah sparrow is considered to be an uncommon but regular breeder in localized areas of Santa Cruz County. Around a dozen pairs typically nest at the Moore Creek Preserve situated less than 0.5 mile north of the study area.

**Habitat Assessment.** Appropriate nesting habitat is available in the grasslands onsite but the dense, homogenous thatch in most areas reduces habitat quality. The seasonal wetlands present in portions of the grassland increase the potential for the species to nest onsite.

### **Tricolored Blackbird (*Agelaius tricolor*)**

The tricolored blackbird typically requires fresh water marshes with emergent vegetation surrounded by water for nesting, although thorny brambles, nettles, dense willows, or grain fields near water are also used. The species is highly colonial and, historically, tricolored blackbirds congregated in large colonies during the breeding season. The species is nomadic and smaller colonies will often nest in different areas from year to year. Juveniles are not likely to return to the sites where they were born. Tricolored blackbirds forage in grassland and cropland on seeds and insects. Nesting colonies are highly susceptible to human disturbance, and entire colonies have been known to abandon nests after only a single visit by humans. The population has declined over the past approximately 60 years due to habitat conversion of natural wetlands and agricultural practices. The tricolored blackbird is designated as a Species of Special Concern by CDFG and as a Bird of Conservation Concern by USFWS.

**Local Occurrences.** The tricolored blackbird is an uncommon nesting species in Santa Cruz County. The species has been seen foraging on the study area (EcoSystems West 2002). There was a small breeding colony at the north end of Antonelli Pond in 1988 but it has since been extirpated. The species is regularly seen foraging in mixed blackbird flocks at the Santa Cruz Landfill located about three miles to the northwest and in fields along the north coast of Santa Cruz County.

**Habitat Assessment.** No nesting habitat is present in the study area for the tricolored blackbird. Foraging habitat is present in the grasslands, especially in more open areas.

### **Other Native Bird Species**

In addition to the species listed above, suitable nesting habitat occurs for other bird species protected under the Migratory Bird Treaty Act (MBTA). The MBTA regulates or prohibits taking, killing, and possession of migratory bird species and their nests as listed in Title 50 Code of Federal Regulation (CFR) Section 10.13. All bird nests and eggs are protected under Section 3503 of the California Fish and Game Code. Birds-of-prey, their eggs, and nests are also protected under Section 3503.5 of the California Fish and Game Code. Potential nesting habitat for bird species protected under the MBTA and Fish and Game Code is present throughout the study area.

### **Pallid Bat (*Antrozous pallidus*)**

The pallid bat inhabits a variety of arid habitats including grassland, scrub, and woodlands. It is a year-round resident in central California, where it is usually associated with oak woodland (which is not present at the MSC). Daytime roosts are generally in trees but also occur in rock outcrops, mines, and sometimes in buildings. Nocturnal roosts are often under bridges and in rock outcrops. One or two young are born in May or June. Maternal colonies generally number less than 100 individuals. Pallid bats feed on insects and arachnids, which are often taken on the ground. The species is very sensitive to disturbance of roost sites. Pallid bats are not known to migrate, and winter hibernation roosts are often close to summer roosts. The pallid bat is designated as a Species of Special Concern by CDFG and as a High Priority Species by the Western Bat Working Group.

**Local Occurrences.** A historic record of the pallid bat is known from 2 miles east of Santa Cruz. None was detected at the MSC by EcoSystems West during several visits in 2002 to characterize the bat community on the study area and at the nearby YLR.

**Habitat Assessment.** Suitable roosting habitat for pallid bats may be present in the abandoned sheds and out-buildings in the existing campus greenhouse complex. However, because pallid bats are sensitive to human disturbance, they likely do not use the area because of ongoing human activity.

### **Townsend's Big-eared Bat (*Corynorhinus townsendii*)**

Townsend's big-eared bat is found throughout much of California, especially in areas where caves and mines are available for roosting habitat. It inhabits a wide variety of habitats including desert scrub, oak woodland, and coniferous forest. It feeds primarily on small moths that are gleaned from vegetation. The species is highly dependent on caves and mines for roost sites, but it will also use buildings and bridges that possess "cave-like" features. It is very sensitive to disturbance of roost sites. It has declined seriously

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across many parts of California and is designated as a Species of Special Concern by CDFG and as a High Priority species by the Western Bat Working Group.

**Local Occurrences.** Townsend's big-eared bat was detected on the Main Campus in 2001, approximately 3 miles north of the Marine Sciences Campus site. None was detected by EcoSystems West (2002) during several visits to characterize the bat community in the MSC study area or at the nearby YLR.

**Habitat Assessment.** Potential foraging habitat is available on site. The species occasionally roosts in abandoned buildings and some of the sheds and portions of the old greenhouses on the project site provide potential roosting habitat. However, because the species is very sensitive to human disturbance it likely would not use the area because of ongoing human activity.

### **Western Red Bat (*Lasiurus blossevilli*)**

The western red bat is widely distributed in the western United States, Central America, and South America. The species roosts primarily in the foliage of trees and shrubs and is closely associated with riparian habitats. It feeds primarily on insects, which are taken in flight or while foraging on the ground. Breeding occurs in late summer, while fertilization is delayed until the spring. It appears that red bats in California move seasonally but do not migrate out of the state. Loss of riparian habitat has been implicated in the decline of this species. The western red bat is designated as a High Priority species by the Western Bat Working Group.

**Local Occurrences.** As reported in the 2005 LRDP EIR, in 2000 the western red bat was detected on the main UCSC campus, which is located about three miles north of the study area. Several surveys of the MSC study area to characterize bat habitat were negative in 2001 and 2002, but potential habitat was identified at the YLR (Ecosystems West 2002).

**Habitat Assessment.** Potential roosting habitat for western red bats is present in the willow patches around MSC wet depression D1, near Westland W6 (see Figure 3.4-1) and just outside the Project area in the original YLR. Foraging habitat is present throughout the study area.

### **Long-legged Myotis (*Myotis volans*)**

The long-legged myotis is found throughout much of California. It is primarily associated with coniferous forests, although it also may be found in riparian habitats. Day roosts are generally in hollow trees, rock crevices, mines, and buildings. A single young is produced each year in June or July. Maternity roost colonies may include hundreds of individuals. Long-legged myotis hibernate in California, and there are likely seasonal movements between summer and winter roosts. Its population status is poorly understood. The long-legged myotis is designated as a High Priority species by the Western Bat Working Group.

**Local Occurrences.** Long-legged myotis was detected on the main UCSC campus in 2000, approximately 3 miles north of the MSC site (UCSC 2006). None was detected by EcoSystems West (2002) during several visits to characterize the bat community on the study area and at the nearby YLR.

**Habitat Assessment.** Potential day roosting habitat is present for long-legged myotis in the existing buildings throughout the study area. The sheds and portions of the abandoned greenhouses on the proposed Project site provide potential day roosting habitat. Maternity roosts are not expected since in the study area this species is primarily associated with woodland habitats.

**San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*)**

The San Francisco dusky-footed woodrat (SFDW) occurs from San Francisco Bay south through the Santa Cruz Mountains to Elkhorn Slough and inland to the Diablo Range. The species is most common in riparian, oak woodland and scrub habitats. It constructs houses out of sticks and other debris, on the ground, or elevated in heavy brush or trees, concentrated particularly along riparian corridors and where there is a vegetative understory. Houses are often reused by successive generations, and some can grow to be six feet or more in height, while others are well-hidden and easily overlooked. Houses are used for rearing young, protection from predators, resting, food storage, thermal protection, and social interaction. Woodrat houses are used by a wide variety of native amphibians, small mammals, reptiles, and insects. The SFDW is designated by the CDFG as a Species of Special Concern.

**Local Occurrences.** SFDW houses recently have been observed in the YLR. The species is relatively common throughout undeveloped portions of north Santa Cruz County primarily in riparian, oak woodland, and coastal scrub habitats.

**Habitat Assessment.** Potential habitat is present in the dense coyote brush scrub within the study area. Habitat is also present in the willow patches near the CDFG facility and near the railroad tracks in the Upper Terrace. Suitable habitat also is present in the abandoned greenhouse area on the Project site, and along the edge of the original YLR.

**American Badger (*Taxidea taxus*)**

The American badger inhabits a variety of open habitats including annual grassland, scrub, and savanna habitats. Badgers feed primarily on rodents such as gophers and ground squirrels. They excavate burrows for den sites as well as during foraging. Burrows are often re-used, though some individuals may dig new burrows each night. The badger was once a widespread resident throughout much of California but within the last century populations have declined as the result of predator and rodent control programs, road-kills, and habitat conversion. The species is designated as a Species of Special Concern list by CDFG.

**Local Occurrences.** On 29 June 2004, a partial carcass of an American badger was found near the East Remote Parking lot at the UC Santa Cruz Main Campus, located approximately 3 miles to the northeast of the MSC (as reported in the UC Santa Cruz 2005 Long Range Development Plan EIR). There also is a 1983 record reporting a badger 4 miles northwest of Santa Cruz. Badgers were known to inhabit the UC Santa Cruz campus at least until 1979, when two individuals were inadvertently poisoned during California ground squirrel control efforts.

**Habitat Assessment.** Suitable habitat for American badgers is present throughout the study area, although they rarely persist near areas that receive regular human use such as the project site. The species is considered uncommon in Santa Cruz County, although high quality habitat appears to be present at nearby Wilder Ranch State Park and other undeveloped areas that support a mosaic of habitats in north Santa Cruz County.

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## **Wetlands, Riparian Habitat, and Other Sensitive Natural Communities**

### **Wetlands**

Under the federal Clean Water Act (detailed below), wetlands are defined by the federal government as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Thus, in order to qualify as a federal jurisdictional wetland (which is thus subject to jurisdiction of the U.S. Army Corps of Engineers [USACE; see below]), the wetland must exhibit three characteristics: wetland hydrology; hydric soils (soils formed under conditions of saturation, flooding, or ponding of long enough duration during the growing season to develop anaerobic conditions); and hydrophytic vegetation (plants that grow under conditions in which 50 percent or more of the root mass is commonly saturated). These federal criteria are detailed in *Corps of Engineers Wetlands Delineation Manual* (USACE 1987).

The California Coastal Act uses slightly different criteria, and defines wetlands as lands within the coastal zone that may be covered periodically or permanently with shallow water. These include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. In cases where wetlands may not be readily identifiable, the Coastal Commission will also rely on the presence of wetland hydrology, hydrophytes, and/or the presence of hydric soils. Under Coastal Commission practice, the hydrological conditions necessary to establish a wetland, if not otherwise apparent, may be determined by the presence of *either* wetland hydrology, hydrophytic vegetation, or hydric soils. This contrasts with the federal definition for a jurisdictional wetland, which requires that the wetland meet all three criteria (hydrology, hydric soils, and hydrophytic vegetation). The Coastal Commission generally treats wetlands, streams, riparian habitats, and open coastal waters as ESHAs, although exceptions may exist where the definition of ESHA is not satisfied. An ESHA may also be found in upland areas.

CDFG utilizes a definition more similar to that of the Coastal Commission than to the USACE's, but requires that when less than the three indicators are present, a wetland may be identified by associated fish and wildlife resources, related biological activity and wetland habitat values.

The terrace areas of the MSC includes five wetland areas (designated in the CLRDP as wetlands W1 through W5) that were formally delineated during the preparation of the CLRDP and CLRDP EIR (The Huffman-Broadway Group 2004) and determined by the USACE to meet the criteria for federal jurisdictional wetlands (Army Corps of Engineers 2008). Six additional wetland areas on the campus (wetlands W6 through W11), also delineated at that time, did not meet all three USACE wetland delineation criteria, although some of these are considered other Waters of the U.S. and also are designated in the CLRDP as ESHAs or non-ESHA wetlands, depending on habitat values. In addition, under the wetland delineation criteria recommended by Coastal Commission staff, the boundaries of the wetlands designated in the CLRDP as wetlands W1 through W4 encompass slightly larger areas than the federally delineated jurisdictional wetland boundaries, based primarily on the presence of *Baccharis*

*douglassii* (marsh baccharis), a species that is considered an obligate<sup>2</sup> wetland plant in California (USDA NCRS accessed February 2, 2011, <http://plants.usda.gov/java/profile?symbol=BADO>). Based on the soil studies on the MSC (Huffman-Broadway Group 2004 and 2011), on the MSC this species occurs both in areas that exhibit wetland hydrology and soils, and also in upland areas that do not exhibit hydric soils.

The federal jurisdictional wetland criteria are met only within the areas where the obligate species occur on hydric soils. However, the final CLRDP uses the more inclusive Coastal Commission staff-recommended boundaries to delineate wetlands and ESHAs for purposes of MSC land-use planning and management. Using the boundaries thus established, the CLRDP establishes buffers of 100 feet radius around wetlands W1 through W4 and wetlands W6 through W10, and a 100- to 150-foot-radius around wetland W5. Under the CLRDP, development is prohibited within the wetlands and ESHAs, and also within the buffers, with minor exceptions<sup>3</sup>. The boundaries of the YLR have been expanded, in compliance with the final CLRDP, to encompass all of the campus wetlands and ESHAs and the undeveloped portions of the buffer areas, which therefore are preserved in perpetuity.

In compliance with CLRDP Implementation Measures 3.3.1 and 3.4.4, wetlands biologists resurveyed the campus in 2010 to determine whether there had been any changes in conditions since the prior delineation that would necessitate revision of campus wetland delineations or ESHA boundaries. This work included field surveys and delineation studies (vegetation survey and soils testing) both prior to and during the 2010–2011 rainy season, and detailed remapping of wetland boundaries (Huffman-Broadway Group 2011). These studies did not result in any proposed changes to federal jurisdictional wetland boundaries, but did result in proposed minor expansions of the boundaries of wetlands W2, W3 and W5 under Coastal Commission wetland delineation criteria, based on the recent expansion of marsh baccharis populations beyond by contiguous with the previously-delineated wetland boundaries (note that the species also occurs as scattered individuals elsewhere in the grasslands and coastal scrub). As shown on Figure 3.4-1 (and Appendix A, Figure 5-2 of this EIR), this expansion of wetlands boundaries and the associated buffers would result in minor changes in the CLRDP land-use plan, including a small decrease in the size of Development Subarea 1, as the southern and eastern margins of this development area are now within the expanded buffers of wetlands W2 and W3. These changes—amendment of the wetland and buffer boundaries to reflect the updated delineation, and the small decrease in the size of Subarea 1—are addressed in proposed minor amendment to the CLRDP (CLRDP Amendment #1, described in Chapter 2, *Project Description*, above).

### **Riparian Habitat and Streams**

As discussed in the CLRDP EIR, wetland W1 (a historic agricultural ditch) and the channel that extends from the south end of wetland W1, south and westward to Younger Lagoon, may meet the CDFG definition for a “stream,” as defined in “Regulatory Setting,” below. The channel that connects to Younger Lagoon exhibits riparian vegetation as well. Wetland W1 meets the federal criteria for a jurisdictional wetland and the flow to Younger Lagoon has been classified as “Other Waters of the U.S.”;

<sup>2</sup> Obligate wetland plants are those which have been found to occur almost exclusively in wetlands. On the MSC, *Baccharis douglasii*, an obligate wetland species, in some instances occurs at the margins of federal jurisdictional wetlands but within upland rather than hydric soils.

<sup>3</sup> Under the CLRDP, development in wetland buffers is restricted to trails, interpretive signage, and some storm water features.

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both therefore are subject to USACE jurisdiction under the Clean Water Act and restoration work there would be subject to a Clean Water Act Section 404 permit. Under CDFG jurisdiction, a Streambed Alteration Agreement also could be required for this work. The channel below the storm water outfall opposite the NOAA facility, which is MSC wetland W11, is considered Other Waters of the U.S. Restoration work proposed at that location under the MSCI Phase A Project would be subject to the same regulatory requirements.

### **Other Sensitive Natural Communities**

As also discussed in the CLRDP, wetland W6 is a seasonal pond/freshwater marsh, a community that is rare, with limited distribution. This pond meets Coastal Commission wetland criteria and would be considered a sensitive natural community by CDFG, but is not a federal jurisdictional wetland. SRP Phase 1B would include enhancement of native vegetation around this area.

### ***Wildlife Corridors***

The CLRDP and CLRDP EIR identify the railroad corridor along the northern margin of the MSC as a potential east-west movement corridor for wildlife, possibly including CRLF. USFWS, in review of the CLRDP, recommended protection of a 100m buffer around occupied CRLF habitat in “depression D2,” located near the railroad track in wetland W2 (see Figure 3.4-1). To enhance wildlife movement habitat, the CLRDP land-use plan designates a 300-foot-wide, east-west-oriented wildlife movement corridor and buffer north of Development Subarea 1, along the northern margin of the campus (which encompasses the D2 depression), and a second 220-foot-wide wildlife corridor buffer across the campus immediately south of Development Subarea 1. The northern wildlife corridor and buffer extend through wetlands W1, W2 and W7 and their buffers. The southern wildlife corridor and buffer extend from Shaffer Road across wetlands W1, W2 and W3 and their buffers. At their western ends, both corridors are contiguous with the wetland W1 channel, from which water seasonally runs south and westward and drains via wetland W6 to the upper end of Younger Lagoon. Because the CLRDP permanently preserves most of the Upper Terrace from development and includes this land in the YLR, this land effectively serves as a wildlife corridor between Shaffer Road and the drainage that leads into Younger Lagoon. This drainage effectively provides a wildlife movement corridor along the western margin of the campus that connects the Upper Terrace and its designated east-west movement corridors to Younger Lagoon.

In addition to protecting these corridors from development, the CLRDP calls for improvement of the habitat in the designated wildlife movement corridors through removal of invasive plants and plantings of native species to provide enhanced protective cover and visual screening for wildlife movement. The CLRDP requires that this habitat enhancement be carried out in conjunction with construction of any drainage improvements for the first project north of the Delaware Avenue Extension. Development of the proposed Upper Terrace staging area and Storage Yard under the proposed MSCI Phase A Project would trigger these habitat enhancement requirements, which would be carried out as part of the SRP Phase 1B project. CLRDP Amendment #1 proposes that this enhancement planting be carried out over the seven year course of SRP Phase 1, but not necessarily concurrently with the development of the storage yard.

***Nesting and Breeding Habitat***

As noted in the wildlife descriptions above, the wetlands on the western margin of the campus may provide nesting habitat for western pond turtles (WPT). The grasslands and coyote brush scrub of the campus terraces provide suitable WPT nesting habitat.

The most recent focused CRLF surveys at the campus (EcoSystems West 2010) indicate that wetland depression D3, in wetland W2, may provide marginal breeding habitat for CRLF in wet years; however, no evidence of CRLF breeding (egg masses, tadpoles) has been observed on the MSC. Other MSC wetland areas do not appear to retain sufficient water for long enough periods to provide suitable CRLF breeding habitat.

Scrub areas around the campus may provide nesting or breeding habitat for San Francisco dusky-footed woodrats and California badgers. Woodrat nests have been observed in the brushy areas around Younger Lagoon, but woodrat houses also potentially could be present in the relatively dense patches of willow and coyote brush around the Upper Terrace, along the western and southern margins of the existing greenhouse complex, and in the brush parts of the Middle Terrace and Lower Terrace.

The dunes around Younger Lagoon provide overwintering habitat for Western burrowing owls. The MSC terrace lands also may provide suitable overwintering habitat for Western burrowing owls, particularly if suitable rodent burrows are present, but burrowing owls are not currently known to breed in Santa Cruz County. Loggerhead shrike, grasshopper sparrow, and Bryant's savanna sparrow, as well as other native birds that do not have special-status designations, may nest in brush or grasslands on the campus terrace lands. Vaux's swift potentially could nest in campus buildings, including the buildings of the greenhouse complex. Some special status bats also potentially may nest in the abandoned greenhouses and the storage sheds in Subareas 6 and 7.

***Consistency with Biological Resources Protections in CLRDP***

All development under the CLRDP is required by the Coastal Commission to be consistent with and to include relevant implementation measures of the CLRDP EIR, as conditions of Coastal Commission approval of the development. Biological resource protection measures applicable to and included in the proposed projects are listed in Section 3.10, *Land Use and Planning*, of this EIR. All areas of the MSC that are not designated for development under the CLRDP have been incorporated into the Younger Lagoon Natural Reserve. This includes all of the campus wetlands and ESHAs and the undeveloped portions of their buffers; the wildlife corridors of the Upper Terrace; the majority of land on the Upper and Lower terraces; and about half of the land on the Middle Terrace. Through inclusion of these areas into the YLR the protection and stewardship of wetlands and other sensitive natural communities on the MSC has been ensured. The management of these lands through the CLRDP Resource Management Plan (RMP) will, over time, substantially enhance the native habitat on the campus and improve habitat conditions for a range of special-status and other native plant and animal species.

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### **3.4.1.3 Regulatory Setting**

The following laws, ordinances, regulations, and standards apply to campus development and would minimize the potential for impacts related to biological resources.

#### **Federal Laws and Regulations**

##### **Federal Endangered Species Act**

Section 9 of the federal Endangered Species Act (ESA) prohibits the “take” of federally listed threatened and endangered species. The ESA defines “take” as any action that would harass, harm, pursue, hunt, shoot, wound, kill, injure, trap, capture, or collect any listed species. “Harm” includes significant habitat modification that could result in injury or death to a species or reduce the viability of the species. Federal projects, federally funded projects, or projects requiring a federal permit must comply with the ESA through a consultation with the U.S. Fish and Wildlife Service or the National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-Fisheries), or both, under Section 7 of ESA. If a proposed non-federal project may result in take of a listed species, and there is no nexus with any federal agency, an Incidental Take Permit under Section 10(a)(1)(B) of the ESA is required; a Habitat Conservation Plan (HCP) must accompany this permit application.

The reconnection of campus wetlands W1 and W2; channel improvements to reduce erosion around the outflow from wetland W6; alterations to the existing Delaware Avenue Extension roadway adjacent to wetlands W1, W2 and W3; trail work and drainage improvements along the De Anza pedestrian trail (which crosses an outlet of wetland W4); and repairs to storm water outfall west of the NOAA facility and a portion of the adjacent channel (W11) all involve restoration of or minor work within federal jurisdictional wetlands (see below), and therefore will or may require a federal Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (USACE). A 404 permit would serve as a federal nexus with the Endangered Species Act for the proposed MSC Projects. In this context, the USACE would consult with USFWS on potential effects to federal special status species and measures necessary to avoid or mitigate impacts.

##### **Clean Water Act (Section 404)**

Areas meeting the regulatory definition of “*waters of the United States*” (jurisdictional waters) are subject to the jurisdiction of the USACE. These waters may include waters “such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce, as well as tributaries to such waters and wetlands adjacent to other waters of the United States defined as waters of the United States, tributaries of waters otherwise defined as waters of the United States, the territorial seas, and wetlands adjacent to waters of the United States” (33 CFR, Part 328, Section 328.3).

USACE, under provisions of Section 404 of the Clean Water Act (1972) (CWA) and Section 10 of the Rivers and Harbors Act (1899), has jurisdiction over waters of the United States. Waters thus regulated are termed “jurisdictional waters.” Impacts to jurisdictional waters, including wetlands (a special category of water of the United States), require a permit from USACE and typically require mitigation. Impacts to wetlands often require compensation in kind to ensure no net loss of extent and function of wetlands.

The proposed MSC Projects will or may involve work in or immediately adjacent to federal jurisdictional wetlands or other waters of the U.S. in five locations: along the berm that separates wetlands W1 and W2 (the hydrological reconnection of which is required by the CLRDP and would be carried out as part of SRP Phase 1B); along the Delaware Avenue Extension, which would be partially abandoned and restored as a pedestrian path as part of MSC Phase A; possibly at the outlet of W4 along the proposed De Anza trail, where minor modifications might be required as part of trail improvements under the NEF Project; in the NOAA storm water outfall channel (W11), where minor work to address erosion would be carried out as part of MSC Phase A; and in the channel from W1 to the Younger Lagoon (where erosion repairs and restoration are proposed as part of the SRP Phase 1B Project).

### **Water Quality Certification (CWA Section 401)**

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain water quality certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. CWA Section 401 certification therefore will be applicable to the proposed projects, which will contribute to storm water discharges to Younger Lagoon via the existing NOAA outfall and also may result in increased seasonal water flow to wetland W4 (both of which are federal jurisdictional waters).

### **Migratory Bird Treaty Act**

The federal Migratory Bird Treaty Act (MBTA)(16 USC §703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, bird nests, and eggs. Disturbance of nests or nesting birds during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment, which could be a violation of the MBTA.

### **State Laws and Regulations**

#### **California Coastal Act**

The California Coastal Act of 1976 provides goals and policies that guide development within California's coastal zone to protect the natural and scenic resources; maximize public access to the coast consistent with resource conservation; assure orderly and balanced utilization and conservation of coastal zone resources; encourage coordinated planning and development of beneficial uses, including educational uses; and assure the priority of coastal-dependent and coastal-related development over other development on the coast.

The Coastal Commission applies the policies of the Coastal Act primarily through review and certification of the CLRDP. The final MSC CLRDP was certified by the Coastal Commission in 2009. Following certification, the Coastal Commission reviews Notices of Impending Development (NOIDs) submitted by the Campus, to assess consistency with the provisions of the CLRDP, which, as noted above, identifies and protects wetlands, ESHAs, and wildlife corridors on the campus, and includes an extensive suite of implementation measures to protect biological resources, as well as a Resource

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Management Plan (RMP) to guide future habitat restoration at the MSC. Applicants for a Section 404 permit to fill or alter a wetland must prepare a certification of consistency with the California Coastal Management Program, and the Coastal Commission must concur in the certification before the Section 404 permit can be issued. In all of its actions affecting wetlands, the Coastal Commission also consults with the CDFG.

### **University of California Natural Reserve System (NRS)**

YLR is one of 36 ecological reserves administered by the Natural Reserve System (NRS) of the University of California to preserve natural systems for teaching and research. Younger Lagoon and the lands around it form the original YLR. All terrace lands on the MSC not designated for development under the CLRDP were incorporated into the YLR in 2008, as required by CLRDP policy. The YLR is administered through an adaptive management plan designed to preserve and enhance the lagoon and surrounding habitat as biological resources, while providing for research, education, and public interpretation and enjoyment. The CLRDP requires consultation with the manager of the YLR regarding any action that has the potential to affect the YLR for this species.

### **California Endangered Species Act (CESA)**

Section 2080 of the CESA prohibits the “take” of state-listed threatened and endangered species. Several of the species described above are protected under CESA. The CESA defines “take” as any action or attempt to hunt, pursue, catch, capture, or kill any listed species. If a proposed project may result in “take” of a listed species, a permit pursuant to Section 2081 of CESA is required from the CDFG. Take can also be authorized through Section 2835 with an approved Natural Community Conservation Plan. A CESA permit may require significant modification of the project and or the application of mitigation measures, which are developed in consultation with CDFG. CDFG recommends consultation early in the project.

### **California Fully Protected Species**

In the 1960s, before CESA was enacted, the California Legislature identified species for specific protection under the California Fish and Game Code. These *fully protected* species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research, and relocation of the bird species for the protection of livestock. Fully protected species are described in Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code. These protections state that “...no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected [bird], [mammal], [reptile or amphibian], or [fish].” The white tailed kite, which is present in the region, is a fully protected species. Campus terrace lands include suitable foraging habitat, and low quality nesting habitat is present adjacent to the campus terraces in the lagoon portion of the YLR for this species.

### **California Fish and Game Code Section 3503 (Bird Nests and Birds of Prey)**

Bird nests are protected in California under Section 3503 of the California Fish and Game Code (CDFG 2003). Section 3503 states that it is “unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.” Disturbance during the breeding season can result in the incidental loss of fertile eggs or nestlings, or otherwise lead to

nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered take by CDFG. CDFG may issue permits authorizing take.

Section 3503.5 of the Code specifies that “It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.”

### **California Fish and Game Code Section 1602**

Activities that result in the diversion or obstruction of the natural flow of a stream, substantially change its bed, channel or bank, or utilize any materials (including vegetation) from the streambed, require that the project applicant enter into a Streambed Alteration Agreement with CDFG pursuant to Sections 1602 of the California Fish and Game Code (CDFG 2003). The definition of streams includes “intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flows.” Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife.

The proposed project includes erosion-repair restoration work in the channel of the wetland W1 drainage to Younger Lagoon and also in the NOAA storm water outfall channel that would be subject to a streambed alteration agreement.

### **Porter-Cologne Water Quality Control Act**

Areas meeting the regulatory definition of “waters of the state” are subject to the jurisdiction of the California Regional Water Quality Control Board. “Waters of the state” means any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code, Chapter 2, 13050(e)). Any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state, other than into a community sewer system, must file a report of waste discharge with the appropriate regional board (California Water Code, Article 4, 13260(a)(1)). The Central Coast Regional Water Quality Control Board administers this Act in Santa Cruz County. Any storm water discharges from the MSC Projects would be subject to these provisions.

## **3.4.2 Relevant Project Characteristics**

The proposed MSC Projects would entail continuous construction activities for a total of up to about 21 months, as detailed in Section 2 (*Project Description*) of this EIR. Intermittent restoration work for the SRP Phase 1B project could continue over a period of several years. During some or all of the continuous construction period, work could be underway at multiple construction sites.

The majority of the proposed construction work would be on previously undeveloped parts of the campus’ Middle Terrace and limited areas of the Upper Terrace. Construction activities for the CBB Project would include demolition of vacant greenhouses; ground clearing; and construction of a new lab building, a new Greenhouse Complex, new parking lots, a storm water detention basin, an earthen berm along the margin of Subarea 7, and utility connections. MSC Phase A work would include extensive excavation for new utility lines, a new Utility Yard, the Upper Terrace Storage Yard (which also would

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be used for construction staging), a new entry road, and a new dedicated pedestrian/bicycle path. It would also include decommissioning and restoration of the existing entry road as a pedestrian path, extension of an earthen berm west of McAllister Way, removal and restoration of informal parking along McAllister Way, and minor erosion repairs.

As described in detail in Section 3.9 (*Hydrology and Water Quality*), the CBB, MSCI Phases A and B and the NEF projects, which would include new hardscape, also include “low-impact development” elements for minimization of storm water runoff. Most of the hardscape would be developed on sites currently characterized by undeveloped Coyote Brush Scrub-Grassland. MSCI Phase B also would include development of one or more additional storm water detention basins on the Middle Terrace.

Under the proposed MSCI Phase A and B Projects and the CBB Project, new utility lines would be installed within the existing utility corridor along McAllister Way, along the corridor of the proposed new entry road, and along an existing unpaved utility corridor from the campus entrance that extends down the central part of the Middle Terrace (the future Middle Terrace Walk). The MSCI Phase B project also would develop a new utility corridor under a new service road parallel with Middle Terrace Walk. Under the NEF Project, a network of existing informal pedestrian paths around the campus margins would be formalized, made accessible, and extended. Several of these paths would be within the margins of designated Resource Protection Buffers within the YLR terrace lands. This type of development is allowed within Resource Protection Buffers under the CLRDP. Interpretive signage, as required by the CLRDP, would be erected along pathways. A small interpretive shelter also would be developed in the buffer of wetland W5, also as part of the proposed NEF Project. In addition, under SRP Phase 1B, limited grading would be undertaken in and adjacent to wetlands W1 and W2 to restore wetland hydrology in compliance with a CLRDP requirement; native vegetation plantings and invasive plant control and native vegetation enhancement for habitat restoration would continue; and additional work would be carried out to reduce erosion and enhance native habitat in two wetland channels that discharge to the Younger Lagoon area (the channel that runs downstream of wetland W6. The existing storm water outfall west of McAllister Way, opposite the NOAA facility) also would be restored, as part of MSCI Phase A. Both of these channels are classified as Other Waters of the U.S., and work would be subject to a 404 permit under the Clean Water Act. No other disturbance would take place within wetlands or wetland buffers.

Construction for CBB would entail temporary clearing and use of a staging area within a CLRDP-designated development area on the Middle Terrace, which would then be revegetated. A second staging area would be developed in Development Subarea 1 on the Upper Terrace to serve both the MSCI and the CBB projects. At the conclusion of construction, this area would be converted to a Storage Yard, consistent with the land-use provisions of the CLRDP. Construction of related storm water management features adjacent to this facility, as part of MSCI Phase A, would trigger a CLRDP requirement for enhancement of native vegetation along the adjacent east-west wildlife movement corridors. If upgrades of the adjacent Shaffer Road are required to provide long term access to the facility, development of safe passage features at the eastern end of designated campus wildlife corridors, to facilitate wildlife movement (particularly for CRLF) across Shaffer Road, also would be required. These features, if required, would be designed in consultation with wildlife biologists, USFWS, and CDFG.

This section assesses the potential effects to biological resources of the all of the proposed MSC Projects (CBB, MSCI Phases A and B, NEF, and SRP Phase 1B), and also of several minor amendments to the previously approved CLRDP that would be implemented in conjunction with or independently of the proposed Projects (subject to University and Coastal Commission approval). The proposed Projects are described in detail in Section 2.0 (*Project Description*) of this EIR. Amendment actions relevant to biological resources issues include Action 2 (differentiating nomenclature for terrace and lagoon areas of YLR, with respect to applicable IMs); Action 3 (expansion of wetlands and wetland buffers); Action 5 (expansion of area where native plants for restoration may be obtained); Action 9 (extension on timing of reconnection of Upper Terrace wetlands and wildlife corridor restoration plantings); and Action 10 (fencing and screening of YLR). These are addressed in relevant sections below.

### **3.4.3 Applicable CLRDP EIR Mitigation Measures**

The CLRDP EIR includes two mitigation measures related to biological resources that are applicable to resource issues raised by the proposed Projects. These are CLRDP Project-Specific Mitigation Measure 4.4-1 (CRLF surveys for projects on the Upper Terrace); and CLRDP Project-Specific Mitigation Measure 4.4-2 (identification and protection of nesting raptors and other special-status birds during the nesting season, which includes identification and protection of burrowing owls during the nesting season). The full texts of these measures are provided in Appendix D of this EIR. However, MSC Projects project-specific mitigation measures are substituted for the CLRDP mitigation measures, as detailed below, for specific applicability to the proposed MSC Projects, and would provide mitigation of impacts that would be equally or more effective than the mitigation measures for which they are substituted.

CLRDP implementation measures relevant to biological resources issues and applicable to the proposed MSC Projects are included in the impact assessment blocks, below, and also are presented in full, with description of how each is applied to the proposed MSC Projects, in Appendix C of this EIR.

### **3.4.4 Impacts and Mitigation Measures**

#### **3.4.4.1 Standards of Significance**

The following standards of significance are based on Appendix G (CEQA Checklist) of the CEQA Guidelines. For the purposes of this EIR, the project would have a significant impact with regard to biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Conflict with any applicable policies protecting biological resources
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other applicable habitat conservation plan

### 3.4.4.2 Analytical Method

The potential for impacts associated with site biological resources were evaluated through assessment of project plans in light of existing information on the biological resources of the campus (Ecosystems West 2002; CLRDP EIR, Section 4.3). Biological records searches were undertaken to update campus and regional data pertinent to the site, and biologists carried out surveys for special-status species and assessed the potential for the proposed projects to result in impacts to special-status and native species and sensitive natural communities (Biosearch Associates et al. 2011). Consistent with CLRDP IMs 3.3.1 and 3.4.4, wetland biologists conducted surveys of campus wetlands and ESHAs to verify and redelineate wetland boundaries and buffers (Huffman-Broadway Group, Inc. 2011), and they also proposed measures to avoid or minimize adverse effects to wetlands that could be affected by storm water system repairs. Consistent with CLRDP IMs 3.2.1, 3.2.12, and 4.3.2, the Campus also has initiated consultation with CDFG and USFWS regarding appropriate protections for special-status species and habitat that could be affected by the Projects, and is in the process of preparing a permit application for a Clean Water Act Section 404 permit for submittal to the U.S. Army Corps of Engineers in relation to proposed wetland restoration and other project activities that could temporarily affect wetlands.

### 3.4.4.3 Project Impacts and Mitigation Measures

#### ***Special-Status Plants***

#### **Potential Destruction or Loss of Special-Status Plants**

<b>MSC Projects Impact BIO-1</b>	If special-status plants are present in the study area, project construction could result in adverse impacts, including mortality of individuals or population groups by crushing or habitat destruction.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/Project Elements</b>	CBB Project (lab, greenhouses, parking and staging areas) MSCI Phase A and Phase B Project (trails, roads, parking lots, Utility Yard, Upper Terrace Storage Yard, staging areas, any utility alignments)

	<p>outside of existing paved corridors)</p> <p>NEF Project (parking lot, trails and trail margins, overlooks)</p> <p>SRP Phase 1B Project (areas to be graded for reconnection of W1 and W2; any grading for check dam and ponded area north of Delaware Extension)</p>
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<p><b>MSC Projects Mitigation Measure BIO-1:</b> A qualified botanist will conduct up to three focused surveys for target special-status plant species on and within the full extent of all vegetated areas that will be subject to project activity (ground disturbance, placement of spoils, construction vehicle parking or traffic, etc.) for each project element during the spring-summer (April-August) blooming period, within two years prior to the beginning of construction. If no special-status species are observed during the focused surveys, no additional mitigation is necessary. If special-status plants are observed, the population will be mapped and quantified and a suitable buffer zone established (based on species requirements, proximity to the work area, and other site specific factors), and other protection measures, such as fencing around the population to protect it from disturbance, will be implemented as determined necessary by the biologist. If the population cannot be avoided by the project, impacts to the population shall be quantified and regulatory agencies (California Department of Fish and Game, and/or U.S. Fish and Wildlife Service, as appropriate) contacted for guidance or permitting, depending on the species affected, and additional measures that may be identified by regulatory agencies to mitigate adverse effects, such as soil stockpiling, transplanted, and/or seed collection and propagation, would be implemented.</p>
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP EIR concluded that no special-status plants are present on the terrace lands of the MSC and that none is likely to be present. This conclusion was based on three years of focused surveys for special-status plants (reported in EcoSystems West 2002). The absence of special-status plants was attributed to the long-term past disturbance, including cultivation, and the invasion of non-native species on these lands. It therefore was concluded that development under the CLRDP, including the proposed projects, would not have the potential to result in significant impacts to special-status plant species.

**Project Impact.** As described above, no special-status plants were detected during reconnaissance surveys of the campus conducted in 2010, but some suitable habitat components for 28 special-status plants species were identified within and adjacent to the project study area. In the nine years that have elapsed since the last focused botanical survey conducted at the campus for the CLRDP in 2002, it is

possible that some special-status species could have colonized the areas. Because the 2010 survey was undertaken outside of the blooming season for most of the special-status plants for which suitable habitat is present, it could not be definitively determined that no special-status plants are present in the project study areas. For these reasons, it is possible that special-status plants could be present on the project site and, if present, could be damaged or destroyed by construction of the proposed Projects. This is a potentially significant impact.

Implementation of MSC Projects Mitigation Measure BIO-1 would ensure that any special-status plants that might be present in the project study area are detected so that they can be avoided and protected during construction. If avoidance is not possible because the special-status plants are within development footprints, the campus will consult with regulatory agencies and will comply with all permitting and regulatory requirements, which may include implementation of additional measures to mitigate impacts to the population, as identified above. Implementation of BIO-1 will ensure that the impact of the projects to special-status plant species is less than significant. In addition, the extensive native habitat restoration efforts underway on the campus, under the CLRDP RMP and the previously approved SRP 1A, would continue under the proposed SRP Phase 1B project; the project will continue to restore and enhance native habitat and improve conditions for the survival and spread of native plant species within the YLR.

Under proposed CLRDP Amendment #1, Action 5, the area from which native plant propagules for campus habitat restoration under the Specific Resources Plan Phase 1 could be obtained would be expanded slightly. CLRDP IM 3.2.14 calls for propagules to be collected from coastal habitats within 1 mile of the MSC and seaward of Highway 1, if feasible. The RMP Scientific Advisory Committee (SAC) recommended that this area was unduly restrictive and that it might not be possible to gather the necessary propagules within this limited area, particularly since much of it is under cultivation. Under the proposed amendment, this area would be expanded to include the first marine terraces and lower reaches of the second marine terraces inland from the coast, in northern Santa Cruz and southern San Mateo counties. This would make it feasible to obtain the necessary propagules, which would be of similar genetic strains to those found on the campus. With the proposed amendment, the intent of IM 3.2.14 and associated requirements of the CLRDP RMP with respect to sources of native plantings would be achieved.

**Potential Degradation of Native Habitat in YLR through Failure to Control Invasive Plant Species in Development Area**

<b>MSC Projects Impact BIO-2</b>	Clearing of a staging area in campus grasslands and subsequent reseeded could introduce or indirectly result in the spread of non-native species into the YLR
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	Implementation Measure 2.3.5 – Interim Weed Abatement Measures for Undeveloped Land Within Development Zones.
<b>Applicable Projects/Project Elements</b>	CBB MSCI Phase A and Phase B Projects (Middle Terrace staging area)
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-2A:</b> In the first fall after use of the staging area is discontinued, gravel and groundcover cloth

	will be removed, the ground surface will be scarified to alleviate any compaction from construction. Then, the entire area will be seeded or replanted with a non-invasive erosion control seed mix or a mix composed of appropriate, locally-collected native grasses and forbs, selected in collaboration with YLR staff from the species listed in the approved SRP Phase 1A. Temporary irrigation will be supplied as needed to ensure that plantings are adequately established. Alternatively, the campus may elect to retain the groundcover cloth and gravel and maintain the area as a temporary parking lot until such time as it is developed.
	<b>MSC Projects Mitigation Measure BIO-2B:</b> If the area is replanted, the Campus will ensure that the restored area will be managed to prevent seed set of annual species and will monitor this area and will remove high priority weeds and control other weedy invasive annual grasses and herbs, consistent with IM 2.3.5 (Interim Weed Abatement Measures for Undeveloped Lands within Development Zones) until such time as the area is developed.
	<b>MSC Projects Mitigation Measure BIO-2C:</b> Grounds Services in collaboration with YLR staff will assess the effectiveness of the measures above in controlling the spread of invasive plants from this site into the YLR annually. If it is determined that the staging site has become a significant source of invasive plants that could migrate into YLR habitat, the Campus will till the area and reseed it annually with sterile grasses, and these planting will be maintained until such time as the site is developed.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP EIR did not identify an impact from CLRDP development with respect to introduction of invasive species, because the CLRDP and its associated RMP include implementation measures that call for the control and removal of invasive plants and ongoing monitoring of habitat on the terrace lands for highly invasive plants. CLRDP IM 2.3.5 requires that, in conjunction with implementation of CLRDP RMP Management Measures (RMP MM 1 and RMP MM 2), which call for removal of invasive non-native plants and tilling and mowing to discourage growth of non-native annuals and enhance native annuals on protected lands, the Campus also shall remove high priority weeds and control other weedy invasive annual grasses and herbs within the undeveloped portions of development zones until such time as the areas are developed.

**Project Impact.** Under the proposed projects, a temporary staging area would be developed within the development area north of the CBB lab site for use during construction of the proposed projects. At the start of construction, this area would be cleared of vegetation and covered with ground cloth and several

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inches of gravel. At the conclusion of construction, gravel and ground cloth would be removed and the ground surface would be scarified and revegetated. Typically, such an area would be vegetated through hydroseeding with grasses, which would grow quickly to hold the soil in place. However, hydroseeding, even with a native grass mix, particularly where the ground has been loosened by scarification, may provide an environment susceptible to opportunistic colonization by local invasive non-native species, which may be able to out-compete the native species. Clearing and revegetation of a staging area that may not be developed for some period of years potentially could result in introduction of undesirable species and genetic stocks and increased colonization of the area by invasive and non-native plants that could spread to the YLR. If this occurred, the development would be inconsistent with the goals of the CLRDP with respect to protection and restoration of native vegetation.

In compliance with CLRDP IM 2.3.5, restoring the staging area would include management and monitoring to ensure high priority weeds and weedy invasive annual grasses are removed. Subsequently, to minimize the potential colonization of the site by invasive species that might then spread into the YLR, the area would be managed and the campus would include the area in the ongoing program of invasive plant control. The area would be monitored yearly, and if it appears to be a source for the spread of non-native invasive plants, additional management including tilling, mowing, or hand weeding would be undertaken. With the implementation of these measures, the potential for the restoration of the staging area to adversely affect YLR habitat would be less than significant.

### **Special-Status Wildlife and Wildlife Nesting and Breeding Sites**

Special-status species discussed in the CLRDP EIR, which are or may be present in the project vicinity but for which there is no habitat within the project area (black swifts and tidewater goby) are not addressed below. Black swifts potentially may nest on ocean cliffs on the campus, but the proposed projects do not include any actions that would affect any of these cliffs. Tidewater goby are known to be present in Younger Lagoon, but the proposed project would not affect the lagoon either directly or, because of the stringent storm water controls included in project design, indirectly through effects to water quality (see Section 3.9, *Hydrology and Water Quality*).

Two special-status wildlife species are known to inhabit the terrace lands of the MSC: the California red-legged frog (CRLF) and the western pond turtle (WPT). As discussed in background sections above, subsequent to preparation of the CLRDP EIR CRLF have been found at two additional locations on campus, and WPT, not formerly known to be present, have been found on campus. Several special-status bird species have been sighted periodically on or near the terrace lands, as described in the CLRDP EIR. Potential habitat also is present in the grasslands and scrub of the terrace lands for several special-status terrestrial species. Several CLRDP Implementation Measures (IMs) put forth in the CLRDP and CLRDP EIR mitigation measures, identified below, are applicable and are included in the proposed project. The implementation of these measures is expected to both minimize negative effects to special-status wildlife and improve the undeveloped open space and expanded YLR through long-term restoration. As the result of changing conditions on site, and new findings or revised assessments since the certification of the CLRDP EIR, several additional potential impacts and mitigation measures are identified, either to address species that previously were not believed to be present (WPT) and/or for which no suitable habitat appeared to be present at the time of the preparation of the CLRDP EIR. The mitigation measures

identified below would provide additional protection based on more recent research and the current conditions on site.

**Potential Construction Impacts to California Red-legged Frog**

<b>MSC Projects Impact BIO-3</b>	Construction activity along roadways and site clearing and grading could result in direct mortality to CRLF in portions of the work area that support appropriate cover, should the individuals be present during construction.
<b>Applicable CLRD Mitigation/Implementation Measures</b>	<ul style="list-style-type: none"> <li>• Project-Specific Mitigation Measure 4.4-1 applies to CRLF surveys for Upper Terrace projects. MSC Projects MM BIO-3, which applies to development throughout the campus, is substituted for the current project.</li> <li>• Implementation Measure 3.2.4 - Habitat enhancement outside development zones</li> </ul>
<b>Applicable Projects/Project Elements</b>	<ul style="list-style-type: none"> <li>• CBB Project (lab, greenhouses, parking and staging areas)</li> <li>• MSC Ph. A and Ph. B Project (trails, roads, parking lot, Utility Yard, Upper Terrace Storage Yard, staging areas, any utility alignments outside of existing paved corridors)</li> <li>• NEF Project (parking lot, trails and trail margins, overlooks)</li> <li>• SRP Phase 1B Project (areas to be graded for reconnection of W1 and W2; any grading for check dam and ponded area north of Delaware Extension); work in W6 to Younger Lagoon channel</li> </ul>
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-3A:</b> Within two weeks prior to the start of construction, and each time a new crew starts work, a qualified biologist will present a worker education program and associated documentation to all new construction personnel at the project site. The on-site foremen will ensure that all construction personnel and subcontractors receive a copy of the written biological education materials. The education program shall include a description of the CRLF and its habitat, the general provisions of the Endangered Species Act, the necessity of adhering to the Act to avoid penalty, and measures that will be implemented, specific to the project and the work boundaries of the project, to avoid affecting CRLF.
	<b>MSC Projects Mitigation Measure BIO-3B:</b> In consultation with a qualified biologist (see MSC Projects Mitigation Measure BIO-15 [Biological Mitigation Coordination]), the Campus will ensure that an exclusion fence for CRLF and western pond turtle is installed around

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	<p>each work area that contains vegetation that could provide appropriate cover for CRLF and/or appropriate nesting habitat for western pond turtle (see MSC Projects Impact BIO-6 below), prior to construction, to prevent CRLF and western pond turtle from moving onto the site. Areas that will be disturbed by SRP Phase 1B activities, road and trail construction and utility construction will be subject to separate mitigation measures, as exclusion fencing would not be effective or practicable for these areas.</p> <p>Fencing alignments will be determined as follows: During development of project specifications and construction drawings, the project biologist will review site-work, grading and other pertinent plans with the UCSC Project Manager to determine locations where exclusion fencing for frogs and turtles (as described below) would be 1) effective in excluding wildlife from construction activity areas, 2) could be employed without unduly hindering construction activity, and 3) appears more likely than allowing free night movement through the construction zone to benefit the target species. To minimize unnecessary exclusion of wildlife that may safely pass through, and subject to consultation between the qualified biologist and the project construction manager, areas where disturbance will be short term and/or temporary may be subject to biological monitoring during vegetation clearing and/or during construction, rather than to fencing.</p> <p>The agreed-upon fencing alignments will be marked on the plans during biological coordination, as specified in Mitigation Measure BIO-15, and included in the project specifications. Prior to any surface disturbance at each location, a qualified biologist will meet in the field with the UCSC project manager and construction foreman to adjust the fencing alignment and timing of erection and removal based on the habitat that will be affected, as well as on the configuration and location of specific construction tasks. The alignments as shown on plans will be subject to adjustment by mutual agreement between the biologist, the project manager and the construction contractors, as necessary to ensure wildlife protection, without unnecessarily impeding construction.</p> <p>Installation of fencing will be monitored by a qualified biologist. Exclusion fence materials may be high-grade nylon silt-fencing, plywood or other appropriate materials. The base of the fence shall be buried at least 6 inches and it shall extend at least 2.5 feet above grade and shall surround the entire exclusion area. If necessary, an appropriate gate shall be engineered, in consultation with a biologist experienced in implementation of these provisions, to access construction areas that excludes the target species at night, but allows egress by workers and</p>
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	<p>equipment during the day. Roads and pathways necessary to access existing facilities will not be fenced or gated. A cover-board (4 by 4-foot 1/2-inch square of plywood) shall be placed at approximately 100-foot intervals outside the exclusion fence to provide predator protection for small animals that encounter the fence. Each cover-board shall be elevated approximately two inches using two attached 6-inch wooden blocks. The elevated edge of each cover-board shall be placed flush against the outside of the exclusion fence. The cover-boards will be labeled with signage to ensure they are not disturbed, and each shall be regularly inspected by the biological monitor to ensure that they remain in place.</p> <p>Fencing may be removed, upon approval of the qualified biologist, when all construction-related activities that could harm or kill CRLF or damage turtle nests (see MSC Projects Impact BIO-6, below) are complete; generally, when the majority of exterior work is complete.</p>
	<p><b>MSC Projects Mitigation Measure BIO-3C:</b> Immediately prior to vegetation removal at each project element/work site, including both fenced and unfenced sites, a qualified biologist will survey each work site for CRLF. The biologist will then monitor the initial removal of vegetation in each work area, including the work areas within exclusion fencing and unfenced areas, including trail alignments, utility alignments outside of existing roadways, and the areas of grading proposed for SRP Phase 1B wetland work. Next, vegetation will be cleared, with hand-held equipment, to a height of 3–6 inches above grade. The qualified biologist will then repeat the inspection before any ground disturbance or heavy equipment movement into the area. If CRLF are observed in the work area at any time during this process, ground disturbing work will be postponed and the USFWS contacted for guidance.</p>
	<p><b>MSC Projects Mitigation Measure BIO-3D:</b> Subsequent to vegetation removal, a qualified biologist will inspect every work area each morning prior to the start of construction activity, until all surface-disturbing activities are complete. If no CRLF are observed during the morning inspection, the biologist will depart. After all potential habitat is cleared within the work area, daily monitoring will cease, but the biologist will inspect exclusion fencing weekly and the contractor will repair fencing as identified by the biologist, by nightfall on the same day. If CRLF are observed on or near the work area at any time, work shall cease in proximity to the observation and a qualified biologist and the USFWS will be contacted immediately. Full-time biological monitoring and/or other mitigation measures may then be required.</p>

	<b>MSC Projects Mitigation Measure BIO-3E:</b> Construction work and all construction vehicle movement on the site will be restricted to the hours between dawn and dusk. In addition, construction vehicles and heavy equipment will be restricted from parking at night along road margins except where roads immediately abut existing development. The biological monitor will inspect the area around and under each piece of equipment not parked within the exclusion areas, prior to equipment movement each morning.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP EIR concluded that development under the CLRDP would not affect CRLF breeding habitat. Further, development would avoid effects to dispersing CRLF because the CLRDP land-use plan established a buffer and wildlife corridor around the area on the campus (wet depression D3 in wetland W2 at the campus northern margin) where the species had been observed. The potential impact to CRLF therefore was considered less than significant.

To further reduce the less-than-significant impact, the CLRDP identified Project Specific Mitigation Measure 4.4-1, which was applied to development on the Upper Terrace (the only location where CRLF have been observed as of 2002). This measure requires that prior to construction on the Upper Terrace a qualified biologist will conduct a survey for CRLF of the area subject to grading and construction. If CRLF are observed, grading will be delayed and the campus will consult USFWS to determine whether a permit will be required for compliance with the Endangered Species Act, and/or to identify measures to avoid take of individual frogs. The biologist also will conduct training sessions for key construction personnel to describe the importance of the species, the need to restrict work to designated area, and procedures to avoid harm or harassment of CRLF.

**Project Impact.** As detailed above, during CRLF surveys in 2010 (Ecosystems West Consulting Group 2011) CRLF were observed both in wet depression D3 (associated with wetland W2) on the Upper Terrace and also in a new location, wet depression D1, south of wetland W6 on the Middle Terrace. In addition, a dead CRLF was observed on the roadway near the Seymour Center parking lot on the Lower Terrace. Based on this new evidence, it appears that CRLF are more widely distributed on the campus, at least seasonally, than previously known. The study area provides non-breeding aquatic habitat for CRLF whenever standing water is present, as well as potential upland habitat for CRLF. Based on these findings, it appears that frogs may be moving across or around the upland areas of the Middle and Lower terraces, as well as in the wildlife corridor on the Upper Terrace. It therefore is concluded that CRLF could be moving throughout the upland areas that would be subject to vegetation removal, grading, and ongoing disturbance during construction and may shelter, during movement, in places such as brush, moist areas, drains, under leaf litter, in rodent burrows, or under equipment or stockpiles. Frogs are most likely to be moving through the area during wet weather and during the night hours, but could shelter within the construction area during the day.

Based on the fact that only a single road-kill has been reported on the site despite regular heavy use of the roads and facilities, the number of frogs moving across the site is likely very small. However, if sheltering

CRLF are present on development sites during construction or move into or across development sites during construction, individuals could be injured or killed. For the proposed Project, MSC Projects Mitigation Measure BIO-3 has been identified as a substitute for CLRDP Project Specific Mitigation Measure 4.1-1 to reduce the potential to encounter or harm CRLF during development throughout the campus. With the implementation of BIO-3, the project would not have a potential adverse effect upon the species and the impact under CEQA would be less than significant. However, if the projects result in the harassment, injury or death of CRLF, this would be considered a take under the Endangered Species Act. It is anticipated that the projects will be subject to a federal permit under Section 404 of the Clean Water Act. In this case, the USACE will perform a Biological Assessment and a Biological Opinion will be developed in consultation with the USFWS regarding whether the projects could result in a take of CRLF. If it is determined that the effect of the project would be adverse, additional mitigation measures could be required as part of the federal permitting process.

#### **Western Burrowing Owl Winter Burrows**

<b>MSC Projects Impact BIO-4:</b>	Adult western burrowing owls could be killed if they occupy a burrow within a work area that will be disturbed during construction.
<b>Applicable CLRDP Mitigation/Implementation Measures:</b>	CLRDP Project Specific Mitigation Measure 4.4-2 applies to the potential to encounter burrowing owls during the nesting season. MSC Projects Mitigation Measure BIO-4 is substituted, for the MSC Projects, to address the potential for impacts to wintering burrowing owls.
<b>Applicable Projects/Project Elements</b>	Construction of all the projects
<b>Significance:</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-4:</b> A qualified biologist will conduct a survey following CDFG guidelines (1995) for wintering burrowing owls during the winter season immediately preceding the start of construction. If the species is detected within the project area, the Campus will contact CDFG for guidance regarding feasible methods to protect owls during construction, and will implement CDFG recommendations to avoid potential impacts to owls.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** Western burrowing owls have not been known to nest in Santa Cruz County for many years. However, wintering owls have been observed in the project vicinity, which suggests the possibility of nesting. The CLRDP EIR concluded that the development under the CLRDP has the potential to result in adverse impacts to western burrowing owls that could be nesting on development sites during construction. Potential impacts to burrowing owls are addressed in the CLRDP in the context of potential impacts to nesting raptors generally, in Project Specific Mitigation Measure 4.4-2. The identified mitigation measures were considered applicable only to the nesting season, February 1 through August 31. The CLRDP EIR (Section 4.3) concluded that the potential for nesting raptors to be present on the site

is low and that there is abundant alternative raptor nesting habitat in the region. Therefore, the probability of impacts to nesting raptors, including burrowing owls, is low and, with the incorporation of the mitigation measure, the impact was considered less than significant.

**Project Impact.** As detailed above, western burrowing owls have been sighted in the YLR several times in recent years, although there still has been no evidence of nesting. Recent assessment (Biosearch Associates et al 2011) determined that the potential for burrowing owls to nest on the project sites is low because the tall grass and brush is only marginally suitable habitat, and because of the low number of California ground squirrel burrows that provide potential underground refugia. However, it is possible that burrowing owls could be present in campus grasslands and scrub within the project areas described above, in natural or atypical burrows during the winter. Construction activity for the proposed projects has the potential to result in injury or death to wintering owl individuals, should a nest be present. MSC Projects Mitigation Measure BIO-4 therefore is substituted for the previously-identified CLRDP Project Specific Mitigation Measure 4.4-2, which focused mitigation only on the nesting season. With the implementation of MSC Projects MM BIO-4, the Projects would not result in a substantial adverse effect upon the species, and the impact therefore would be less than significant.

**Construction Impacts to American Badgers**

<b>MSC Projects Impact BIO-5</b>	Ground disturbance during construction in grassland and scrub could result in injury or death of American badgers, should they be present.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/Project Elements</b>	CBB Project (lab site, parking lot site, staging area) MSCI Project Phase A and Phase B (new road route, parking lot, Utility Yard, Upper Terrace Storage Yard, staging areas, detention basins, any utility alignments outside existing paved corridors) NEF Project (parking lot site, Overlook G site) SRP Phase 1B Project (areas to be graded for reconnection of W1 and W2; any grading for check dam and ponded area north of Delaware Extension)
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-5:</b> Within 15 days prior to surface disturbance in each project area, a qualified biologist will conduct a pre-construction survey for badger dens and diggings at each project site and within 200 feet of project margins (exclusive of the portion of the YLR surrounding the lagoon, which is already fenced and protected). If a badger den is detected within the project site or the buffer zone (exclusive of the YLR, where no disturbance will occur), a wildlife-friendly exclusion fence shall be installed (steel T-posts and yellow nylon rope or similar material), 25-feet from the den in all directions, and CDFG shall be contacted for guidance. Additional

	mitigation measures recommended by CDFG will be implemented to ensure that any badgers present in or near project areas are protected or appropriately relocated.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP EIR did not identify American badgers as among the species present, or for which potential habitat is present at the MSC.

**Project Impact.** The species is uncommon in Santa Cruz, and badgers tend to avoid areas where there is much human activity. However, as reported by Biosearch Associates et al (2011), although the potential for American badger to be present on the MSC is low, suitable habitat is present throughout the grasslands and coastal scrub on the campus and high-quality habitat appears to be present at nearby Wilder Ranch State Park, the Moore Creek Preserve, and other undeveloped areas that support a mosaic of habitats in north Santa Cruz County. A partial badger carcass was found on the Main Campus of UC Santa Cruz in 2004. If a badger should be present in a burrow on the project sites during construction, construction could result in its injury or death. MSC Mitigation Measure BIO-5 would ensure that any occupied badger burrows on the site are protected or relocated by a qualified biologist with appropriate CDFG permits, to avoid this impact. With implementation of this measure, the impact would be less than significant.

#### **Western Pond Turtle Upland Movement and Nesting**

<b>MSC Projects Impact BIO-6:</b>	Construction work in grasslands and open coyote brush scrub habitat could result in death of adult western pond turtles if they attempt to nest in a work area during construction, and eggs or hatchlings could be killed if a nest is deposited within a work area.
<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	None
<b>Applicable Projects/Project Elements</b>	All projects (vegetation clearing, grading, excavation and use of heavy equipment off road)
<b>Significance:</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-6:</b> <u>The construction crew training described in MSC Projects Mitigation BIO-3A, above, also shall include information on avoidance and protection of western pond turtles and their nests. In addition</u> <del>Subject to the specifications set forth in MSC Projects Mitigation BIO-3A, above,</del> prior to April 15 during the year of construction (prior to the beginning of nesting season), work areas shall be enclosed with a wildlife exclusion fence as specified in Mitigation Measure BIO-3B (above), before surface disturbance occurs, to reduce the chance that turtles may deposit eggs within the work area. If construction begins before April 15, the exclusion fence requirement specified in Mitigation Measure BIO-3B ( <del>above</del> ) is still required. In

	areas that will be temporarily disturbed, such as for installation of underground utilities or trail construction, a qualified biologist shall search for any evidence of western pond turtle nesting prior to surface disturbance. If a western pond turtle or nest is discovered, CDFG will be contacted for guidance regarding appropriate protection or, if necessary, relocation of the nest.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP EIR determined that although the western pond turtle theoretically could be present on the site due to the presence of suitable aquatic habitat, the species was assumed not to be present because none was observed during surveys in 2002. No impact was identified in the CLRDP.

**Project Impact.** Wildlife surveys on the MSC in 2009 and 2010 (Ecosystems West Consulting Group 2009, 2010) identified a gravid western pond turtle on the MSC in wet depression D1, near wetland W6. Pond turtles may travel long distances in seeking a nest site, and the open grasslands of the MSC Middle and Upper terraces provide suitable nesting habitat for pond turtles. Given that a large amount of open space in the Upper and Middle terraces that provides potential nesting habitat for western pond turtles has been incorporated into the YLR for permanent preservation, loss of localized areas of habitat as the result of project development is not considered a significant impact. However, nests deposited within construction sites could be damaged or destroyed by grading and other construction activities. Turtles moving to or from a nest site could be injured or killed by grading and construction vehicles. With the implementation of MSC Mitigation Measure BIO-6, the project would not result in a substantial adverse effect to the species, and the impact would be less than significant.

#### **Nesting and Breeding Success of Special-Status and Native and Migratory Birds**

<b>MSC Projects Impact BIO-7</b>	Direct removal of vegetation, including grasses and shrubs, could result in destruction of nests of special status and other native and migratory birds. Construction activity, particularly in Subareas 6 and 7 in close proximity to Younger Lagoon, could disturb nesting birds, if present, which could result in nest abandonment and adversely affect breeding success.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	MSC Projects MM BIO-7A and -7B are substituted, for the MSC Projects, for CLRDP Project Specific Mitigation Measure 4.4-2 to provide additional specificity in application of nesting bird protections for these particular projects.
<b>Applicable Projects/ Project Elements</b>	All projects (vegetation clearing, grading, excavation, demolition and construction)
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-7A:</b> If work in any project site area must commence during the avian breeding season (February 1 to August 31), a qualified biologist shall conduct a pre-construction breeding bird survey throughout areas of suitable habitat within 300 feet of the work

	area within 15 days prior to the onset of any construction activity. If nesting birds or active nests of any species are observed within a project work area or surrounding buffer, an appropriate buffer zone shall be established around each active nest to protect nesting adults and their young from construction disturbance. The size and configuration of buffer zones for each nest site shall be determined by a qualified biologist in consultation with CDFG based on site conditions and species. Construction work within the buffer zone will be postponed until all the young are fledged, as determined by a qualified biologist.
	<b>MSC Projects Mitigation Measure BIO-7B:</b> In addition, to avoid interference by construction noise with bird nesting within YLR, construction work in Development Subareas 6 and 7 (the Greenhouse Complex and adjacent Parking Lot C, plus berm and fence alternations along YLR margin) will not begin during the peak nesting season (March 1 through August 1) unless the biological monitor determines that starting work during this time period will not impact birds that are present. If work begins after August 1 or before March 1, it may continue during the nesting season.
	<b>MSC Projects Mitigation Measure BIO-7C:</b> Berm construction in Development Subarea 7 shall be completed as early as possible in the construction period, such that the berm will provide buffering for YLR from noise and activity associated with subsequent construction.
	<b>MSC Projects Mitigation Measure BIO-7D:</b> Prior to berm construction, Subarea 6 will be used for the least noisy construction staging activities, such as contractor offices and parking.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP EIR determined that the development areas on the MSC include potential nesting habitat for raptors and special-status birds and that raptor nesting and breeding could be adversely affected by development activity. The EIR identified CLRDP Project Specific Mitigation Measure 4.4-2, which calls for surveys of projects areas that include potential nesting habitat prior to construction during the nesting season, and for protection of active nests during construction. The CLRDP EIR concluded that the potential for nesting raptors to be present on the site is low, and that there is abundant alternative raptor nesting habitat in the region. The probability of impacts to nesting raptors therefore was considered to be low and, with the incorporation of the mitigation measure, the impact was considered less than significant.

**Project Impact.** Recent analysis confirms the assessment that grasslands and scrublands in the project area include potential nesting habitat for several special-status birds, as well as nesting habitat for other native and migratory birds. The updated analysis also identified the potential for construction of the

proposed projects to create intermittent startling noise off site in the original YLR (lagoon and adjacent areas) that could disturb nesting birds in the vicinity of the proposed Greenhouse Complex. MSC Projects Mitigation Measures BIO-7A through -7D therefore are substituted for CLRDP MM 4.4-2, to provide specific procedures for pre-construction nesting bird survey and protections, and to provide specific protections in relation to construction at the greenhouse complex site. With the implementation of these measures, the potential impact of the projects to nesting birds would be less than significant.

**Potential Mortality of Special-Status Bats Due to Disturbance of Day or Maternity Roosts**

<b>MSC Projects Impact BIO-8:</b>	Potential habitat for special-status bat species is present in the greenhouses slated for demolition. If greenhouses and associated structures are occupied by special-status bats, demolition could result in destruction of day roosts or maternity roosts.
<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (greenhouse demolition)
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-8:</b> The Campus will ensure that a qualified biologist conducts a pre-construction survey for special-status bats of the greenhouses and associated sheds before demolition occurs. If special-status bats are detected, the campus will contact CDFG for recommendations on appropriate measures to be taken to exclude bats such that they would not be harmed, and these measures will be implemented prior to demolition. If maternity roosts that would be displaced by demolition or construction are identified, the Campus will consult with CDFG to determine whether artificial replacement roosts should be installed in appropriate habitat nearby, and carry out CDFG recommendations.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** Although the CLRDP EIR determined that the MSC includes potential habitat for several special-status bats, none was identified during the 2002 survey and no potential impacts were identified.

**Project Impact.** Project assessment by Biosearch Associates (2011) suggests that the abandoned greenhouses and sheds in the existing campus greenhouse complex may provide suitable roosting or nesting habitat for some bat species that are listed by CDFG as Species of Special Concern. Although these special-status species tend to avoid areas subject to human activity, many of the greenhouses and associated storage areas have been vacant for several years and could potentially have become attractive to bats. If bats are present, the demolition of these structures in the course of the MSC Projects could

result in injury or mortality of bats or, potentially, interference with breeding success if maternity roosts are present. The implementation of MSC Projects MM BIO-8 would ensure that the MSC Projects would not result in substantial adverse effects to any special-status bat species, so the impact to special-status bats would be less than significant.

#### **San Francisco Dusky-footed Woodrats (SFDW), Potential Nesting and Breeding Sites**

<b>MSC Projects Impact BIO-9</b>	Demolition, vegetation removal, and ground disturbance for project construction could result in direct impacts to SFDW houses, injury or mortality of woodrats and their young (should they be present), or interference with woodrat breeding.
<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	None
<b>Applicable Projects/Project Elements</b>	All projects (demolition, vegetation clearing and grading)
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation <u>Measure</u> BIO-9A:</b> A pre-construction survey for the SFDW will be conducted within 15 days prior to demolition, vegetation removal or ground disturbance at each site. If no active SFDW houses are found, no further mitigation is necessary at that location. If SFDW houses are found and they can be avoided, a buffer zone will be erected around the SFDW house, using a temporary fence that does not inhibit the natural movements of wildlife (such as steel T-posts and a single strand of yellow rope or similar materials) and all construction activity will be prohibited within that zone. If one or more SFDW houses cannot be avoided, and relocation is necessary, CDFG will be contacted for approval for a qualified and permitted biologist to live-trap and relocate individual rats. For each house lost, one stick pile “house” will be relocated or created in the nearest suitable habitat outside the construction zone, in the animal’s home range if possible, and the live-trapped individual will be released into the stick pile, to minimize the potential impact.
	<b>MSC Projects Mitigation <u>Measure</u> BIO-9B:</b> In addition, in the vicinity of each relocated house, preferably within the relocated animal’s home range, SFDW habitat will be enhanced, in consultation with a biologist with SFDW experience, by placement of an anchor log and, if sufficient suitable material is not readily available, additional woody debris suitable for creation of additional nests, to ensure that there are sufficient suitable nest sites for SFDW already present as well as any that are relocated.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** As assessed in the CLRDP EIR, house sites and home ranges of San Francisco dusky-footed woodrat (SFDW) were presumed to be present in the dense scrub and brushlands around Younger Lagoon, but no SFDW or their nests had been observed at the time of that assessment. Since the area around Younger Lagoon would not be subject to development under the CLRDP, it was concluded that, even if woodrats were present, the impact of CLRDP development would be less than significant.

**Project Impact.** More recently, SFDW nests have been observed around on the brushy slopes around Younger Lagoon. Potential habitat for the SFDW is present wherever coyote brush scrub is dense. Although no woodrat houses have been observed on the terrace lands (the lands that would be affected by the proposed Projects), the quality of potential SFDW habitat on the MSC terrace lands has increased since 2002, due to the increased density of coastal scrub vegetation cover. The abandoned sheds and the storage areas in Subarea 6 also provide suitable habitat for SFDW, particularly because of their close proximity to the dense brush around Younger Lagoon. The proposed MSC Projects include demolition of abandoned sheds and greenhouses in Subarea 6. In addition, project development would entail removal of brush at the sites of the CBB lab, the Subarea 7 berm; parking lots and staging areas; the Utility Yard; the Upper Terrace Storage Yard; and the riparian corridor along wetlands W1 and W6 that could be affected by SRP Phase 1B. Brush removal and grading for various elements of the MSC Projects, and demolition in the greenhouse area, could result in destruction of woodrat houses, and potential injury or mortality of adults and young if they are present. Under MSC Projects Mitigation Measure BIO-9A, if a SFDW is found in the project area in a location that cannot be avoided by construction, a qualified biologist, in consultation with and through permit from CDFG, would live trap SFDW individuals, relocate the house to the closest suitable habitat that would not be subject to further disturbance, and release the individual into the relocated house. This would minimize impacts to any SFDW that may be present in the project area. Under MSC Project Mitigation Measure BIO-9B, if instances occur in which houses are displaced, additional woody debris piles of local trimmings of appropriate size (if sufficient suitable material is not already present), suitably anchored against large logs or other natural features, would be installed in the relocation area under the direction of a qualified biologist. This would serve to enhance habitat adjacent to the project area to accommodate any increase in SFDW population density as the result of moving of SFDW houses, consistent with current biological practices under CDFG recommendations, and would mitigate the potential impacts to SFDW to a less-than-significant level.

***Wildlife Movement***

**Potential for Fencing to Interfere with Wildlife Movement into and out of YLR**

<b>MSC Projects Impact BIO-10</b>	New fencing to be installed west of McAllister Road could potentially hinder the movements of CRLF, western pond turtles and other wildlife into and out of the area immediately surrounding Younger Lagoon such that vulnerability to predation would be increased. In addition, project construction traffic along roadways could increase CRLF barriers to movement into upland habitat and susceptibility to death by road-kill.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	Implementation Measure 3.2.3 - Protection and Enhancement of Wildlife Movement

	Implementation Measure 3.5.1 – Protection and Enhancement of YLR Habitats  Implementation Measure 3.5.8 - Protective Measures for YLR in Middle Terrace
<b>Applicable Projects/Project Elements</b>	MSCI (new or revised fencing associated with restoration of informal parking and berm improvements along west side of McAllister Way)  All projects (construction traffic along McAllister Way and Delaware Avenue Extension)s
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-10A:</b> Any new or replaced fencing will be designed and installed in such a way as to provide 4 inches of clearance between the ground and the bottom of the fence to allow small animals to pass beneath.
	<b>MSC Projects Mitigation Measure BIO-10B:</b> Wherever the paved access road crosses terrace portions of the YLR, no parking will be allowed along the road from sunset to sunrise.
	<b>MSC Projects Mitigation Measure BIO-10C:</b> No construction activity that involves movement of vehicles or heavy equipment on or off road will be allowed during night hours, that is, from 30 minutes after sunset to 30 minutes before sunrise unless approved by a qualified biologist.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The CLRDP includes land-use designations and implementation measures designed to enhance wildlife habitat, including wildlife movement corridors on the campus. The CLRDP land-use plan formally designates and protects two parallel wildlife corridor across the Upper Terrace of the campus and includes implementation measures that require the enhancement of these corridors and a third north-south wildlife movement corridor along the channel that flows between wetlands W1 and W2 and Younger Lagoon. Through implementation of the CLRDP RMP, vegetation cover and seasonal riparian habitat along protected wildlife corridors would be enhanced to improve connectivity for movements of animals, potentially including CRLF, between the Moore Creek Drainage and Antonelli Pond to the east; the protected areas around Younger Lagoon to the west; and Wilder Creek farther to the west. The CLRDP also requires the Campus to coordinate with adjacent property owners to promote the extension of the wildlife corridor eastward from the MSC to Antonelli Pond.

The CLRDP also includes IM 3.2.3 to protect and enhance wildlife movement. Among other things, this measure requires fencing and vegetation screening around new development to assist in protecting wildlife from indirect adverse effects from development and human-generated noise, light, and activity.

IMs 3.5.1 and 3.5.8 explicitly require fencing, a berm, and/or vegetation screening along the YLR boundary west of McAllister Way to protect YLR from unauthorized human intrusions. The CLRDP (Section 6.8.2) includes fencing/barrier design guidelines. Among these is the requirement that fencing and barriers shall be sited and designed so that they do not interfere with wildlife movement between undeveloped areas of the campus and/or at the Campus border.

**Project Analysis.** MSC Mitigation Measure BIO-10A would ensure that fencing along the west side of McAllister Way would be designed consistent with CLRDP design guidelines, taking into account recent biological findings that indicate potential CRLF and WPT activity on the campus. Proposed CLRDP Amendment #1, Action 10, would revise the location of new YLR fencing, allowing it to be placed along the McAllister Way side of the earthen berm rather than on the YLR side. This amendment action, proposed by the YLR manager, would improve protection of the YLR from human intrusion and would have no effect upon wildlife movement into and out of the original YLR.

MSC Mitigation Measure BIO-10B and -10C would minimize the potential for CRLF and WPT that might be moving during the night hours to be injured as the result of sheltering under or around parked construction vehicles near the margins of natural areas or crossing roads or moving through unfenced areas during night hours.

Proposed CLRDP Amendment #1, Action 10, would revise the location of new YLR fencing, allowing it to be placed along the McAllister Way side of the earthen berm rather than on the YLR side of the berm. This amendment, proposed by the YLR manager, would improve protection of the YLR from human intrusion, and would have no effect upon wildlife movement.

With the implementation of these measures, the potential for roads and fencing to serve as barriers to wildlife movement, including potential movement of CRLF and WPT in upland habitat, would be reduced to a less-than-significant level.

**Potential for Night Lighting to Interfere with Wildlife Movement and Activity within YLR and Terrace ESHAs**

<b>MSC Projects Impact BIO-11</b>	Greenhouse lighting could adversely affect movements of nocturnal mammals and roosting birds in the YLR if night lighting is spilled into this area.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	Implementation Measure 4.3.1 - Visual Intrusion into YLR Implementation Measure 4.3.4 - Building Lighting
<b>Applicable Projects/Project Elements</b>	CBB Project (greenhouses)
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-11:</b> The walls and roofs of the greenhouses will be equipped with appropriate shades, which will be used during periods of night lighting, or will be screened with earthen berms and vegetation designed and positioned in such a way as to exclude direct light from the greenhouses from spilling into YLR

	during night time.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** As discussed above, the CLRDP includes measures and design guidelines to minimize the impact of development on wildlife movement in natural areas. Specifically, the CLRDP includes lighting restrictions and guidelines. IM 4.3.1 requires that development adjacent to YLR shall be sited and designed so that activity and direct light shall not be visible from within YLR. IM 4.3.4 requires that interior lighting shall be located so as to minimize the potential for light and glare to be visible from within Resource Protection, Resource Protection Buffer, and Wildlife Corridor areas. CLRDP Section 6.6.1 includes lighting design guidelines to avoid light spill into YLR and other natural habitat areas. With the inclusion of these design guidelines and measures, the CLRDP EIR concluded that the proposed project would not result in a significant impact with respect to wildlife movement and wildlife corridors.

**Project Impact.** The proposed CBB greenhouses would be located near the margin of the YLR and would include substantial lighting that may be lit during late afternoon, evening, and nighttime hours during certain times of year. This lighting would likely be visible in the YLR and could cast direct or indirect light into the YLR if not screened. MSC Mitigation Measures BIO-10 would ensure that the CLRDP design measures and IMs are appropriately applied to provide adequate screening of greenhouse light to ensure that it does not spill into the YLR. With implementation of this mitigation measure, the impact of the projects with respect to light spill into YLR that might interfere with wildlife movement would be less than significant.

### ***Wetlands, Riparian Habitat, and Sensitive Natural Communities***

#### **Minor Fill of Wetlands in Course of Restoration**

<b>MSC Projects Impact BIO-12</b>	Project activities would result in minor disturbance to and fill into wetlands.
<b>Applicable CLRDP Mitigation/ Implementation Measures:</b>	Implementation Measure 3.2.1 - Restoration of Wetlands on the Marine Science Campus Implementation Measure 3.2.2 – Management of Terrace Wetlands Implementation Measure 3.2.10 – Natural Areas Habitat Management Implementation Measure 3.5.1 – Protection and Enhancement of YLR Habitats Implementation Measure 3.5.3 – Protection of YLR Resources
<b>Applicable Projects/Project Elements</b>	SRP Phase 1B W1/W2 reconnection; planting work in W4, W5 and around W6; erosion repairs in channel from W1 to Younger Lagoon MSCI Phase A restoration of main entry road, NOAA storm water outfall (W11) NEF Project, De Anza trail crossing of W4 outlet

<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-12A:</b> During the first rainy season after brush wattles are installed in the outflow channel downstream of wetland W1, a biologist will inspect the channel after each major storm to assess whether wattles have been effective in slowing flows and decreasing erosion, and have not introduced any unanticipated effects, such as increased erosion under the wattles. If new erosion is observed, the wattles would be removed and an alternative solution for erosion repairs proposed.
	<b>MSC Projects Mitigation Measure BIO-12B:</b> A silt fence will be erected along the north side of the Delaware Avenue Extension prior to any work on the roadbed removal project and will be maintained throughout construction on this project element. If any silt or other material is inadvertently dropped into wetland W3, it will be removed by hand shovel.
	<b>MSC Projects Mitigation Measure BIO-12C:</b> Erosion repairs at the NOAA outfall west of McAllister Way (W11) will be confined to hand placement of rocks, or in conjunction with “soft” engineering solutions, such as placement of bush wattles in the channel, which will serve as a wetland restoration measure. Fence design will minimize or avoid intrusion into the channel.
	<b>MSC Projects Mitigation Measure BIO-12D:</b> At the point where the proposed De Anza pedestrian trail crosses the outlet culvert at the east end of wetland W4, the trail crossing will be designed to avoid fill into the wetland and outflow channel. This may be accomplished by use of buttresses placed outside wetland margins to support an elevated walkway, or any other solution that ensures that no fill is spilled into the wetland during construction.
<b>Residual Significance</b>	No impact or less than significant impact

**Previous Analysis.** All campus wetlands are protected by CLRDP Policy 3.2, by their inclusion in the YLR and by the designation of buffers between the wetland margins and the margins of development. The CLRDP permits only very limited and non-intrusive development within the wetland buffers: pedestrian trails; interpretive overlooks and signage for public visual access and education; and, in two areas, passive storm water infiltration facilities (detention ponds). The established buffers are considered adequate to ensure that the development proposed does not degrade the habitat area, as required by Coastal Act Section 30240. Other IMs, referenced above, prohibit lighting and noise intrusions into campus wetlands and ESHAs and protect them from intrusions by humans and domestic animals. Implementation of Policy 3.2 also would enhance and protect sensitive plant communities on the terrace area. The CLRDP EIR concluded that, due to the inclusion of these measures and policies in the CLRDP,

there would be no significant impacts to wetlands and other sensitive habitats from the implementation of the CLRDP.

**Project Impact.** SRP Phase 1B would implement CLRDP IM 3.2.1, which calls for the connection, expansion, and restoration of wetlands on the Upper Terrace, and for enhancement of plant biology of W1, W2, and W6 to provide an improved north-south wildlife movement corridor on the western margin of the campus. It would also implement some elements of IM 3.2.2 and 3.2.10, in continuing vegetation restoration efforts on the terrace lands, including in wetlands W4, W5 and W6 (a sensitive natural community) and the outflow channel from W1. SRP Phase 1A has been provided to the Coastal Commission, as required by the IM. SRP Phase 1B would implement those portions of the plan that would directly affect jurisdictional wetlands and therefore would be subject to a Clean Water Act Section 404 permit. As a restoration project, it is anticipated that the effects of implementation of SRP Phase 1B upon campus wetlands would be beneficial. Relevant mitigation as identified above also would be applied to the SRP Phase 1B Project to ensure that the grading and vegetation disturbance required for the restoration would not adversely affect special-status or protected wildlife, or special-status plants.

As part of the SRP Phase 1B program of restoration, it has been proposed that willow wattles be installed in the outflow channel below wetland W1 to slow flows and reduce the amount of silt in waters flowing to Younger Lagoon. MSC Projects Mitigation Measure BIO-12A would be implemented to provide for monitoring of the channel after placement of the wattles to ensure that the desired effect is achieved. If water flow under the wattles continues or if erosion is increased, the wattles would be removed and an alternative solution, such as strategic hand placement or rocks or logs to create step pools, would be designed and implemented in consultation between biologists and hydrological engineers. With the implementation of this measure, the impact of this restoration project with respect to wetland fill would be less than significant

CLRDP IM 5.1.6 requires the removal of more than half the width of the Delaware Avenue Extension roadbed, and restoration of the uncovered width with native plantings. The goals of this measure are to increase buffering of the southern margin of wetland W3 while maintaining the former roadway elevation, which has effectively served as a hydrologic dam to maintain terrace hydrology. MSC Projects Mitigation Measure BIO-12B would be implemented during project construction to ensure that there is no inadvertent fill to this wetland. With the implementation of this measure, no impact would occur with respect to wetland fill.

The CLRDP Stormwater Concept Plan describes erosion in the outfall channel (W11) downstream from the NOAA storm water outfall west of McAllister Way and recommended reinforcement of the channel to reduce erosion and improve water quality. This channel is classified as Other Waters of the U.S. MSC Projects Mitigation Measure BIO-12C will be implemented to ensure that erosion repairs at this location are comprised of features compatible with wetland restoration, which will permit revegetation of the channel with wetland plants. In addition, if fencing across the channel to restrict human entry into the YLR is required, implementation of the fencing specifications in BIO-12C will ensure that no fill is inadvertently placed in the wetland channel. With the implementation of these measures, the impact of repairs at this location will be beneficial with respect to wetland restoration and less than significant with respect to wetland fill.

CLRDP IM 6.1.3 requires development of a series of pedestrian trails around the campus. An existing unpaved trail runs along the route of the proposed De Anza Trail, along the campus east margin. This route crosses over a partially crushed culvert through which outflow from wetland W4 runs under the trail and then under the De Anza community wall. Water from the wetland sometimes backs up at the culvert and flows across the roadway at a low point in this area. Development of an ADA-accessible trail across this low point could result in inadvertent minor fill into the wetland outflow. Implementation of MSC Projects Mitigation Measure BIO-12D would ensure that trail design at this location would not result in inadvertent fill to the wetland, and the impact of trail construction with respect to wetland fill therefore would be less than significant.

Several of the actions under proposed CLRDP Amendment #1 are relevant to campus wetlands. Under Amendment #1, Action 3, the areas of wetlands W2, W3, and W5 and the associated buffers, would be expanded slightly, primarily to reflect the spread of marsh baccharis as delineated in 2010. This action would be beneficial to the wetlands in that it would increase the protected and buffered wetland area. Under proposed Action 9, the timing of reconnection of wetlands W1 and W2 prescribed by the CLRDP RMP would be extended, such that the SRP Phase 1B actions could be undertaken in steps throughout SRP Phase 1 (that is, within the first seven years of implementation of the RMP). This recommendation is consistent with the recommendations of the Scientific Advisory Committee established to guide implementation of the RMP, and would provide opportunities to monitor results and make small adjustments in the reconnection strategy to better improve hydrological functioning over time. The impact of proposed CLRDP Amendment #1 with respect to wetlands would be beneficial and less than significant.

**Indirect Impacts to Wetland Hydrology**

The potential for deep excavation of utility lines and other development under the proposed projects to result in indirect impacts to wetland hydrology is discussed in Section 3.9, *Hydrology and Water Quality* (MSCI Impact HYD-1). That section identifies mitigation measures to be incorporated into construction that would ensure that construction would not result in adverse indirect impacts to wetland hydrology.

**Sensitive Natural Communities**

<p><b>MSC Projects Impact BIO-13</b></p>	<p>The proposed MSC Projects and CLRDP Amendment #1 would involve minor project activity within terrace ESHAs and/or could indirectly affect sensitive natural communities in the YLR through the introduction of increased light, noise and activity in the vicinity.</p>
<p><b>Applicable CLRDP Mitigation/Implementation Measures</b></p>	<p>Implementation Measure 3.2.2 – Management of Terrace Wetlands            Implementation Measure 3.2.3 - Protection and Enhancement of Wildlife Movement            Implementation Measure 3.4.1 -            Implementation Measure 3.4.2 -            Implementation Measure 3.4.3 -</p>

	<p>Implementation Measure 4.3.1 – Additional Measures to Protect Habitat Areas</p> <p>Implementation Measure 4.3.2 - Visual Intrusion into Terrace ESHA and Other Areas Outside of Development Zones</p> <p>Implementation Measure 4.3.4 - Building Lighting</p>
<b>Applicable Projects/Project Elements</b>	<p>Construction activities for all projects</p> <p>Operation of CBB and NEF projects</p>
<b>Significance</b>	Less than significant

**Previous Analysis.** All campus wetlands and other ESHAs are protected, under the CLRDP, by their inclusion in the YLR and by the designation of buffers between the wetland margins and the margins of development. The CLRDP permits only very limited and non-intrusive development within the wetland buffers: pedestrian trails, interpretive overlooks and signage for public visual access and education and, in two areas, passive storm water infiltration facilities (detention ponds). The CLRDP EIR concluded that, with the inclusion of these protections, the project would not result in significant adverse impacts to sensitive natural communities.

**Project Impact.** The proposed SRP Phase 1B Project is a wetland and habitat restoration project that would involve earth moving and fill in wetlands W1 and W2, and replanting of native vegetation in other ESHAs that are sensitive natural communities, on the YLR terrace lands. As restoration efforts to be implemented in compliance with the CLRDP, and with the implementation of relevant mitigation measures described above, the SRP Phase 1B work would be beneficial to sensitive natural communities, and the impact would be less than significant.

The other projects listed above each would involve work in proximity to terrace ESHAs and/or the Younger Lagoon Reserve (Lagoon and Lagoon Bluffs) and therefore pose the potential for indirect impacts with respect to increased night light, noise, and activity in the vicinity of these sensitive natural communities. However, each of these projects complies with and incorporates the relevant IMs listed above to ensure that the indirect effects of development upon sensitive natural communities are minimized. The impact therefore would be less than significant.

Proposed CLRDP Amendment #1 involves several actions that potentially could affect sensitive natural communities. Action 2 would clarify language in the CLRDP to distinguish between implementation measures that were intended to apply to the original YLR as it existed prior to CLRDP certification, and the YLR terrace lands that were subsequently added to the YLR. In particular, IM 3.4.3 specifies that the YLR shall not be exposed to noise from human activity on the terrace lands in excess of 60 dBA CNEL, and IM 4.3.1 requires that development on the terrace lands shall be designed such that activity and direct light from CLRDP development will not be visible within the YLR. The standards set by these two implementation measures were intended to apply to the original YLR, but were not intended to apply to the YLR terrace lands. None of the proposed Projects intrudes into terrace ESHAs, and each proposed development is subject to lighting restrictions, and includes screening, noise buffering, and other elements

designed to minimize indirect effects to wetlands and other sensitive natural communities, consistent with applicable CLRDP requirements. Action 2 therefore would not lessen the protections afforded to sensitive natural communities, and the impacts of this action therefore would be less than significant.

Proposed CLRDP Amendment #1 Action 4 would amend CLRDP provisions regarding windbreak trees (that were included in the CLRDP in part to provide screening of light and activity associated with development from the YLR and terrace ESHAs) to permit the alternative use of tall shrubs. This amendment was made at the recommendation of the RMP Scientific Advisory Committee, as trees are not native to this site. The species proposed tend to spread invasively and could impair native habitat restoration efforts in the YLR. Shrub screening, in combination with earthen berms, selective fencing, shielding of lighting, and noise controls around generators and other noise-producing equipment are expected to be equally effective in protecting wildlife in sensitive communities in the YLR from disturbance, and the impacts of this action therefore would be less than significant.

Proposed CLRDP Amendment #1 Action 5 would expand the geographic area from which native plants to be used for restoration within the YLR (including on the terrace lands) could be obtained. This expansion was recommended by the Scientific Advisory Committee, which considered the geographic area originally specified to be impracticably restrictive. The expanded area for obtaining plants and seeds would still maintain local genetic sources and improve the effectiveness of native habitat restoration, a beneficial effect. The impact of this action therefore would be less than significant.

Proposed CLRDP Amendment #1 Action 6 would revise the layout and locations of public access pedestrian trails on the terrace lands to reduce potential human intrusions in close proximity to terrace ESHAs, while still providing ample opportunity for public viewing. The effect to sensitive natural communities would be beneficial and the impact of the action would be less than significant.

**Consistency with the Applicable Land-Use Plan**

<b>MSC Projects Impact BIO-14</b>	The proposed MSC Projects include elements that are inconsistent with some biological resources provisions of the CLRDP. These minor inconsistencies would be rectified by proposed minor CLRDP Amendment #1, and none would result in significant physical effects to the environment.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	Implementation Measure 3.2.14 - Non-Invasive Native Plant Species Required  Implementation Measure 3.3.2 - Update CLRDP With Respect to Wetlands  Implementation Measure 3.5.5 - Siting of Windbreak/Screening Trees  Implementation Measure 3.14.1 - Natural Areas Protection
<b>Applicable Projects/Project Elements</b>	All

<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Significance after Mitigation</b>	Not applicable

**Previous Analysis.** The CLRDP includes numerous policies, design standards, and implementation measures to ensure the protection of biological resources, including wildlife, sensitive natural communities, and wetlands. CLRDP IM 3.3.1 requires predevelopment reevaluation of campus wetlands and IM 3.3.2 requires that the CLRDP be amended to reflect any changes in wetland boundaries and associated buffers. CLRDP IM 3.4.4 and 3.4.5 similarly require reevaluation of the extent of campus ESHAs and update of the CLRDP to reflect amended ESHA boundaries and buffers. IM 3.14.1 requires that terrace lands not designated for development in the CLRDP be incorporated in the YLR and that the CLRDP be amended to reflect this redesignation.

**Project Impact.** As described above, as the result of the expansion of the marsh baccharis community adjacent to wetlands W2 and W3 since approval of the CLRDP, wetland W2 has expanded slightly eastward and wetland W3 has expanded slightly northward, such that their required buffers now encroach upon Development Subarea 1, site of the Upper Terrace staging area and Storage Yard. In response to this change, proposed CLRDP Amendment #1, Action 1, would revise the CLRDP land-use diagram to incorporate updated wetland boundaries as delineated in the 2011 wetland study, to expand wetland buffers in conformance with these new boundaries, and to conform the southern and eastern margins of Development Subarea 1 to the revised wetland buffers (see figures in Appendix A of this EIR). The footprint of the proposed Upper Terrace staging area and Storage Yard, described in the Project Description above as an element of the MSCI Phase A Project, has been reduced to conform with the updated wetland buffer margins. Therefore, development of this project element would not encroach upon any wetland buffer. Proposed minor amendments with respect to protection of sensitive natural communities from indirect impacts and the details of wetland and other habitat restoration are discussed under previous headings.

The proposed Projects incorporate and are consistent the biological resources protections of the CLRDP in all major respects, and the impact of the Projects with respect to inconsistency with the CLRDP would be less than significant. With the proposed minor amendments, there would be no impact with respect to inconsistency with the biological resources provisions of the CLRDP. Consistency with the CLRDP is addressed in more detail in Section 3.10, *Land Use*.

**Potential Effects of Simultaneous Construction of Multiple Projects at the MSC**

<b>MSC Projects Impact BIO-15</b>	Construction of the MSC Projects could result in unanticipated biological resources impacts as multiple actions are conducted simultaneously or on overlapping schedules, if high quality and consistent communication between project biologist(s) and project managers is not maintained
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<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/Project Elements</b>	All
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure BIO-15:</b> A qualified biologist or biologists will be identified as Biological Mitigation Coordinator, prior to the start of the construction documentation phase of the project to be involved in coordination and communication of biological mitigation requirements throughout project planning and construction. The responsibilities of the Biological Mitigation Coordinator will include: review of project specifications to ensure that biological mitigation measures are accurately conveyed to contractors; review of project plans to advise on the need for and specific placement of exclusion fencing for each project elements; assistance with regulatory consultation as needed; attendance at regular meetings with project managers and contractors to ensure that biological mitigation measures are appropriately included in the construction schedule to ensure that these measures are effective; and coordination of biological monitoring.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** This issue was not addressed in the CLRDP EIR.

**Project Impact.** As identified above, construction activities for the proposed MSC Projects could be underway on several areas of the campus simultaneously. One or more of these projects would have the potential for short-term impacts to several special-status species, to nesting birds and other nesting and breeding special-status wildlife, to wildlife movement, and to wetlands. In each case, the mitigation measures included in or applied to the Projects would avoid, minimize, and/or mitigate these effects such that the impact would be less than significant. Furthermore, the expansion and protection of the YLR under the CLRDP, and the continuing enhancement of natural areas under proposed projects such as SRP Phase 1B provide substantial areas of protected natural habitat on the campus, the quality of which will continue to improve through the habitat enhancement activities already implemented and those which would be carried out under the proposed MSC Projects. None of the projects developed under the CLRDP will be permitted to infringe upon the CLRDP-designated wildlife movement corridors or the YLR.

Nonetheless, some of the mitigation measures are complex, and if timing or locations of implementation are not coordinated among all project parties, there is a potential that some elements could be mistimed or overlooked. MSC Projects Mitigation Measures BIO-15 would be implemented to ensure that the timing of biological mitigation measures is well coordinated, both among the various measures and among the various projects. This would ensure that the complex suite of mitigation measures is well coordinated and carefully monitored by biologists who are appropriately qualified to oversee and advise implementation. The implementation of this measure would provide appropriate oversight to ensure that the full suite of

identified biological resource mitigation measures is appropriately implemented, such that impacts to biological resources would be less than significant.

#### 3.4.4.4 Cumulative Impacts and Mitigation Measures

<b>MSC Projects Impact BIO-16</b>	Cumulative development in the west side of Santa Cruz and at the MSC could affect biological resources, but these effects would be minimized through compliance the City's General Plan and Local Coastal Program and with the CLRDP.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/Project Elements</b>	All
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required.
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The cumulative context for biological resources that could be affected by development of the MSC under the CLRDP is future development in the west side of Santa Cruz.

The CLRDP EIR concluded (pp. 3.4-71 to -73) that development in the west side has the potential to affect special status plants that might be present but that MSC development would not contribute to this impact because no special status plants had been identified at the MSC. With respect to special status species, the CLRDP EIR concluded that, with the protection measures included in the CLRDP and CLRDP EIR, MSC development would not result in a loss of breeding or aestivation habitat or take of individual CRLF, and that other development in the west side of Santa Cruz would similarly have less-than-significant impacts to CRLF because potential development areas do not lie between breeding habitats, and parcels adjacent to the Moore Creek movement corridor area already developed. Nests of special status birds and raptors would be protected both on the campus and in the cumulative study area because all projects would include similar protections to avoid construction disturbance. CLRDP development would not result in loss of wetland habitat and, while effects to wetlands elsewhere in the region could not be estimated, the complex of applicable regulatory programs makes it likely that effects to other wetlands likewise would be avoided or minimized such that cumulative impacts would be less than significant. Cumulative development in the west side area could adversely affect wildlife movement, particularly if the vacant parcels between Shaffer Road and Antonelli Pond were developed. The contribution of CLRDP development to this cumulative impact would be less than significant, because of the extensive open land protected on the MSC site, and because of the designation of wildlife corridors to remain undeveloped and to be enhanced for wildlife movement on the MSC. The CLRDP also commits the University to coordinate with adjacent property owners and the City, in the event of future development in these areas, to provide for the extension of MSC wildlife movement corridors to Antonelli Pond, such that the cumulative impact would be less than significant.

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The City's General Plan and Local Coastal Program include numerous policies to protect natural resources, including the biological resources of the west side of Santa Cruz. Future development in the west side will be required to comply with these plans, and MSC development is required to comply with the CLRDP: thus, cumulative development would not conflict with applicable plans and policies for resource protection. Cumulative development in the west side, including development under the CLRDP, would result in increased human population in the west side, and an increase in domestic pets, which could lead to increased noise and activity that could disturb local natural areas. City plans and policies regulate human use of these areas and take these factors into account. The CLRDP prohibits dogs and cats from the MSC and provides for trails to be separated from sensitive natural areas and for public education regarding resources values that, in conjunction with the protections provided under the CLRDP, would ensure that the cumulative impact to biological resources from increased population and development would be less than significant.

**Project Impact.** The majority of on-going development in the vicinity of the MSC consists of infill development in relatively urban areas, although there are some parcels of land in the Santa Cruz west side that have remained undeveloped for several decades, and that may be subject to development over the next decade through projects such as the City's proposed desalination plant, which could be sited on the parcel between the MSC and Antonelli Pond, and a recently-approved multi-use development further to the east. This ongoing development has similar potential to result in biological resources impacts to those identified for campus development, with respect to wildlife movement, special status plant and animal species, and sensitive natural communities. However, as noted above, development off campus is subject to General Plan and Local Coastal Program provisions designed to protect biological resources. Under the CLRDP, about 70 of the 98 acres that comprise the MSC are permanently protected from development by inclusion in the YLR. The CLRDP RMP sets forth an extensive program of habitat restoration that is already underway and that will be fully implemented on these protected lands over the next 20 years. The protected area includes all of the wetlands and other designated ESHAs on the campus, a total of about 18 acres, plus designated development buffers around each. Campus development under the CLRDP is also required to include low-impact development measures and best-management practices for storm water control to ensure that the proposed projects do not diminish the quality of wetland or ocean habitats. In addition, the CLRDP includes an extensive suite of land-use controls and environmental protections to ensure that proposed development on the 98-acre MSC would not make a significant contribution to cumulative biological resources impacts. The proposed MSC Projects would comply with and implement all relevant provisions of the CLRDP, and the biological mitigation measures identified above would further ensure that the effects of the proposed development upon biological resources would be reduced to less-than-significant level. The proposed CBB Project includes light shielding and vegetation and noise screening to minimize indirect effects to wildlife and natural areas. SRP Phase 1B would also implement wetland restoration and native vegetation enhancement elements that would benefit campus biodiversity and wetland functioning. The MSC Projects' contributions to the cumulative impacts of regional development upon biological resources therefore would be less than significant and would not be cumulatively considerable.

### 3.4.5 References

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**Table 3.4-1**  
**Special-Status Plants with Potential to Occur on UCSC MSC and Study Area<sup>1</sup>**  
*Bold text indicates species has been observed or suitable habitat is present on or near the project site*

Species	Status	Typical Habitat	Habitat Assessment of Study Area
<i>Amsinckia lunaris</i> <b>bent-flowered fiddleneck</b>	List 1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland, 3-500 m. Blooms March-June.	<b>Suitable habitat present in Non-native Grassland.</b>
<i>Arabis blepharophylla</i> <b>coast rock cress</b>	List 4.3	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub (rocky), 3-1,100 m. Blooms February-May.	<b>Suitable habitat present in Coastal Scrub, Coastal Bluff Scrub, and some Non-native Grassland.</b>
<i>Arenaria paludicola</i> marsh sandwort	List 1B.1, SE, FE	Sandy openings in freshwater or brackish marshes and swamps, 3-170 m. Blooms May-	No suitable habitat present in project footprint.
<i>Calandrinia breweri</i> <b>Brewer's calandrinia</b>	List 4.2	Chaparral, coastal scrub (sandy or loamy, disturbed sites and burns), 10-1,220 m. Blooms March-June.	<b>Suitable habitat present in Coastal Scrub.</b>
<i>Campanula californica</i> swamp harebell	List 1B.2	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, freshwater marshes and swamps, north coast coniferous forest (mesic), 1-405 m. Blooms June-October.	No suitable habitat present in project footprint.
<i>Carex comosa</i> bristly sedge	List 2.1	Coastal prairie, valley and foothill grassland, marshes and swamps (lake margins), 0-625m. Blooms May-September.	No suitable habitat present in project footprint.
<i>Carex saliniformis</i> <b>deceiving sedge</b>	List 1B.2	Coastal prairie, coastal scrub, meadows and seeps, coastal salt marshes, 3-230 m. Blooms in June (sometimes July).	<b>Potential marginal suitable habitat present in mesic areas of Non-native Grassland and Coastal Scrub.</b>
<i>Chorizanthe robusta</i> var. <i>robusta</i> <b>robust spineflower</b>	List 1B.1, FE	Maritime chaparral, cismontane woodland, coastal dunes, coastal scrub (sandy or gravelly), 3-330 m. Blooms April-September.	<b>Suitable habitat present in Coastal Scrub.</b>

<sup>1</sup> List compiled from Ecosystems West (2002) and searches of the CNDDDB (CDFG 2010) and CNPS Online Inventory (CNPS 2010) records for the Santa Cruz, Davenport, Felton, Soquel, and Laurel USGS 7.5' quads, and other lists and publications (refer to Biosearch Associates et al. 2010).

**Table 3.4-1**  
**Special-Status Plants with Potential to Occur on UCSC MSC and Study Area<sup>1</sup>**  
*Bold text indicates species has been observed or suitable habitat is present on or near the project site*

Species	Status	Typical Habitat	Habitat Assessment of Study Area
<i>Collinsia multicolor</i> <b>San Francisco collinsia</b>	List 1B.2	Closed-cone coniferous forest, coastal scrub, 30-250 m. Blooms March-May.	<b>Suitable habitat present in Coastal Scrub.</b>
<i>Elymus californicus</i> California bottlebrush grass	List 4.3	Broadleafed upland forest, cismontane woodland, north coast coniferous forest, riparian woodland, 15-470 m. Blooms May-August.	No suitable habitat present in project footprint.
<i>Fritillaria agrestis</i> <b>stinkbells</b>	List 4.2	Chaparral, cismontane woodland, pinyon juniper woodland, valley and foothill grassland (clay), 10-1,555 m. Blooms March-June.	<b>Suitable habitat present in Non-native Grassland.</b>
<i>Grindelia hirsutula</i> var. <i>maritima</i> <b>San Francisco gumplant</b>	List 1B.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland (sandy), 15-400 m. Blooms June-September.	<b>Suitable habitat present in Non-native Grassland, Coastal Bluff Scrub, and Coastal Scrub.</b>
<i>Holocarpa macradenia</i> <b>Santa Cruz tarplant</b>	List 1B.1, FT, SE	Coastal prairie, coastal scrub, valley and foothill grassland (often clay, sandy), 10-220 m. Blooms June-October.	<b>Suitable habitat present in Non-native Grassland.</b>
<i>Horkelia cuneata</i> ssp. <i>sericea</i> <b>Kellogg's horkelia</b>	List 1B.1	Closed-cone coniferous, maritime chaparral, coastal prairie, coastal dunes, coastal scrub (sandy or gravelly openings), 10-200 m. Blooms April-September.	<b>Suitable habitat present in Coastal Scrub.</b>
<i>Horkelia marinensis</i> <b>Point Reyes horkelia</b>	List 1B.2	Coastal dunes, coastal prairie, coastal scrub (sandy), 5-350 m. Blooms May-September.	<b>Suitable habitat present in Coastal Scrub.</b>
<i>Leptosiphon grandiflorus</i> <b>large-flower linanthus</b>	List 4.2	Coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, coastal scrub, valley and foothill grassland (sandy). 5-1,220 m. Blooms April-August.	<b>Suitable habitat present in Non-native Grassland, Coastal Bluff Scrub, and Coastal Scrub.</b>

**Table 3.4-1**  
**Special-Status Plants with Potential to Occur on UCSC MSC and Study Area<sup>1</sup>**  
*Bold text indicates species has been observed or suitable habitat is present on or near the project site*

Species	Status	Typical Habitat	Habitat Assessment of Study Area
<b><i>Lomatium parvifolium</i></b> <b>small-leaved lomatium</b>	List 4.2	Closed-cone coniferous forest, chaparral, coastal scrub, riparian woodland (serpentine), 20-700 m. Blooms January-June.	<b>Suitable habitat present in Coastal Scrub.</b>
<b><i>Micropus amphibolus</i></b> <b>Mt. Diablo cottonweed</b>	List 3.2	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, valley and foothill grassland (rocky), 45-825 m. Blooms March-May.	<b>Suitable habitat present in Non-native Grassland and Coastal Scrub.</b>
<b><i>Microseris paludosa</i></b> <b>marsh microseris</b>	List 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland (mesic), 5-300 m. Blooms April-June.	<b>Marginal habitat present in mesic areas of Non-native Grassland and Coastal Scrub.</b>
<b><i>Monardella undulata</i></b> <b>curly-leaved monardella</b>	List 4.2	Closed-cone coniferous forest, maritime chaparral, coastal dunes, coastal prairie, coastal scrub, ponderosa pine sandhills (sandy soils), 0-305 m. Blooms May-September.	<b>Suitable habitat present in Coastal Scrub.</b>
<b><i>Pedicularis dudleyi</i></b> <b>Dudley's lousewort</b>	List 1B.2, SR	Maritime chaparral, cismontane woodland, north coast coniferous forest, valley and foothill grassland, 60-900 m. Blooms April-June.	<b>Suitable habitat present in Non-native Grassland.</b>
<b><i>Pentachaeta bellidiflora</i></b> <b>white-rayed pentachaeta</b>	List 1B.1, FE, SE	Cismontane woodland, coastal scrub, valley and foothill grassland (often serpentine), 35-620 m. Blooms March-May.	<b>Suitable habitat present in Non-native Grassland and Coastal Scrub.</b>
<b><i>Perideridia gairdneri</i> ssp. <i>gairdneri</i></b> <b>Gairdner's yampah</b>	List 4.2	Mesic sites in broadleaved upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools, 0-365 m. Blooms June-October.	<b>Suitable habitat present in mesic areas of Non-native Grassland.</b>
<b><i>Piperia michaelii</i></b> <b>Michael's rein orchid</b>	List 4.2	Coastal bluff scrub, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, 3-915 m. Blooms April-August.	<b>Suitable habitat present in Coastal Bluff Scrub and Coastal Scrub.</b>

**Table 3.4-1**  
**Special-Status Plants with Potential to Occur on UCSC MSC and Study Area<sup>1</sup>**  
*Bold text indicates species has been observed or suitable habitat is present on or near the project site*

Species	Status	Typical Habitat	Habitat Assessment of Study Area
<i>Plagiobothrys chorisianus</i> var. <i>hickmanii</i> <b>Hickman's popcorn-flower</b>	List 4.2	Moist places in closed-cone coniferous forest, chaparral, coastal scrub, marshes and swamps, vernal pools, 15-185 m. Blooms April-June.	<b>Suitable habitat present in mesic areas of Coastal Scrub.</b>
<i>Plagiobothrys diffusus</i> <b>San Francisco popcornflower</b>	List 1B.1, SE	Coastal prairie, valley and foothill grassland, 60-360 m. Blooms March-June.	<b>Suitable habitat present in Non-native Grassland.</b>
<i>Sanicula hoffmannii</i> <b>Hoffmann's sanicle</b>	List 4.3	Broadleafed upland forest, chaparral, coastal scrub (often serpentinite or clay), 30-300 m. Blooms March-May.	<b>Suitable habitat present in Coastal Scrub.</b>
<i>Sidalcea malachroides</i> <b>maple-leaved checkerbloom</b>	List 4.2	Broadleafed upland forest, coastal prairie, coastal scrub, north coast coniferous forest, riparian woodland (often disturbed areas), 2-730 m. Blooms April-August.	<b>Suitable habitat present in Coastal Scrub.</b>
<i>Silene verecunda</i> ssp. <i>verecunda</i> <b>San Francisco campion</b>	List 1B.2	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland (sandy), 30-645 m. Booms March-June (sometimes August).	<b>Suitable habitat present in Non-native Grassland, Coastal Bluff Scrub, and Coastal Scrub.</b>
<i>Stebbinsoseris decipiens</i> <b>Santa Cruz microseris</b>	List 1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland (open areas, sometimes serpentinite), 10-500 m. Blooms April-May.	<b>Suitable habitat present in Non-native Grassland and Coastal Scrub.</b>
<i>Trifolium buckwestiorum</i> <b>Santa Cruz clover</b>	List 1B.1	Broadleafed upland forest, cismontane woodland, coastal prairie (gravelly, margins), 105-610 m. Blooms April-October.	<b>Marginal habitat present in Non-native Grassland.</b>
<i>Zigadenus micranthus</i> var. <i>fontanus</i> <b>marsh zigadenus</b>	List 4.2	Vernally mesic places in chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, marshes and swamps (often serpentinite), 15-1,000m. Blooms April-July.	<b>Marginal habitat present in mesic areas of Non-native Grassland.</b>

**Status Codes:**

FE	Federal Endangered
FT	Federal Threatened
SE	State Endangered
SR	State Rare
List 1B	CNPS list of plants rare, threatened, or endangered in California and elsewhere
List 2	CNPS list of plants rare, threatened, or endangered in California but more common elsewhere
List 3	CNPS list of plants of which more information is needed (a review list)
List 4	CNPS list of plants of limited distribution (a watch list)
.1/.2/.3	Seriously endangered in California/Fairly endangered in California/ Not very endangered in California

Table 3.4-2

Habitat Assessment for Special-Status Vertebrates on the MSC, Santa Cruz County, California

*Bold text indicates species has been observed or suitable habitat is present on or near the project site*

Common Name <i>Scientific Name</i>	Status	Habitat Requirements	Habitat Assessment of Study Area
<b>Amphibians</b>			
<b>California red-legged frog</b> <i>Rana draytonii</i>	FT SSC	Breeds in ponds, freshwater marshes, slow-moving creeks	<b>Observed onsite. Foraging, sheltering and dispersal habitat present; no breeding habitat</b>
<b>Reptiles</b>			
California coast horned lizard <i>Phrynosoma blainvillii</i>	SSC	Sandy soils in washes, chaparral, scrub and grasslands	No suitable habitat onsite
Legless lizard <i>Anniella pulchra</i>	SSC	Coastal sand dunes, washes, woodlands and riparian areas w/ moist, sandy soils	No suitable habitat onsite
<b>Western pond turtle</b> <i>Actinemys marmorata</i>	SSC	Ponds, creeks and rivers; nests and winters in grasslands	<b>Observed onsite. Seasonal aquatic habitat; nesting habitat present</b>
<b>Birds</b>			
California brown pelican <i>Pelecanus occidentalis californicus</i>	FE	Nests colonially on rock cliffs or island; feeds on fish	No nesting or foraging habitat onsite
Golden eagle <i>Aquila chryseatos</i>	BCC	Nests in large trees and cliffs; forages in open habitats	No nesting habitat onsite
<b>Ferruginous hawk (wintering)</b> <i>Buteo regalis</i>	BCC	Winters in grasslands and other open habitats	<b>Suitable foraging habitat present in grasslands</b>
<b>Northern harrier</b> <i>Circus cyaneus</i>	SSC	Nests on ground in marsh and grassland habitats	<b>Observed onsite. Potential nesting and foraging habitat in grasslands</b>
<b>White-tailed kite</b> <i>Elanus leucurus</i>	FP BCC	Nests in trees; forage in open habitats; roost in colonies at night	<b>Observed onsite. Observed foraging onsite; nesting habitat on adjacent YLR</b>

**Table 3.4-2**  
**Habitat Assessment for Special-Status Vertebrates on the MSC, Santa Cruz County, California**  
*Bold text indicates species has been observed or suitable habitat is present on or near the project site*

Common Name <i>Scientific Name</i>	Status	Habitat Requirements	Habitat Assessment of Study Area
<b>American peregrine falcon</b> <i>Falco peregrinus anatum</i>	SE BCC	Nests on cliffs and occasionally buildings; forages on birds	<b>No suitable nesting habitat; Potential foraging habitat present</b>
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT	Nests on protected beaches and sand dunes	No suitable habitat onsite
Short-eared owl (nesting) <i>Asio flammeus</i>	SSC	Nests in low growing vegetation in marsh, savanna and meadow habitats	Not known as breeding species in Santa Cruz County
Long-eared owl <i>Asio otus</i>	SSC	Nests in open woodland and coniferous forests, often near riparian areas	No nesting habitat onsite; marginal habitat on adjacent YLR
<b>Burrowing owl</b> <i>Athene cunicularia</i>	SSC BCC	Nests in grasslands, open scrub with suitable burrows	<b>Potential wintering habitat in grasslands and margins of study area; no nesting habitat</b>
Black swift <i>Cypseloides niger</i>	SSC BCC	Nests on cliffs, coastal bluffs, and sea caves	Nesting has not been confirmed in County since 1994; occasional during migration
<b>Vaux's swift</b> <i>Chaetura vauxi</i>	SSC	Nest in snags, sometimes chimneys	<b>Potential nesting habitat on existing buildings</b>
Willow flycatcher ( <i>Empidonax traillii</i> )	SE	Nests in dense willow riparian habitats.	Does not breed in County; rare visitor during migration
<b>Loggerhead shrike</b> <i>Lanius ludovicianus</i>	SSC BCC	Nests in isolated trees and shrubs; forages in open habitats	<b>Suitable nesting habitat present in scrub habitat around Younger Lagoon</b>
Yellow warbler ( <i>Dendroica petechia brewsteri</i> )	SSC	Nests in deciduous riparian woodlands along streams and lakes	No nesting habitat onsite

**Table 3.4-2**

**Habitat Assessment for Special-Status Vertebrates on the MSC, Santa Cruz County, California**

*Bold text indicates species has been observed or suitable habitat is present on or near the project site*

<b>Common Name Scientific Name</b>	<b>Status</b>	<b>Habitat Requirements</b>	<b>Habitat Assessment of Study Area</b>
Yellow-breasted chat <i>Icteria virens</i>	SSC	Nests in dense riparian habitats with well-developed understory	Likely extirpated as breeding species in County; rare visitor during migration
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	SSC	Marsh habitats in and around San Francisco Bay	Project site outside accepted range for subspecies
<b>Grasshopper sparrow</b> <i>Ammodramus savannarum</i>	SSC	Nests in short- to mid-height open grasslands	<b>Suitable nesting habitat present in grasslands</b>
<b>Bryant's savannah sparrow</b> <i>Passerculus sandwichensis alaudinus</i>	SSC	Nests in tidally influenced habitats and moist grasslands	<b>Suitable nesting habitat present in grasslands</b>
<b>Tricolored blackbird (nesting colony)</b> <i>Agelaius tricolor</i>	SSC BCC	Nests in freshwater marsh; forages in grasslands; croplands	<b>No nesting habitat onsite; foraging habitat present in grasslands</b>
<b>Mammals</b>			
<b>Pallid bat</b> <i>Antrozous pallidus</i>	SSC WBWG	Roosts in caves, trees and buildings; forages in variety of habitats	<b>Potential roosting habitat in trees and buildings</b>
<b>Townsend's big-eared bat</b> <i>Corynorhinus townsendii</i>	SSC WBWG	Roosts in caves, buildings, hollow redwoods; forage in many habitats	<b>Potential roosting habitat present in trees, buildings</b>
<b>Western red bat</b> <i>Lasiurus borealis</i>	SSC WBWG	Roosts in foliage of trees and shrubs in riparian habitats	<b>Potential foraging habitat; roosting habitat offsite in YLR</b>
<b>Long-legged myotis</b> <i>Myotis volans</i>	WBWG	Roosts in trees, rock crevices, mines and buildings	<b>Potential roosting habitat in buildings</b>
<b>Fringed myotis</b> <i>Myotis thysanodes</i>	WBWG	Maternity roosts in bridge crevices, tree cavities and under exfoliating bark	<b>No roosting habitat onsite; potential foraging habitat</b>

Table 3.4-2

Habitat Assessment for Special-Status Vertebrates on the MSC, Santa Cruz County, California  
*Bold text indicates species has been observed or suitable habitat is present on or near the project site*

Common Name <i>Scientific Name</i>	Status	Habitat Requirements	Habitat Assessment of Study Area
<b>San Francisco dusky-footed woodrat</b> <i>Neotoma fuscipes annectens</i>	SSC	Deciduous and mixed woodlands, scrub, thickets, riparian corridors	<b>Suitable habitat in dense scrub areas on slopes of Younger Lagoon; unlikely in or near project development areas</b>
California sea otter <i>(Enhydra lutris)</i>	FT	Near-shore marine habitats; will pup on protected shorelines	No suitable habitat onsite; present in adjacent near-shore habitats
<b>American badger</b> <i>Taxidea taxus</i>	SSC	Variety of open habitats	<b>Suitable habitat throughout grasslands and coyote brush scrub but use of project site unlikely due to human activity</b>

**Status Codes:**

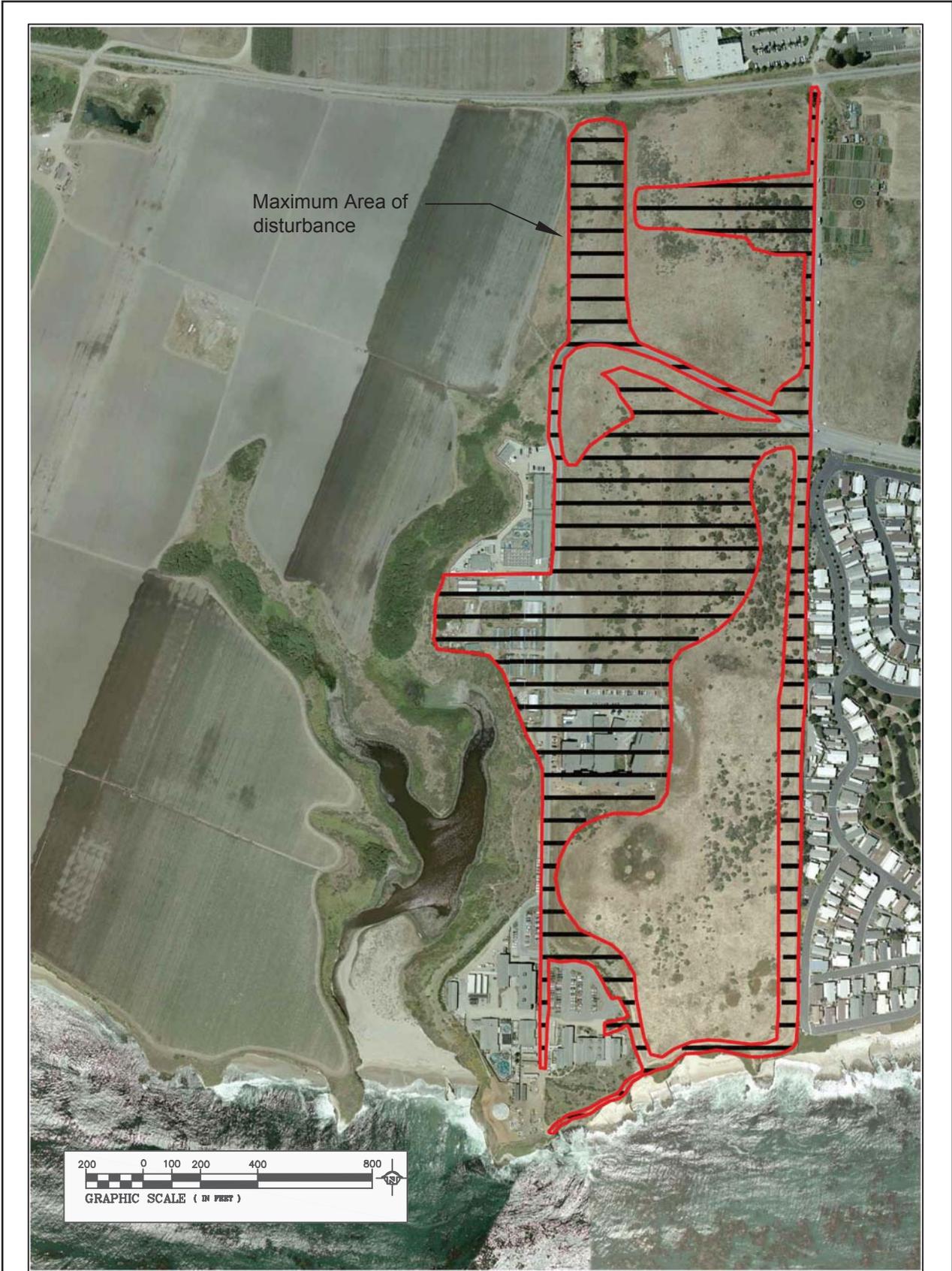
FE	Federally listed as Endangered under Federal Endangered Species Act (ESA)
FT	Federally listed as Threatened under ESA
SE	State listed as Endangered under California Endangered Species Act (CESA)
ST	State listed as Threatened under CESA
BCC	U. S. Fish and Wildlife Service Birds of Conservation Concern
FC	Federal candidate species (former Category I candidates)
FP	Fully Protected Species under the Fish and Game Code of California
SSC	Species of Special Concern designated by California Department of Fish and Game
WBWG	Listed as High Priority by Western Bat Working Group



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Wetlands on and near the Campus and  
 CRLF Observations on the Campus

Figure  
 3.4-1



**3.5 CLIMATE CHANGE**

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## 3.5 CLIMATE CHANGE

This section evaluates the potential contribution of greenhouse gas (GHG) emissions resulting from the proposed MSC Projects to global climate change. The CLRDP EIR did not analyze greenhouse gas emissions. Therefore, this climate change analysis is not tiered from the CLRDP EIR.

Public comments in response to the Notice of Preparation of this EIR did not address greenhouse gas emissions or climate change.

### 3.5.1 Environmental Setting

#### 3.5.1.1 Global Climate Change

Global climate change refers to any significant change in climate measurements—such as temperature, precipitation, or wind—lasting for an extended period (i.e., decades or longer) (U.S. Environmental Protection Agency 2008). Climate change may result from:

- Natural factors, such as changes in the sun’s intensity or slow changes in the Earth’s orbit around the sun.
- Natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHGs and other gases to the atmosphere from volcanic eruptions).
- Human activities that change the atmosphere’s composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

The natural process through which heat is retained in the troposphere<sup>1</sup> is called the “greenhouse effect.” The greenhouse effect traps heat in the troposphere through a three-fold process as follows: 1) short-wave radiation in the form of visible light emitted by the Sun is absorbed by the Earth as heat; 2) long-wave radiation is re-emitted by the Earth; and 3) GHGs in the atmosphere absorb or trap the long-wave radiation and re-emit it back towards the Earth and into space. This third process is the focus of current climate change actions.

While water vapor and carbon dioxide (CO<sub>2</sub>) are the most abundant GHGs, other trace GHGs have a greater ability to absorb and re-radiate long-wave radiation. To gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-emit long-wave radiation over a specific time period. The GWP of a gas is determined using CO<sub>2</sub> as the reference gas with a GWP of 1 over 100 years. For example, a gas with a GWP of 10 is 10 times more potent than CO<sub>2</sub> over 100 years. The use of GWP allows GHG emissions to be reported using CO<sub>2</sub> as a baseline. The sum of each GHG multiplied by its associated GWP is referred to as carbon dioxide equivalents (CO<sub>2</sub>e). This essentially means that 1 metric ton of a GHG with a GWP of 10 has the same climate change impacts as 10 metric tons of CO<sub>2</sub>.

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<sup>1</sup> The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth’s surface to 10 to 12 kilometers.

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The primary effect of global climate change has been a rise in the average global tropospheric temperature of 0.2° Celsius per decade, as determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming is likely to occur, which would induce further changes in the global climate system during the current century (Intergovernmental Panel on Climate Change 2007). Changes to the global climate system and ecosystems and to California could include:

- Rising average global sea levels.
- Changing weather patterns and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones.
- Declining Sierra snowpack levels, which account for approximately half of the surface water storage in California.
- Increasing the number of days conducive to ozone formation in high ozone areas located in the Southern California area and the San Joaquin Valley.
- Increasing the potential for erosion of California's coastlines and seawater intrusion into the Sacramento and San Joaquin Delta and associated levee systems due to the rise in sea level.
- Increasing pest infestation of drought-weakened trees, making California more susceptible to forest fires.
- Increasing the demand for electricity by 1 to 3 percent by 2020 due to rising temperatures resulting in hundreds of millions of dollars in extra expenditures.

### **Greenhouse Gases**

State law defines GHGs to include the following compounds:<sup>2</sup>

- **Carbon Dioxide (CO<sub>2</sub>).** CO<sub>2</sub> is primarily generated from fossil fuel combustion from stationary and mobile sources. CO<sub>2</sub> is the most widely emitted GHG and is the reference gas (GWP of 1) for determining the GWPs of other GHGs.
- **Methane (CH<sub>4</sub>).** Methane is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. The GWP of methane is 21.
- **Nitrous Oxide (N<sub>2</sub>O).** N<sub>2</sub>O is produced by human-related sources, including agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.
- **Hydrofluorocarbons (HFCs).** HFCs typically are used as refrigerants in both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam-blowing is growing, particularly

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<sup>2</sup> All Global Warming Potentials are given as 100-year values. Unless noted otherwise, all GWPs were obtained from the Intergovernmental Panel on Climate Change (1996).

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as the continued phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWPs of HFCs ranges from 140 for HFC-152a to 11,700 for HFC-23.

- **Perfluorocarbons (PFCs).** Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a Global Warming Potential several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years) (Energy Information Administration, n.d.). The GWPs of PFCs range from 5,700 to 11,900.
- **Sulfur Hexafluoride (SF<sub>6</sub>).** Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride has a GWP of 23,900. However, it is not prevalent in the atmosphere (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm] of CO<sub>2</sub>) (U.S. Environmental Protection Agency n.d.).

The primary GHGs of concern relative to the proposed Projects are CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. These three GHGs are generally emitted from combustion activities. The other GHGs listed above are related to specific industrial uses and are not anticipated to be emitted in measurable or substantial quantities by the proposed Projects.

#### ***Sources of Greenhouse Gas Emissions***

Worldwide anthropogenic (man-made) GHG emissions total approximately 43,363 million metric tons of CO<sub>2</sub> equivalents (MMTCO<sub>2</sub>e).<sup>3</sup> The top five countries and the European Union accounted for approximately 59 percent of the total global GHG emissions according to the most recently available data (See Table 3.5-1, Top Five GHG Producer Countries and the European Union).

**Table 3.5-1  
Top Five GHG Producer Countries and the European Union (Annual)**

<b>Emitting Countries</b>	<b>GHG Emissions (MMTCO<sub>2</sub>e)<sup>1</sup></b>
<b>China</b>	7,265
<b>United States</b>	7,217
<b>European Union (EU), 27 Member States</b>	5,403
<b>Russian Federation</b>	2,202
<b>India</b>	1,877
<b>Japan</b>	1,412
<b>TOTAL</b>	<b>25,376</b>

Source: World Resources Institute 2010.

<sup>1</sup> MMTCO<sub>2</sub>e = million metric tons of CO<sub>2</sub> equivalents

Note: Emissions for Annex I nations based on 2007 data; for Non-Annex I nations (e.g., China, India), based on 2005 data.

<sup>3</sup> The CO<sub>2</sub> equivalent emissions are commonly expressed as “million metric tons of carbon dioxide equivalent (MMTCO<sub>2</sub>E).” The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that MMTCO<sub>2</sub>E = (million metric tons of a GHG) x (GWP of the GHG). For example, the GWP for methane is 21. This means that the emission of one million metric tons of methane is equivalent to the emission of 21 million metric tons of CO<sub>2</sub>.

As noted in Table 3.5-1, the U.S. is the second largest producer of global GHG emissions. The primary GHG emitted by human activities in the United States is carbon dioxide (CO<sub>2</sub>), which represents approximately 84 percent of total GHG emissions (U.S. EPA 2008). CO<sub>2</sub> from fossil fuel combustion, the largest source of GHG emissions, accounts for approximately 80 percent of U.S. GHG emissions (US EPA 2008).

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based on the 2008 GHG inventory data (i.e., the latest year for which data are available), California emitted 474 MMTCO<sub>2</sub>e *including* emissions resulting from imported electrical power in 2008 (CARB 2010a). Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute, California's total statewide GHG emissions rank second in the U.S. (Texas is number one), with emissions of 417 MMTCO<sub>2</sub>e *excluding* emissions related to imported power (CARB 2010a).

The primary contributors to GHG emissions in California are transportation, electric power production (from both in-state and out-of-state sources), industry, agriculture and forestry, and other sources, which include commercial and residential activities. Table 3.5-2, GHG Emissions in California (below), provides a summary of GHG emissions reported in California in 1990 and 2008, separated by categories defined by the United Nations Intergovernmental Panel on Climate Change (IPCC).

**Table 3.5-2**  
**GHG Emissions in California**

Source Category	1990 (MMTCO <sub>2</sub> e) <sup>1</sup>	Percent of Total	2008 (MMTCO <sub>2</sub> e) <sup>1</sup>	Percent of Total
<b>ENERGY</b>	<b>386.41</b>	<b>89.2</b>	<b>413.80</b>	<b>86.6</b>
Energy Industries	157.33	36.3	171.23	35.8
Manufacturing Industries & Construction	24.24	5.6	16.67	3.5
Transport	150.02	34.6	173.94	36.4
Other (Residential/Commercial/Institutional)	48.19	11.1	46.59	9.8
Non-Specified	1.38	0.3	0.00	0.0
Fugitive Emissions from Oil & Natural Gas	2.94	0.7	3.28	0.7
Fugitive Emissions from Other Energy Production	2.31	0.5	2.09	0.4
<b>INDUSTRIAL PROCESSES &amp; PRODUCT USE</b>	<b>18.34</b>	<b>4.2</b>	<b>30.11</b>	<b>6.3</b>
Mineral Industry	4.85	1.1	5.35	1.1
Chemical Industry	2.34	0.5	0.06	0.0
Non-Energy Products from Fuels & Solvent Use	2.29	0.5	1.97	0.4
Electronics Industry	0.59	0.1	0.80	0.2
Substitutes for Ozone-Depleting Substances	0.04	0.0	13.89	2.9
Other Product Manufacture and Use	3.18	0.7	1.66	0.3
Other	5.05	1.2	6.39	1.3
<b>AGRICULTURE, FORESTRY, &amp; OTHER LAND USE</b>	<b>19.11</b>	<b>4.4</b>	<b>24.42</b>	<b>5.1</b>
Livestock	11.67	2.7	16.28	3.4
Land	0.19	0.0	0.19	0.0

Source Category	1990 (MMTCO <sub>2</sub> e) <sup>1</sup>	Percent of Total	2008 (MMTCO <sub>2</sub> e) <sup>1</sup>	Percent of Total
Aggregate Sources & Non-CO <sub>2</sub> Sources on Land	7.26	1.7	7.95	1.7
<b>WASTE</b>	<b>9.42</b>	<b>2.2</b>	<b>9.41</b>	<b>2.0</b>
Solid Waste Disposal	6.26	1.4	6.71	1.4
Wastewater Treatment & Discharge	3.17	0.7	2.70	0.6
<b>Emissions Summary</b>				
<b>Gross California Emissions</b>	433.29		477.74	
<b>Reductions Due to Absorption by Forests and Rangelands</b>	-6.69		-3.98	
<b>Net California Emissions</b>	426.60		473.76	

<sup>1</sup> MMTCO<sub>2</sub>e = million metric tons of CO<sub>2</sub> equivalents

Source: CARB 2010a.

Between 1990 and 2008, the population of California grew by approximately 8.1 million (from 29.8 to 37.9 million) (U.S. Census Bureau 2010). This represents an increase of approximately 27.2 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from \$788 billion in 1990 to \$1.8 trillion in 2008, representing an increase of approximately 128 percent (over twice the 1990 gross state product) (California Department of Finance 2010). Despite the population and economic growth, California's net GHG emissions only grew by approximately 11 percent. The California Energy Commission (CEC) attributes the relatively slow rate of growth in GHG emissions to the success of California's renewable energy programs and its commitment to clean air and clean energy (California Energy Commission 2006a).

### ***Regulatory Setting***

California has enacted several legislative bills and executive orders aimed at reducing the state's greenhouse gas inventory and its impact on global climate change. Each of these is discussed below.

### **U.S. Environmental Protection Agency**

The U.S. Environmental Protection Agency adopted a mandatory GHG reporting rule in September 2009. The rule would require suppliers of fossil fuels or entities that emit industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to the U.S. EPA beginning in 2011 (covering the 2010 calendar year emission). Vehicle and engine manufacturers would begin reporting GHG emissions for model year 2011.

On September 15, 2009, the U.S. EPA and the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) issued a joint proposal to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles designed to reduce GHG emissions and improve fuel economy. The proposed standards would be phased in and would require passenger cars and light-duty trucks to comply with a declining emissions standard. The final standards were adopted by the U.S. EPA and DOT on April 1, 2010.

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On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- **Endangerment Finding.** The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding.** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

While these findings do not impose additional requirements on industry or other entities, this action is a prerequisite to finalizing the U.S. EPA's proposed GHG emissions standards for light-duty vehicles, which were jointly proposed by the U.S. EPA and the NHTSA.

#### **California Building Standards Code Title 24**

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally designed with the intent of reducing GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. The latest revisions were adopted in 2008 and became effective on January 1, 2010.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code). The CALGreen Code encourages sustainable construction practices in the following categories: 1) Planning and design; 2) Energy efficiency; 3) Water efficiency and conservation; 4) Material conservation and resource efficiency; and 5) Environmental air quality” (California Building Standards Commission 2009). The CALGreen Code became effective on January 1, 2011. Unless otherwise noted in the regulation, all newly constructed buildings in California are subject to the requirements of the CALGreen Code.

#### **Assembly Bill 1493**

Assembly Bill 1493 (AB 1493, Pavley) was enacted on July 22, 2002 to address the large contribution made to California's GHG emission by the transportation sector. AB 1493 requires CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles whose primary use is noncommercial personal transportation. CARB adopted such standards in September 2004. The new standards would phase in between 2009 through 2016. When fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22 percent in greenhouse gas emissions compared to the emissions from vehicles in 2002, while the mid-term (2013–2016) standards will result in a reduction of about 30 percent.

However, before these regulations could go into effect, the U.S. EPA had to grant California a waiver under the federal Clean Air Act (CAA), which ordinarily preempts state regulation of motor vehicle emission standards. On June 30, 2009, the U.S. EPA formally approved California's waiver request. In light of the federal standards adopted in April 2010, California has agreed to defer to the proposed national standard through model year 2016 if granted a waiver by the U.S. EPA. The AB 1493 standards require additional reductions in CO<sub>2</sub> emissions beyond 2016 (referred to as Phase II standards), which have not yet been defined.

#### **Executive Order S-3-05 and the Climate Action Team**

In June 2005, California Governor Schwarzenegger issued Executive Order S-3-05, which established the following goals for the State: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The Secretary of California Environmental Protection Agency (CalEPA) is required to coordinate the GHG reduction efforts of various agencies. Representatives from some of these agencies comprise the State's Climate Action Team.

#### **California State Senate Bills 1078 and 107**

In 2002, California State Senate Bill 1078 established California's Renewable Portfolio Standard (RPS) which requires investor-owned utilities, such as Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric, to increase energy production from renewable source 1 percent per year up to a minimum of 20 percent of total energy generation by 2017. California State SB 107, signed by the Governor of California on September 26, 2008, accelerated the Renewable Portfolio Standard by requiring investor-owned utilities to meet the 20 percent target by 2010.

On September 15, 2009, the Governor issued Executive Order S-21-0911 requiring CARB, under its AB 32 authority, to adopt regulations to meet a 33 percent RPS target by 2020. The CARB regulations would use a phased-in or tiered requirement to increase the amount of electricity from eligible renewable sources over an eight-year period beginning in 2012. CARB adopted the regulation in September 2010.

#### **California State Assembly Bill 32**

In furtherance of the goals established in Executive Order S-3-05, the California State Legislature enacted Assembly Bill 32, the California Global Warming Solutions Act of 2006. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries with penalties for noncompliance. AB 32 requires the State to undertake several actions; the major requirements are discussed below.

CARB is responsible for carrying out and developing the programs and requirements necessary to achieve the goals of AB 32—the reduction of California's GHG emissions to 1990 levels by 2020. The first action under AB 32 resulted in CARB's adoption of a report listing three specific early-action greenhouse gas emission reduction measures on June 21, 2007. On October 25, 2007, CARB approved an additional six early-action GHG reduction measures under AB 32. CARB has adopted regulations for all early-action measures. The original three adopted early-action regulations meeting the narrow legal definition of “discrete early action GHG reduction measures” include:

- A low-carbon fuel standard to reduce the “carbon intensity” of California fuels.

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- Reduction of refrigerant losses from motor vehicle air conditioning system maintenance, by restricting the sale of “do-it-yourself” automotive refrigerants.
  - Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The additional six early-action regulations adopted on October 25, 2007, also meeting the narrow legal definition of “discrete early action GHG reduction measures,” include:

- Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology.
- Reduction of auxiliary engine emissions of docked ships by requiring port electrification.
- Reduction of perfluorocarbons from the semiconductor industry.
- Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products).
- Require that all tune-up, smog check and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency.
- Restriction on the use of sulfur hexafluoride (SF<sub>6</sub>) from non-electricity sectors if viable alternatives are available.

On December 6, 2007, as required under AB 32, CARB approved the 1990 greenhouse gas emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 MMTCO<sub>2</sub>e. The inventory revealed that in 1990 transportation was the largest single sector generating carbon dioxide, with 35 percent of the state's total emissions, followed by industrial emissions (24 percent); imported electricity (14 percent); in-state electricity generation (11 percent); residential use (7 percent); agriculture (5 percent); commercial uses (3 percent). AB 32 does not require individual sectors to meet their individual 1990 GHG emissions inventory; the total statewide emissions are required to meet the 1990 threshold by 2020.

In addition to the 1990 emissions inventory, CARB also adopted regulations requiring the mandatory reporting of GHG emissions for large facilities on December 6, 2007. The mandatory reporting regulations require annual reporting from the largest facilities in the state, which account for approximately 94 percent of greenhouse gas emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 tons of carbon dioxide each year from on-site stationary combustion sources.

As indicated above, AB 32 requires CARB to adopt a scoping plan indicating how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions. CARB released the *Climate Change Scoping Plan*, which contained an outline of the proposed state strategies to achieve the 2020 GHG emission limits, in October 2008. The CARB Governing Board approved the *Climate Change Scoping Plan* on December 11, 2008. The *Climate Change Scoping Plan*

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identifies 18 recommended strategies the state should implement to achieve AB 32. As of October 2010, CARB has identified ongoing programs and has adopted regulations for 29 individual measures to reduce GHG emissions in accordance with the *Climate Change Scoping Plan* strategies. CARB will continue to draft additional rule language and conduct public workshops and rulemaking procedures through 2011. It is scheduled to finalize regulations by January 1, 2012.

Key elements of the *Climate Change Scoping Plan* include the following recommendations:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.
- Achieving a statewide renewable energy mix of 33 percent.
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system.
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets.
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard that was set under Executive Order S-1-07.
- Creating targeted fees, including a public goods charge on water use; fees on high global warming potential gases; and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Under the *Climate Change Scoping Plan*, approximately 85 percent of the state's emissions are subject to a cap-and-trade program that places covered sectors under a declining emissions cap. It is expected that emissions reductions from the cap-and-trade program will account for a significant portion of the reductions required by AB 32.

#### **California State Senate Bill 97**

In August 2007 the California State legislature enacted SB 97, which directed the Governor's Office of Planning and Research (OPR) to develop guidelines under CEQA for the mitigation of greenhouse gas emissions. OPR submitted the *Proposed Draft CEQA Guideline Amendments for Greenhouse Gas Emissions* to the Secretary for Natural Resources on April 13, 2009. The Natural Resources Agency conducted formal rulemaking procedures and adopted the final CEQA Guideline Amendments on December 30, 2009.

#### **California State Senate Bill 375**

SB 375 requires CARB to set regional greenhouse gas reduction targets after consultation with local governments. The target must then be incorporated within that region's Regional Transportation Plan, which is used for long-term transportation planning in a Sustainable Communities Strategy. SB 375 also requires each region's Regional Housing Needs Assessment to be adjusted based on the Sustainable Communities Strategy in its Regional Transportation Plan. Additionally, SB 375 will reform the

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environmental review process to create incentives to implement the strategy, especially transit priority projects.

### **California State Senate Bill 1368**

SB 1368 requires the CEC to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the Public Utilities Commission. This effort will help to protect energy customers from financial risks associated with investments in carbon-intensive generation by allowing new capital investments in power plants that have GHG emissions as low as or lower than new combined-cycle natural gas plants; by requiring imported electricity to meet GHG performance standards in California; and by requiring that the standards be developed and adopted in a public process.

### **University and Campus Policies and Procedures**

#### **UC Policy on Sustainable Practices**

The UC Policy on Sustainable Practices, adopted by the Regents in 2006 and revised in September 2009, states that University will develop a long term strategy for voluntarily meeting the State goal, pursuant to AB 32, of reduce GHG emissions to 1990 levels by 2020. In addition, the University will pursue the goal of reducing GHG emissions to 2000 levels by 2014 and provide an action plan for becoming climate neutral. The policy includes the following implementation procedures:

- By December 2008, the University will develop an action plan for becoming climate neutral which will include: a feasibility study for meeting the 2014 and 2020 goals stated in the Policy Guidelines, a target date for achieving climate neutrality as soon as possible while maintaining the University's overall mission, and a needs assessment of the resources required to successfully achieve these goals. Climate neutrality means that the University will have a net zero impact on the Earth's climate, which will be achieved by minimizing GHG emissions as much as possible, and using carbon offsets or other measures to mitigate the remaining GHG emissions.
- Each UC campus will pursue individual membership with the California Climate Action Registry. The Senior Vice President, Business and Finance, in coordination with campus administration, faculty, students, and other stakeholders will form a Climate Change Working Group that will develop a protocol to allow for growth adjustment and normalization of data and accurate reporting procedures. The Climate Change Working Group will monitor progress toward reaching the stated goals for GHG reduction, and will evaluate suggestions for programs to reach these goals.

The University has set the following emissions reduction goals:

- Reduce GHG emissions to 2000 level by the year 2014.
- By 2020, reduce GHG emissions to 1990 level.
- By 2050, reduce to 80 percent below 1990 levels.

**American College and Universities Presidents' Climate Commitment**

The University of California, as a ten-institution system, has signed the American College and University Presidents' Climate Commitment (ACUPCC). Each signatory to this document commits to completing an inventory of greenhouse gas emissions within one year and to developing, within two years, an institutional plan to achieve climate neutrality as soon as possible. The commitment also includes specific interim actions, including requiring that new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent; purchasing Energy Star appliances; offsetting GHG emissions generated by institutional air travel; encouraging and providing access to public transportation; purchasing or producing at least 15 percent of the institution's electricity consumption from renewable sources; supporting climate and sustainability shareholder proposals at companies where the institution's endowment is invested; and adopting measures to reduce waste.

**Santa Cruz Climate Action Compact**

The UC Santa Cruz Chancellor and representatives of the City and County of Santa Cruz signed a Climate Action Compact in September 2007. Each partner in this compact agreed to:

- Set and present a GHG reduction goal for its organizations.
- Identify specific inter-institutional cooperative projects that reduce GHG emissions, stimulate investment in the community, and foster economic development.
- Present a comprehensive GHG reduction action plan for its organization.
- Immediately invite others from the public, private, and nonprofit sectors in the region to join in the effort.

**UC Santa Cruz Policies**

The Chancellor's Council on Climate Change, which was created in January 2008, has prepared a Draft Climate Action Plan (CAP) for the campus. The Campus is currently revising the CAP. The plan will set a target date for climate neutrality by quantifying emission sources, identifying projects to reduce those emissions, and implementing the projects.

UC Santa Cruz completed its first year of third-party-certified GHG reporting for the year 2006, through the California Climate Action Registry. In its most recent report (for the year 2009) the Campus reported direct emissions, including those from University vehicles; space and water heating; indirect emissions from purchased electricity; and emissions from air travel. Emissions from nonfleet mobile sources (such as commuters, METRO buses, and delivery vehicles) were reported for the Main Campus only. The inventory does not include emissions associated with purchased goods. The campus's estimated emissions for 2009 were 73,086 metric tons of CO<sub>2</sub>e.

**3.5.2 Relevant Project Characteristics**

The proposed Coastal Biology Building (CBB) Project includes development of a new 40,000-gsf lab building, two new parking lots, a Greenhouse Complex, and associated utilities and stormwater system.

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The proposed Marine Science Campus Infrastructure (MSCI) Project consists of campus utility and circulation improvements to serve both the CBB Project and future campus development under the CLRDP. The proposed Nature Education Facilities (NEF) Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage, and outdoor exhibits. Under the proposed SRP 1B Project, CLRDP-mandated wetland restoration and habitat improvements would be implemented. CLRDP Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the projects described above, to clarify CLRDP language, to address minor changes made to CLRDP language during the Coastal Commission approval process, and to respond to the evolution of the CLRDP Resource Management Plan under the guidance of the Scientific Advisory Committee that was established to guide Younger Lagoon Reserve (YLR) restoration efforts, as required by the CLRDP.

Operation of the proposed CBB Project would generate greenhouse gas emissions directly through combustion of natural gas in new boilers for heating and domestic hot water in the new lab building and the greenhouse research facility and in the new emergency and standby generators. The 40kW emergency generator would be fueled by natural gas, with propane as a backup fuel; the two 200kW standby generators would be fueled with natural gas. The use of electricity in the new buildings would indirectly generate GHG emissions. The estimated utility usage for the CBB Project is presented in Table 3.16-5 in Section 3.16, *Utilities and Service Systems*. CBB Project operations would generate an estimated 505 daily vehicle trips, which would result in an increase in GHG emissions. MSC visitors using the proposed NEF Project Parking Lot A are projected to generate an estimated 40 additional daily trips to the campus.

Operation of the proposed MSCI and SRB 1B Projects would not generate GHG emissions. CLRDP Amendment #1 does not have implications for climate change.

As described in Chapter 2, *Project Description*, the design for the proposed CBB lab building includes a variety of features to improve energy efficiency. The proposed CBB Project would also incorporate a variety of feasible GHG control measures. In compliance with the UC Policy on Sustainable Practices, project design and operation must be consistent with the principles of sustainability and energy efficiency to the fullest extent possible, while also taking into account budgetary constraints and regulatory and programmatic requirements. Specifically, the University has set a goal for all new building projects, other than acute-care facilities, to out-perform the required provisions of the California Energy Code (Title 24) energy-efficiency standards by at least 30 percent. All new laboratory buildings must be designed and built to a minimum standard equivalent to a LEED™-NC “Silver” rating and the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria (EPC), as appropriate. In accordance with these policies, UC Santa Cruz has identified the following specific features to be incorporated into the proposed CBB Project:

- The CBB Project would undergo review under the Savings By Design program to maximize energy efficiency and minimize energy use. The Savings by Design program is funded by California utility customers and administered by utility providers, including PG&E. The program offers design assistance, financial incentives to owners when the efficiency of their new building exceeds a certain threshold, financial incentives to design teams, and energy design resources.

- Consistent with Campus Standards, mechanical cooling would be provided only for cooling of laboratory equipment rooms and rooms with computer or other climate-sensitive equipment. Offices would be naturally ventilated using operable windows. Laboratories would be conditioned and ventilated by a central air handling system that would provide heat and ventilation only.
- Energy-efficient condensing boilers would be used to heat the CBB lab building and greenhouses.
- Energy efficient fumehoods would be used, and users would be trained in procedures to minimize unnecessary mechanical ventilation when the hoods are not in use, to further minimize energy demand.
- All heating, ventilation, and air conditioning systems would be commissioned by a third-party commissioning agent to ensure functional efficiency consistent with the design of each system.
- The long wing of the CBB is oriented east-west to allow for the greatest exposure to natural light. Uses that would benefit from softer, more uniform indirect lighting would be placed along the northern facade of the building. Southern facades would receive direct sunlight, allowing passive heating during winter days. Shading devices above windows would minimize overheating during the warm months.
- All interior and exterior lighting would use high efficiency fluorescent, ceramic metal halide, and solid-state light sources. Electronic ballast (which reduces energy use for lighting) will be used. Energy-efficient halogen sources will be used for specialty display or accent lighting. Exterior lights will be controlled by the campus Energy Management System.
- Bicycle lockers, sheltered bike parking, and showers and lockers for bicycle commuters would be installed at the CBB building.
- Bicycle and pedestrian trails would be constructed to provide access from the campus entrance to the new buildings.
- Plantings would be low-water use, with minimal turf.
- Toilets would be dual flush (1.6 gpf/1.1 gpf).
- Street lighting would be provided only within development zones.
- The Campus is evaluating the cost-effectiveness and energy yield of installing photovoltaic panels over Parking Lot D.

Santa Cruz Metro Route 3 public transit buses stop at the entrance to the MSC but do not provide bus service within the campus. The MSC Project would include a new transit stop on McAllister Way at the CBB lab building, to provide infrastructure for future transit service to the site. The MSC Project would also improve pedestrian and bicycle access on the campus. Bicycle parking would be provided at each entrance to the CBB lab building, and covered bicycle parking would be provided along the south side of the building. The CBB Project would include sufficient covered, secure bicycle parking to accommodate 25 to 30 percent of CBB employees, and also would add commute showers and lockers to those already present on the campus to encourage and accommodate an anticipated increase in bicycle commuting.

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Additional space would be reserved around the CBB to provide covered secure bicycle parking to accommodate 100 percent of CBB employees, and additional parking of this type would be added as demand dictates.

Although a parking fee program has not yet been implemented at the MSC, UC Santa Cruz Transportation and Parking Services (TAPS) has submitted a Notice of Impending Development to the California Coastal Commission for a proposed parking management program under which permits would be required for employee and visitor parking; and undergraduate students would not be eligible for MSC parking permits. Many of UC Santa Cruz' alternative transportation programs are available to the employees and students who would occupy the new facilities. These programs include vanpools; "Zimride," an online network that facilitates ridesharing and carpooling; the Zipcar program, which offers cars for use on demand at a daily or hourly rate; emergency rides home for employees who commute once or more per week via transportation alternatives; reduced-fee transit passes for employees; a service agreement with SCMTD that provides any registered student access to any regularly-scheduled transit route operating within Santa Cruz County without paying a fare; and bicycle programs that include information on bicycle safety, a bike maintenance clinic, interest-free loans for purchase of bicycles, and a bicycle "library." Recent casual surveys suggests that about 22 percent of current MSC employees and 24 percent of students taking classes at the MSC presently commute to the campus via bicycle (Davenport 2010; Davenport and Pageler 2011).

University construction contracts for all of the MSC Projects will require that at least 75 percent of construction waste be diverted from landfill.

### **3.5.3 Applicable CLRDP EIR Mitigation Measures**

The CLRDP EIR did not analyze impacts on climate change. Therefore, there are no CLRDP EIR Mitigation Measures related to climate change.

### **3.5.4 Impacts and Mitigation Measures**

#### **3.5.4.1 Standards of Significance**

In accordance with SB 97, the Natural Resources Agency adopted amendments to the *State CEQA Guidelines* on December 30, 2009, which include criteria for evaluating GHG emissions.<sup>4</sup> According to the amended Appendix G of the *State CEQA Guidelines*, a project would have a significant effect on the environment if it would:

- Generate GHGs, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

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<sup>4</sup> The adopted amendments may be viewed at the following website: <http://ceres.ca.gov/ceqa/guidelines/2009>.

There is no applicable plan that meets the requirements of the CEQA guidelines with respect to the second of these two criteria.<sup>5</sup> None of the AB 32 Climate Change Scoping Plan measures applies directly to the proposed MSC Projects. Therefore, for purposes of this EIR, a project would have a significant effect on the environment if it would generate GHGs, either directly or indirectly, that may have a significant impact on the environment.

The Monterey Bay Unified Air Pollution Control District (MBUAPCD) has not established significance thresholds for determining whether a project's GHG emissions would have a significant effect on the environment. In the absence of thresholds applicable to the Monterey Bay Area, the MBUAPCD has indicated that the University has the discretion to utilize the thresholds established by the neighboring Bay Area Air Quality Management District (BAAQMD) (Getchell 2011). The BAAQMD has established project-level screening criteria and significance thresholds for operational GHG emissions in its *CEQA Air Quality Guidelines* (BAAQMD 2010). The BAAQMD GHG significance threshold was specifically designed to ensure compliance with AB 32 emissions reductions requirements in the Bay Area. This was accomplished by estimating projected growth within the BAAQMD's jurisdiction and determining the GHG emissions allowable from new sources associated with that growth. The thresholds selected would capture 90 percent of emissions from new development in the Bay Area. Therefore if a proposed project's emissions are below the significance threshold, it can be assumed to comply with AB 32 within the Bay Area and would not conflict with the State GHG reduction goals established in AB 32. The BAAQMD sets the following thresholds to determine whether a project's operational GHG emissions would be significant:

- For land-use development projects (residential, commercial, industrial, and public land uses and facilities), the threshold is compliance with a qualified GHG Reduction Strategy; or annual emissions less than 1,100 metric tons CO<sub>2</sub>e per year (MTCO<sub>2</sub>e/yr); or emissions of less than 4.6 MT CO<sub>2</sub>e/service population/yr, where service population (SP) is defined as the number of residents plus employees who would be associated with the project. The "efficiency" threshold of 4.6 MT CO<sub>2</sub>e/SP/yr is applicable only to residential and mixed-use facilities.
- For stationary-source projects, the threshold for impact significance is 10,000 MTCO<sub>2</sub>e/yr. Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require an Air District permit to operate. The BAAQMD guidelines specify that the GHG emissions from permitted stationary sources should be calculated separately from a project's operational emissions. For example, if a project includes a permitted stationary source, such as a back-up generator on site, the GHG emissions from the generator should not be

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<sup>5</sup> CEQA guidelines specify that such a plan must meet certain conditions. For example, it must quantify greenhouse gas emissions resulting from activities within a defined geographic area; establish a level below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable; specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, collectively would achieve the specified emissions level; establish a mechanism to monitor the plan's progress toward achieving that emissions level; and be adopted in a public process following environmental review. The MSC Projects are required to comply with the University of California Policy on Sustainable Practices, which includes measures that would reduce the greenhouse gas emissions of the CBB Project. However, the University's policy does not meet the requirements set forth in the CEQA Guidelines. Therefore, compliance with the policy cannot be used as a significance threshold.

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added to the project's total emissions. Instead, the generator's GHG emissions should be calculated separately and compared to the GHG threshold for stationary sources to determine its impact level.

The BAAQMD has not adopted a threshold of significance for construction-related GHG emissions.

Although the BAAQMD thresholds were developed to capture 90 percent of all emissions in the Bay Area, and therefore reflect the types of development projects anticipated in that area, these numeric thresholds also are conservative. One other air district in California, the South Coast Air Quality Management District (SCAQMD) (following a methodology similar to that used by the BAAQMD) has adopted an interim numeric screening threshold of 3,000 MTCO<sub>2</sub>e/yr for residential, commercial, and mixed-use land uses. Alternatively, under the SCAQMD interim guidance, an agency may use the following thresholds by land use type, if they are applied consistently: 3,500 MTCO<sub>2</sub>e/year for residential projects, 1,400 MTCO<sub>2</sub>e/year for commercial projects, and 3,000 MTCO<sub>2</sub>e/year for mixed-use projects. The SCAQMD also uses a threshold of 10,000 MTCO<sub>2</sub>e/year for industrial projects<sup>6</sup>

This EIR uses the BAAQMD thresholds as the most conservative (that is, the most stringent) of the available numeric thresholds.

### **3.5.4.2 Analytical Method**

#### ***Construction Emissions***

Construction-related emissions of CO<sub>2</sub> for all the MSC Projects were estimated using URBEMIS2007. URBEMIS2007 is a land-use and transportation-based computer model designed to estimate regional air emissions, including CO<sub>2</sub> from new development projects. URBEMIS2007 does not provide estimates of other GHGs associated with combustion, namely methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). Therefore, in order to account for emissions of these compounds, the following adjustments were made to the URBEMIS2007 emission calculations:

- **Construction diesel trucks and equipment.** The CO<sub>2</sub> emissions associated with off-road and on-road equipment were multiplied by a factor based on the assumption that CO<sub>2</sub> represents approximately 99.4 and 99.0 percent, respectively, of the CO<sub>2</sub> emissions. These assumptions were derived from information provided by the California Climate Action Registry (California Climate Action Registry 2009) and the California Energy Commission (California Energy Commission 2002).
- **Motor vehicles.** The CO<sub>2</sub> emissions associated with construction worker trips were multiplied by a factor based on the assumption that CO<sub>2</sub> represents 95 percent of the CO<sub>2</sub>e emissions associated with passenger vehicles, which account for most of the project-related trips. This assumption was based on data provided by the U.S. EPA (2005).

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<sup>6</sup> <http://www.aqmd.gov/ceqa/handbook/GHG/2010/sept28mtg/wkgrp15minutes.pdf>.

## **Operational Emissions**

### **Direct Emissions**

Operation of the project would result in direct emissions of GHGs, primarily as a result of natural gas combustion for space and water heating, and in emergency and standby generators and mobile sources. Building and motor vehicle air conditioning systems may use HFCs (and hydrochlorofluorocarbons [HCFCs] and chlorofluorocarbons [CFCs] to the extent that they have not been completely phased out at later dates); however, these emissions are not quantified since they would only occur through accidental leaks. It is not possible to estimate the frequency of accidental leaks without some level of speculation.

Natural gas combustion sources were divided into two categories—“area sources” and “stationary sources”—based on permitting requirements for the MBUAPCD that are related to energy rating of the equipment used. Area sources are smaller sources that would not require permits to operate within the jurisdiction of the MBUAPCD. The boilers for the CBB facility and greenhouse were included in this category, as they are below the heat rating for boilers that would require a permit to operate. Stationary sources are any sources that would require a permit to operate. The three generators included in the CBB Project were categorized as stationary sources since they would require permits to operate due to their horsepower rating.<sup>7</sup>

Area source emissions were calculated using URBEMIS2007 using default assumptions for a university land-use type, with the exception of the larger sources with known natural gas consumption rates. Emissions were computed using standard emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O resulting from combustion of natural gas.<sup>8</sup> Stationary source emissions also were calculated using natural gas consumption rates based on the heat rating and operational schedule of the equipment combined with GHG emission factors. Mobile source emissions for the MSC Projects were calculated using URBEMIS2007, based on the estimate of 545 average number of daily trips (505 generated by the CBB Project and 40 by the NEF Project). The direct operational emissions calculated using URBEMIS2007 were adjusted to account for emissions of CH<sub>4</sub> and N<sub>2</sub>O using the same methods used for construction emissions.

### **Indirect Emissions**

The proposed CBB Project would also result in indirect GHG emissions due to the consumption of electricity generated off site, water treatment and distribution, wastewater treatment, and solid waste generation. Electricity consumption was based on the estimated electricity demand for the CBB Project<sup>9</sup>. The emission factor for CO<sub>2</sub> due to electrical demand was obtained from public reports to the California Climate Action Registry for PG&E, the electrical utility serving UC Santa Cruz (California Climate Action Registry 2010). Emission factors for CH<sub>4</sub> and N<sub>2</sub>O used for electricity generation were obtained from CARB’s *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*, which includes GHG emission factors from utility providers in

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<sup>7</sup> The analysis was based on two standby generators rated at 200 kilowatts (268 horsepower) each and one emergency generator rated at 40 kilowatts (54 horsepower).

<sup>8</sup> UCSC estimated natural gas consumption at approximately 59,760 therms per year (approximately 5,976 million British thermal units per year).

California (CARB 2010b). The factors cited in the CARB report are based on data collected by the California Climate Action Registry. The emission factors take into account the current mix of energy sources used to generate electricity and the relative carbon intensities of these sources. Sources include natural gas, coal, nuclear, large hydroelectric project, and other renewable sources of energy. The CARB emission factors do not take into account the fact that UC Santa Cruz purchases renewable energy credits from a variety of sources (wind, solar, biogas, small-scale hydropower, and geothermal), to match 84 percent of the campus' electricity demand (that is, to offset the portion of energy provided by the utility provider that is derived from non-renewable sources).

Estimates of GHG emissions due to water consumption, wastewater treatment, and solid waste generation were based on the estimated water demand and generation of wastewater and solid waste for the CBB Project.<sup>10</sup> GHG emissions from water consumption result from the consumption of electricity to convey, treat, and distribute water. The annual electrical demand factors for potable water were obtained from the CEC (2006b). GHG emissions associated with wastewater result from the use of electricity to treat wastewater and from the treatment process itself, which primarily releases CH<sub>4</sub> into the atmosphere. Wastewater generation was estimated by multiplying the potable water demand by 80 percent. GHG emission factors for wastewater treatment were obtained from the U.S. EPA (US EPA 1998a) The City of Santa Cruz Regional Wastewater Treatment Facility uses the methane to generate electricity, thereby reducing the emissions of methane; however, this was not taken into account in calculating the CH<sub>4</sub> emissions from wastewater treatment. GHG emissions from solid waste generation are due to the decomposition of organic material, which releases CH<sub>4</sub> into the atmosphere. The City of Santa Cruz Resource Recovery Facility is equipped with a landfill gas control and collection system, which is used to generate electricity. The GHG emission factor for solid waste generation was obtained from the U.S. EPA, utilizing the factor for mixed municipal solid waste as disposed in landfills without landfill gas recovery and electric generation as a conservative assumption (US EPA 1998b).

### **3.5.4.3 Project Impacts and Mitigation Measures**

#### ***Greenhouse Gas Emissions***

<b>MSC Projects Impact CLIMATE-1</b>	Construction of the MSC Projects and operation of the CBB and NEF projects would result in an increase in campus GHG emissions, which would contribute to global warming.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects / Project</b>	Construction activities for all projects

<sup>9</sup> UC Santa Cruz estimated annual demand for CBB of 891,400 kWh.

<sup>10</sup> UC Santa Cruz estimated potable water demand at approximately 1.94 million gallons per year and solid waste generation at approximately 35.64 tons per year. Wastewater was estimated at 80 percent of the potable water demand (approximately 1.56 million gallons per year).

<b>Elements</b>	CBB lab building and greenhouse operations NEF Parking Lot A operations
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR did not analyze impacts related to climate change.

**Project Impact.** Construction of the MSC Projects would result in total one-time GHG emissions of 889 MTCO<sub>2</sub>e. The MSC and SRP 1B Projects would not result in any operational emissions of GHGs. The annual GHG emissions associated with operation of the proposed CBB and NEF projects are provided below in Table 3.5-3, Estimated CBB and NEF Operational GHG Emissions. Detailed calculations are provided in Appendix E. Direct and indirect emissions associated with operation of the CBB Project are compared with the BAAQMD's threshold of significance for land-use projects, which is 1,100 MTCO<sub>2</sub>e per year. Emissions from stationary sources are compared with the threshold for stationary sources, which is 10,000 MTCO<sub>2</sub>e per year. As shown in Table 3.5-3, below, the operational GHG emissions from the CBB and NEF projects would be below the applicable thresholds.

The emissions associated with the proposed MSC Projects represent a conservative assessment of the actual GHG emissions that would result from development of the MSC Projects. The construction emissions were based on the assumption that equipment would operate continuously throughout an 8-hour work-day. In reality, construction equipment tends to operate cyclically for only a portion of the work day. As shown in Table 3.5-3, GHG emissions from motor vehicles represent over half of the total emissions associated with the operation of the proposed CBB and NEF projects. As of the date of this report, neither the state nor the federal government regulates tailpipe GHG emissions. However, several regulatory actions have taken place at the federal and state level that would reduce GHG emissions from motor vehicles during future years. Model year 2012 through 2016 vehicles are expected to meet increasingly more stringent fuel economy and GHG emission standards. By 2016, passenger vehicles and light-duty trucks are expected to achieve a Corporate Average Fuel Economy (CAFE) standard of 35.5 miles per gallon and a CO<sub>2</sub> emission standard of 250 grams per mile. This represents an approximately 30 percent reduction in GHG emissions. These reductions were not accounted for in the model. Further, both the City's wastewater and solid waste treatment facilities capture methane emissions and use them for energy, greatly reducing emissions from these facilities. None of these factors were taken into account for this analysis.

**Table 3.5-3**  
**Estimated CBB and NEF Projects Operational GHG Emissions**

<b>Operational GHG Emissions from Area, Mobile, and Indirect Sources</b>	<b>GHG Emissions (MTCO<sub>2</sub>e/Year)<sup>1</sup></b>
Operational (Mobile) Sources	628
Area and Natural Gas Sources	69
Electrical Consumption	270
Solid Waste Generation	12
Water Supply	2
Wastewater Generation	1
<b>TOTAL Annual</b>	<b>982</b>
<b>BAAQMD Threshold</b>	<b>1,100</b>
<b>Operational GHG Emissions from Stationary Sources</b>	<b>GHG Emissions (MTCO<sub>2</sub>e/Year)</b>
Standby Generators	262
Emergency Generator	1
<b>TOTAL Annual</b>	<b>263</b>
<b>BAAQMD Threshold</b>	<b>10,000</b>

**Source:** Impact Sciences, Inc.

Emissions calculations are provided in Appendix E.

<sup>1</sup> MMTCO<sub>2</sub>e = million metric tons of CO<sub>2</sub> equivalents

As the CBB and NEF projects' annual operational emissions would be less than 1,100 MTCO<sub>2</sub>e of GHG per year, and the MSCI and SRP Phase 1B projects would not generate any operational emissions; and the CBB Project stationary source emissions would be less than 10,000 MTCO<sub>2</sub>e, the MSC Projects would not conflict with the state's ability to achieve the reduction targets under AB 32. The CBB Project would also incorporate several sustainability and GHG reduction measures, as required by UC's commitment to both internal and ACUPCC reduction targets. These measures would reduce energy consumption and vehicle traffic to the extent possible, thus ensuring that the Projects would not hinder efforts to achieve GHG emissions reductions required under AB 32. For these reasons, the potential impacts of the proposed MSC Projects on climate change would be less than significant.

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**3.6 CULTURAL RESOURCES**

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**FIGURES**

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Figure 3.6-1 Ocean Shore Railroad Route in the Project Vicinity

## 3.6 CULTURAL RESOURCES

This section of the EIR addresses the potential impacts on cultural resources from the development of the proposed MSC Projects. Cultural resources may include historic and prehistoric archaeological sites; deposits and features; built environment resources including (but not necessarily limited to) buildings, structures and objects; and traditional cultural properties, including cemeteries, human remains, and features or sites associated with significant events or practices in the traditional culture of an ethnic group. This section describes work undertaken to identify any cultural resources that may be present within the MSC Projects area; to evaluate the significance of each identified resource in order to identify those that appear to qualify as historical resources under CEQA or as historic properties under the National Historic Preservation Act (NHPA); and to assess the potential effects of the proposed MSC Projects on those resources. This section also assesses the potential for undiscovered resources (such as buried archaeological deposits or human remains) to be present within the project site, and identifies measures to avoid adverse effects to any such resources that could be affected by grading and excavation activities.

This section provides project-level analysis and additional detail regarding cultural resources and, pursuant to Section 15152 of the CEQA Guidelines, supplements and augments the analysis provided in Section 4.5 of UC Santa Cruz' Marine Science Campus CLRDP EIR.

No public comments related to cultural resources were received during the scoping period for this EIR.

### 3.6.1 Environmental Setting

See CLRDP EIR Section 4.5.1 for a comprehensive discussion of the regional historic and prehistoric setting of the campus, which also pertains to the proposed Projects. Additional information and discussion is provided below.

#### 3.6.1.1 Regulatory Setting

##### ***California Environmental Quality Act***

Under the California Environmental Quality Act, Section 15064.5, a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. As defined by CEQA, historical resources may include cultural resources of both the historic and the prehistoric period, including built environmental properties and features and archaeological deposits. An historical resource, under CEQA, is a cultural resource that meets one or more of the eligibility criteria for the California Register of Historical Resources (CRHR), as follows:

- 1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or
- 2) Is associated with the lives of persons important in our past; or
- 3) Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses artistic values; or

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- 4) Has yielded, or may be likely to yield, information important in prehistory or history.

A resource formally determined by the State Historical Resources Commission to meet one or more of these criteria is listed on the CRHR. Resources listed on the National Register of Historic Places are automatically included on the CRHR. In addition, a resource listed in a local register of historical resources, or any resource that a lead agency determines, by substantial evidence “in light of the whole record,” may be considered to be historically significant. For the MSC Projects, in the absence of a formal determination of eligibility, a resource assessed as meeting one of the CRHR eligibility criteria listed above would be treated as an historical resource.

Pursuant to Section 15064.5 of the CEQA Guidelines, archaeological resources that have not otherwise been determined to be historical resources may be considered significant if they are unique. Public Resources Code Section 21083.2 defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one of the following criteria: contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information; has a special and particular quality, such as being the oldest of its type or the best available example of its type; or is directly associated with a scientifically recognized, important prehistoric or historic event or person.

Section 15064.5 also assigns special importance to human remains and specifies procedures to be used when Native American human remains are discovered. These procedures are stated under Public Resources Code Section 5097.

**California Health and Safety Code 7050.5 and Public Resources Code 5097.98**

Under the California Health and Safety Code, the intentional disturbance, mutilation, or removal of interred human remains is a misdemeanor. The code requires that, upon discovery of human remains outside of a dedicated cemetery, the county coroner must be notified and further ground disturbance must cease until the coroner makes a report determining whether the find represents a crime scene or a Native American burial. If the coroner recognizes the remains to be those of a Native American, he must contact the Native American Heritage Commission (NAHC) within 24 hours. Public Resources Code 5097.98 sets forth procedures by which the NAHC may identify a Most Likely Descendant, who may inspect the remains and consult with the landowner to provide recommendations for the respectful treatment and/or reinterment of the remains.

**Clean Water Act Section 404 and the National Historic Preservation Act**

It is anticipated that activities under the proposed MSC Projects that would involve restoration work will require a permit or permits under Section 404 of the Clean Water Act. A project that requires a federal permit is considered a federal undertaking under Section 106 of the National Historic Preservation Act (NHPA). In considering whether to issue a 404 permit, the Army Corps of Engineers, (USACE, the federal lead agency under the Clean Water Act and therefore likely the lead federal agency under Section 106 of the NHPA), has a responsibility to take into account the effects of the proposed action on historic properties. The USACE complies with the NHPA through implementing procedures set forth at 33 CFR 325, Appendix C.

The NHPA establishes the National Register of Historic Places (NRHP), and defines federal criteria for determining the historical significance of archaeological sites, historic buildings, and other cultural resources. Cultural resources that meet the eligibility criteria of the NRHP are termed “historic properties,” whether the resource dates to the historic or the prehistoric period. Under Section 106 of the NHPA, the lead federal lead agency is required to identify the area of potential effects for its undertaking (the proposed Projects); to identify any potential historic properties within the area of potential effects; to apply the NRHP criteria of significance to determine whether any of the identified properties is eligible for listing on the NRHP and therefore is an historic property; and to determine whether the undertaking’s effects on eligible historic properties would be adverse. The effort to identify potential historic properties must include not only archival research and archaeological and architectural surveys, but also outreach to the public and efforts to include potentially interested parties (such as Native American and other ethnic groups, and historical societies) that may have information about the presence of potential historic properties.

To be determined eligible for the NRHP, a potential historic property must meet one of four historical significance criteria (listed below), and also must possess sufficient depositional, architectural, or historic integrity to retain the ability to convey the resource’s historic significance. Resources determined to meet these criteria are eligible for listing in the NRHP and are termed “historic properties.” A resource may be eligible at the local, state, or national level of significance.

A property is eligible for the NRHP if it possesses integrity of location, design, setting, materials, workmanship, feeling, and association, and it:

- a) Is associated with events that have made a significant contribution to the broad patterns of our history; or
- b) Is associated with the lives of a person or persons significance in our past; or
- c) Embodies the distinctive characteristics of a type, period or method of construction, or represents the work of a master, or possesses high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction; or
- d) Has yielded or may be likely to yield information important in prehistory of history.

A resource that lacks historical integrity or does not meet one of the NRHP criteria of eligibility is not considered a historic property, and effects to such a resource are not considered significant under the NHPA. Section 106 also establishes a consultation process under which the federal lead agency may consult with the Advisory Council on Historic Preservation to take effects upon historic properties into account in federal decision-making regarding approval of the undertaking. A process is also established for mitigating adverse effects on historic properties.

### **3.6.1.2 Local and Regional Context**

#### ***Paleontological Setting***

As summarized in the CLRDP Draft EIR (pp. 4.5.4 and 4.5.5), the MSC Projects area has been partially or completely covered by the sea many times during past geologic ages. The Santa Cruz Mountains, one

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to two miles inland of the project site, were formed primarily of uplifted marine sediments. Some of these sediments include the fossils of animals and plants.

On the MSC Projects site, marine terrace deposits in excess of 100,000 years old (in most places only a few feet thick) are underlain by Santa Cruz Mudstone bedrock, which is approximately 6 to 10 million years old. The mudstone bedrock in some locations includes fossil clam molds and fish bones and scales; but fossils of large animals are very rare in this formation. Fossils also are rare in the overlying marine terrace deposits. Whale vertebrae and shellfish shells, which are found occasionally in the marine terrace deposits, are virtually identical with modern specimens. There are no known fossil deposits in the surface stratum on the terrace lands of the campus, nor have there been any finds.

According to the City of Santa Cruz General Plan Sensitive Archaeological and Paleontological Areas Map, the southern edge of the campus site, along the coastline includes a sensitive paleontological resource area. This band is outside the area of potential effects for the proposed MSC Projects.

### ***Prehistoric Period***

Archaeological evidence suggests that human occupation of the Santa Cruz area probably began at least 10,000 and perhaps as long as 15,000 years ago (Cartier and Bobo 2002). The San Francisco and Monterey Bay regions were occupied prehistorically, starting around 500 A.D, by the Ohlone (also known as Costanoan), a group of tribelets that shared closely related languages (Levy 1978). The Santa Cruz area was occupied by Awaswas Ohlone. At the time of European contact, Awaswas speakers probably numbered less than 1,000 persons and were distributed among several villages (Shipley 2002).

Prehistorically and into ethnographic times, the Ohlone followed a hunter-gatherer subsistence pattern. Acorns and, in regions close to the coast, shellfish, were significant dietary staples, along with a wide range of other plant and animal foods. The abundance and high quality of natural resources in the region supported settlement in semi-sedentary villages, often near the mouths of streams on the coast, at stream confluences, or near other water sources. Most groups also used inland sites at least seasonally. Temporary camps or other activity areas are often found along ridges or other travel corridors.

The Ohlone participated in very extensive trade networks. Monterey chert from coastal sources, used to manufacture high quality stone tools, was widely traded throughout the region. Abalone and olive snail shells acquired on the Pacific coast, and ornaments manufactured from these shells, were highly valued and were traded throughout the western United States. Obsidian from the Napa/ Sonoma region and from eastern California was imported into the Monterey Bay region.

### ***Historic Period***

European explorers may have passed by or landed in Monterey Bay as early as the 1500s, but the Ohlone's first recorded encounter with Europeans was in 1769, when Portola's overland expedition passed through the Santa Cruz area. Mission Santa Cruz, founded in 1791, was the first permanent European colony in the Santa Cruz area. By about 1795, virtually all of the Awaswas and other nearby groups had been absorbed by the mission or had died of introduced diseases. By 1808, Yokuts people from the Central Valley were being settled at the mission as well (Milliken 2002). The Mexican administration of Alta California secularized the mission system (1833–1834) and awarded numerous land grants to Mexican and other pioneers throughout the region. Some Native American survivors of the

system may have gone to work for local ranchers and other local industries, but there is no record that any native villages were reestablished.

The principal historic use of the marine terraces of the UC Santa Cruz Marine Science Campus since at least the early 1900s has been the farming of row crops. The site may have seen non-intensive agricultural or grazing uses in association with the Santa Cruz mission as early as the 1790s. Younger Lagoon, which abuts the western edge of the campus, is named for the Younger family, who arrived in Santa Cruz in 1831. Moore Creek, east of the campus, was named for Eli Moore, who owned a ranch in the area in the 1840s. Antonelli Pond, on Moore Creek a short distance east of the campus, is a manmade pond that was created in 1908 as a log pond for the San Vicente Lumber Company's sawmill (Clark 1986). Wilder Ranch State Historic Park, to the west of Younger Lagoon, was part of Rancho de Matadero. During the mission period, cattle were slaughtered at the site, and hides may have been shipped from the adjacent cove. After secularization of the mission in 1834, these lands and the project site were part of the Rancho Refugio land grant. The grantees built two adobes here, established the first sawmill in the region, and also established a dairy that produced butter and cheese. From the 1850s through the 1890s, schooners loaded lumber at a coastal cove at the mouth of what is now Wilder Creek, a short distance north of Younger Lagoon. In the 1850s and again in the 1870s, new owners purchased portions of the rancho. From the time of their acquisition of the property in 1871, the Wilder family ran a very successful and innovative dairy operation at the Wilder Ranch, which operated for almost a century (State of California Dept. of Parks and Recreation. n.d). The historic features associated with these operations are located about three-quarter of a mile west of the project site, close enough that stock from these and other earlier ranching and dairy operations might have been grazed on the project site historically.

In 1905, construction began for the Ocean Shore Railroad, starting simultaneously from both ends, in Santa Cruz and in San Francisco (Beutel n.d). The Ocean Shore Railroad was a highly ambitious endeavor to create the first continuous commercial transportation route along the coast between San Francisco and Santa Cruz, which would cut travel time from five hours to two and one-half hours. Investors envisioned that the railroad also would encourage settlement and recreational use of the San Mateo and Santa Cruz coasts. The many impassable, rocky cliffs along this route posed a significant engineering challenge and required extensive rock cutting and blasting. High rock-filled trestles, designed ultimately to accommodate three pairs of tracks, were constructed across virtually every creek crossing and coastal valley mouth, effectively blocking much of the prior access to the coast. Out-flowing creeks were directed through tunnels to the beach at many locations. Near its southern end in Santa Cruz, the Ocean Shore Railroad crossed what is now the MSC and ran east along what is now Delaware Avenue, then known as Ocean Shore Road (Pease and Taylor 1909).

Segments of the envisioned line were constructed from San Francisco south to Tunitas Creek (on the central San Mateo County coast), and between Santa Cruz and Davenport, but the envisioned middle section, from Davenport to Tunitas, was never completed. The San Francisco earthquake of 1906 destroyed a segment of the northern part of the route and was financially disastrous. Nonetheless, the line was carrying freight and passengers in both the northern and southern segments by the end of 1908. However, the success of the Ocean Shore operations in attracting freight business from the San Vicente lumber operations in Santa Cruz and a cement manufacturer in Davenport drew the interest of Southern Pacific Railroad (SPRR). SPRR built a competing spur to Davenport and effectively took over the cement

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shipping business. SPRR also refused right of way such that the Ocean Shore line stopped short of downtown Santa Cruz. SPRR, with its well-established route over the hill to San Jose and up the peninsula to San Francisco, soon out-competed the Ocean Shore Railroad. Ocean Shore fell into receivership in 1910 and was abandoned in 1920 (Beutel n.d.).

### **3.6.2 Relevant Project Characteristics**

There are no built environmental historical resources on or in the vicinity of the proposed MSC Projects, so project development has no potential to result in adverse indirect effects (such as alteration of the historic setting or adverse visual, noise, or vibration effects) to historical structures or other features of the built environment. The nature of finished development therefore is not relevant to the impact analysis.

All of the proposed MSC Projects, with the exception of the proposed CLRDP Amendments, will entail ground disturbance, both temporarily, during construction, and permanently, as a result of development. Ground disturbance has the potential to disturb or destroy cultural resources if such resources are present. The construction footprint of each project element that would entail temporary ground disturbance during construction therefore is relevant to this analysis.

### **3.6.3 Applicable CLRDP EIR Mitigation Measures**

CLRDP Project-Specific Mitigation Measure 4.5-1, procedures to address human remains encountered during construction, is applicable to and included in the proposed MSC Projects. The complete text of the mitigation measure is provided in Appendix D of this EIR. Appendix C provides the complete text of all applicable CLRDP implementation measures and explains how each is addressed by the MSC Projects.

### **3.6.4 Impacts and Mitigation Measures**

#### **3.6.4.1 Standards of Significance**

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, the Projects generally would be considered to have a significant adverse impact on the environment if it would:

- Cause a substantial adverse change<sup>1</sup> in the significance of a historical resource as defined in CEQA Section 15064.5; or
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Section 15064.5; or

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<sup>1</sup> A “substantial adverse change,” according to CEQA Guidelines Section 15064.5, is defined as the “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource is impaired.” Material impairment is defined as the alteration of, “in an adverse manner, those characteristics of a historical resource that convey its historical significance and its eligibility for inclusion in the California Register of Historical Resources.”

- Disturb any human remains, including those interred outside of formal cemeteries; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

### **3.6.4.2 Analytical Method**

For cultural resources, an area of potential effects (APE) was established based on the geographic (horizontal and vertical) extent within which the MSC Projects potentially could result in direct (ground disturbing) impacts or indirect impacts (such as to the visual or historic setting of significant resources). This area was then subjected to archival research, and a records search was performed for previously recorded archaeological and historic surveys and reports. Additional archaeological survey, historic inventory, and significance assessment was conducted for the single historical site on the MSC, which had not been recorded previously. The significance of each resource identified within the APE is assessed relative to CRHR or NRHP criteria. No further consideration is required for resources that do not meet the significance criteria. For significant resources, the potential for project impacts is determined based on the potential for each project element to adversely affect the characteristics that make the resource significant.

#### **Area of Potential Effects (APE)**

The APE for the MSC Projects consists of the footprint of all project elements, including all areas that would be subject either to temporary disturbance during construction and/or to development. These areas are illustrated on Figure 3.4-2 in Section 3.4 (*Biological Resources*) of this EIR in Section. Note that for the MSC Projects only the area of direct impact is considered, as no built environmental historical resources are present on within the viewshed of the campus that require consideration of an area of potential indirect effects.

#### **Cultural Resources Identification Efforts and Findings on the Campus**

As described in the CLRDP EIR (p. 4.5-2), the entire MSC site was subjected to a records search and complete intensive archaeological survey prior to preparation of the CLRDP EIR; some portions of the project areas have been surveyed multiple times in conjunction with prior project proposals (Pacific Legacy 2002). In 1987, soil testing was carried out at one suspected archaeological deposit where Monterey chert cobbles were found scattered on the surface. After testing, it was concluded that soils at this location likely represent spoils from past dredging of an adjacent ditch, and that the cobbles were native to the local soils, had not been transported to the site, and were not culturally modified. No archaeological sites or features were recorded.

One historic feature, the mast from the 1924 wreck of the coastal steamer, La Feliz, is present in the rocks below the Pacific cliff of the campus. It is suspected that remnants of the sunken ship may lie offshore. The eligibility of the site has not been determined. The CLRDP EIR concluded (p. 4.5-6) that there is no potential for work under the CLRDP to affect the shipwreck site in any way. The site lies outside the area of potential effects for the proposed Projects.

The earliest buildings on the MSC date to 1976, and all are therefore well under 50 years of age. None of the buildings exhibits exceptionally innovative architectural features or has historical associations that would suggest eligibility to the CRHR or NRHP (CLRDP EIR p. 4.5-2).

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Although the most recent archaeological survey of the MSC was completed in 2002, resurvey of the entire APE does not appear to be warranted for several reasons. No archaeological materials or historic features have been noted or uncovered despite fairly extensive development along the west side of the Lower and Middle Terraces of the campus. No unusual soil discolorations, shell lenses, or artifacts have been noted during construction on the site, along the disturbed margins of existing development, along roadways and unpaved trails throughout the campus, in spoils from hydrologic and geotechnical investigations, or in areas around the campus where extensive restoration plantings and invasive removal projects have been carried out by hand. Finally, because of dense grass and vegetation and, in the winter, standing water, surface visibility outside of the campus development zones is extremely limited, such that archaeological resurvey of the site generally would be of very limited value. The saturated soils and wetlands around the campus (presuming that this has been a long-term condition) may have made this site undesirable for settlement, both historically and prehistorically. The archaeological survey of the site was not updated for the present Projects, with the exception of recordation of a historic railroad route, described below.

An archaeological records search for the entire campus and a 1/2-mile radius around the campus was conducted by the Northwest Information Center (NWIC) of the California Historical Resources Information System in March 2011. The NWIC reported one previously recorded prehistoric archaeological site on the campus, CA-SCR-363 (P-44-000594). However, the locational description on this record indicates that the site location map filed with the record is in error; SCR-363 in fact is identical with previously-recorded prehistoric site CA-SCR-274, which is located about 1/2 mile distant from the MSC. This interpretation was confirmed by the individual who supervised recordation of the site (Rob Edwards 2011). An addendum to the site record for CA-SCR-363 therefore has been filed to correct this error (Morgan 2011a).

One potential historical resource within the MSC Projects APE, previously unrecorded, was identified through archival research. This is a portion of the alignment of the historic Ocean Shore Railroad, described below.

**Ocean Shore Railroad Segment (P-44-000700).** The mapped route of a segment of the historic Ocean Shore Railroad appears to coincide with the Delaware Avenue Extension, the existing entry road into the MSC (Figure 3.6-1). The railroad alignment lies within the area of potential effects for the proposed Projects, westward from the campus entrance to the point where Delaware Avenue Extension turns south and becomes McAllister Way, a length within the campus of about 700 feet. East of the campus, the railroad route continued along what is now Delaware Avenue—shown on a 1909 street map as “Ocean Shore Avenue”—to downtown Santa Cruz. As described in the background history section above, the Ocean Shore Railroad carried freight and passengers for a brief time between San Francisco and Tunitas Creek on the San Mateo Coast, and between Davenport and Santa Cruz on the Santa Cruz coast. From Davenport to Santa Cruz, the line apparently paralleled the southern side of the Southern Pacific Railroad (SPRR) tracks. West and north of the MSC, most of the railroad route in the near vicinity of Santa Cruz appears to have been obliterated. However, based on historic mapping and interpretation of topographic features shown on a modern USGS quadrangle, it appears that the Ocean Shore line diverged from the SPRR alignment at a point about 1,600 feet west of the western margin of the MSC, then ran in a southeasterly direction to what is now the campus.

Within the MSC, the railroad alignment consists of an oil and gravel road about 16-feet wide. The roadway route is near level. There has been no subsurface examination of the cross-section of the roadway, so it cannot be determined whether there is a rock or gravel bed beneath it, as would be common for a railroad line. No ties, rails, or spikes have been noted anywhere on the campus. While the road profile is not noticeably elevated, hydrologists have suggested that the roadway has effectively provided a dam that helps to retain seasonal surface water in wetlands north of the roadway. During heavy rains, water from Wetland 2 sometimes spills onto and runs along the road in a westerly direction.

Just northwest of the point where the Delaware Extension meets McAllister Way, there is a low concrete buttress-like structure in the wetland area adjacent to the road. Although it is possible that this feature was associated with the Ocean Shore Railroad (the remnant of a culvert overcrossing or small bridge over an agricultural drainage ditch or natural drainage), these features are oriented at a right angle to the road bed as it now exists. This orientation would have required a sharp turn from the Delaware alignment which could not be navigated by a train; therefore, the bridge footings probably are not related to the railroad, but may represent a later farm road ditch crossing. A historic site record has been prepared for the railroad alignment segment (Morgan 2011b).

**CRHR Eligibility Assessment.** Although it functioned for only a very short time, the Ocean Shore Railroad is historically significant as the first commercial transportation route in the history of the Santa Cruz coast. Its construction was a remarkable and highly ambitious feat of engineering—albeit an environmental and aesthetic disaster for the coast, even from the perspective of many observers at the time. As such, to the extent that the railroad route and its features survived, they almost certainly would meet CRHR Criterion 1/NRHP Criterion A (association with important historic events) and CRHR Criterion 3/NRHP Criterion C (as significant pioneering engineering features) for eligibility to the CRHR and NRHP. However, the short segment of the site within the MSC (Ocean Shore Railroad, P-44-000700) appears to consist only of the modern roads that marks the historic route, with no physical evidence of the railroad itself—except the culvert/bridge abutment feature, which cannot definitively be associated with the railroad. On this basis, the site appears to lack historical integrity of materials, design, and association. Further, beyond the route itself, the site as now known appears to have no potential to yield additional historical data. For these reasons, the site does not appear to be eligible to the CRHR or the NRHP. It is possible that railroad features may lie hidden under the existing paving. If buried features were uncovered during construction, they could provide important information about the resource. However, based on features observable at this time, the site does not appear to qualify as a historical resource under CEQA or a historic property under NHPA. The Ocean Shore Railroad route (P-44-000700) is the only known potential historical resource on the MSC. Based on what can be observed at this time, this site does not appear to be eligible for the CRHR or NRHP due to loss of historical integrity and apparently very limited potential to yield additional historic information.

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### 3.6.4.3 Project Impacts and Mitigation Measures

#### **Unanticipated Buried Archaeological Resources, Human Remains, and Paleontological Resources**

<b>MSC Projects Impact CULT-1</b>	Unanticipated archaeological resource, human remains, or paleontological resources could be damaged or destroyed during construction.
<b>Applicable CLRDP EIR Mitigation/Implementation Measures</b>	General Mitigation Measure 4.5-1 Implementation Measure 3.9.1 - Construction Monitoring, Archaeological/Paleontological Resources
<b>Applicable Projects/Project Elements</b>	All
<b>Significance</b>	Less than significant
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP concluded that the development under the CLRDP has the potential to result in damage to or destruction of unanticipated archaeological, historical, and paleontological resources that could be uncovered during construction. CLRDP IM 3.9.1, which sets forth requirements for work stoppage, assessment, and mitigation in the event of an unanticipated discovery of cultural or paleontological resources, is included as part of the MSC Projects. Further, the CLRDP EIR identifies Project-Specific Mitigation Measure 4.5-1, which also requires work stoppage and compliance with PRC 5097 for the protection and treatment of human remains that could be discovered during ground disturbance. With the incorporation of IM 3.9.1 and Mitigation Measure 4.5-1, the impact of the Projects on unanticipated archaeological resources, human remains, or paleontological resources discovered during ground disturbance at the campus would be less than significant.

**Project Impact.** The potential to encounter buried archaeological resources, human remains, or paleontological resources during construction appears to be slight, for the reasons given above in the discussion of previous archaeological surveys, and also due to the low paleontological sensitivity of the geologic formations that underlie the campus. Should construction result in unanticipated discovery of buried resources or human remains, impacts to significant finds would be reduced to less-than-significant levels by the implementation of CLRDP IM 3.9.1 and CLRDP EIR Project Specific MM 4.5-1, which are incorporated in the Projects. Because these measures are incorporated in the Projects, the impact would be less than significant.

***Impacts to Known Resources***

<b>MSC Projects Impact CULT-2:</b>	Project construction would further alter the Delaware Avenue Extension route of the Ocean Shore Railroad segment within the project area (P-44-000700) and could obliterate undiscovered features that retain the identity of the site as a railroad line.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	General Mitigation Measure 4.5-1 Implementation Measure 3.9.1 - Construction Monitoring, Archaeological/Paleontological Resources
<b>Applicable Projects/Project Elements</b>	MSCI Phase A Project (Delaware Avenue Extension restoration) SRP Phase 1B wetland 1 drainage modifications
<b>Significance:</b>	Less than significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure CULT-2A:</b> An archaeologist will be present during road ripping along the Delaware Avenue extension to document the cross section of the roadbed and any associated railroad-related features that might be uncovered. If potentially significant features are uncovered, work in the immediate vicinity will stop until the find can be recorded and assessed. An archaeologist also will be present during any work in the W1 channel that may modify any existing concrete features in the channel to document and assess these features.
	<b>MSC Projects Mitigation Measure CULT-2B:</b> The interpretive signage included in the proposed MSCI Phase A and NEF projects will include at least one sign commemorating the history of the Ocean Shore Railroad. The University will develop appropriate content for the sign through archival research into the construction, route, and history of the railroad. The sign will, at a minimum, delineate the route of the railroad line; provide a brief discussion its significance in local history; and interpret any physical remnants that are uncovered during construction. The manager of the YLR will be consulted about the appropriate placement of historic signage along the pedestrian path that follows the former railroad route.
<b>Residual Significance</b>	Less than significant

**Previous Analysis.** The remains of the shipwreck, La Feliz, offshore of the MSC, is the only potential historical resource noted in the CLRDP EIR. As discussed above, the CLRDP does not include any actions that would have the potential to affect this offshore site. No impact to this resource would occur.

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**Project Impact.** As described above, additional archival research and field inspections for the proposed MSC Projects identified one additional, previously unrecorded cultural resource within the Projects' APE—a segment of the route of the Ocean Shore Railroad (P-44-000700). Because the roadway marking the route is apparently all that remains of the site, the site does not retain integrity of materials, design, or association, and it therefore does not appear to meet the eligibility criteria of the CRHR or NRHP. However, it is possible that railroad-related features or artifacts lie hidden under the Delaware Avenue Extension paving. Under the proposed MSC Project, more than half of the width of the roadbed would be ripped and converted to a pedestrian path, and the ripped section would be revegetated. Roadbed ripping could expose buried railroad features, should any remain. Under the proposed SRP Phase 1B Project, work is proposed adjacent to the roadway in the outlet channel of Wetland 1 to create a weir or check dam to facilitate regulation of outflow and to create a ponded area upstream. The proposed work could entail the removal or modification of the concrete features in the drainage, which could expose or modify undiscovered features of the site. If features associated with the railroad are present, they could provide additional information about how the railroad was designed and operated. In this case, the site could be eligible for the CRHR and NRHP for its potential to yield significant historical information.

Further, although the Ocean Shore Railroad represented a significant advance in coastal transportation and included many impressive feats of engineering, very little of the route remains or has been recorded. Preservation of any remnant feature, and providing interpretive signage along the route, would be of value in interpreting the site to the public, consistent with the public education and interpretive goals of the CLRDP. For these reasons, although the impact of further modification of the resource and ancillary elements would not be significant under CEQA thresholds, the Campus will carry out MSC Projects Mitigation Measures CULT-2A and 2B to ensure that any physical remnants of the site are documented, and to provide for public interpretation for the site. Implementation of these measures would further reduce already less-than-significant impact to the Ocean Shore Railroad site.

#### **3.6.4.4 Cumulative Impacts and Mitigation Measures**

As analyzed in the CLRDP EIR and discussed above, no significant historical resources have been identified on the MSC that would be affected by the proposed Projects. Measures are included in the Projects to ensure that if unanticipated archaeological, historical, or paleontological resources are discovered during construction, any such resources would be protected and assessed, and appropriate mitigation carried out to preserve the significant information or characteristics embodied in the site. Measures also are included in the MSC Projects to further mitigate the less-than-significant impacts of the Projects to the site of the Ocean Shore Railroad (P-44-000700), the route of which would be preserved and interpreted for the public. Because these measures are included in the proposed MSC Projects, the impact of the Projects upon cultural resources would be less than significant.

As discussed in the CLRDP EIR (p. 4.5-7 to 4.5-9), the cumulative context for assessment of the proposed MSC Projects is the development of both the Marine Science Campus and of the remaining undeveloped parcels located within the Santa Cruz west side study area by about 2020, according to existing City of Santa Cruz General Plan land-use designations.

As discussed above, any disturbance of native soils carries the potential to result in impacts to archaeological resources and human remains. Disturbance of fossil-bearing sediments carries the potential to disturb or destroy paleontological resources. Archaeological surveys and studies have been conducted on the Marine Science Campus and no significant resources have been identified in any areas proposed for development. While it is possible that buried resources could come to light in future, the potential for impacts is slight. With the CLRDP policies and mitigation measures included in the proposed MSC Projects, the potential for the Projects to result in significant impacts to cultural resources is reduced to a less-than-significant level. For these reasons, development under the CLRDP, including the proposed MSC Projects, would not result in any significant residual impacts on cultural resources.

Similarly, City of Santa Cruz policies and regulations require that project analyses include identification of cultural resources and preservation or mitigation as appropriate to reduce impacts to a less-than-significant level in accordance with General Plan/LCP Policy 1.2.2. Developers of parcels that are not within the areas previously identified as sensitive are still required to provide for the evaluation and proper handling of any cultural resources discovered in the course of development. Implementation of these policies will ensure the protection of archaeological and paleontological sites as they are identified in the future. Therefore, as a result of protections in place, development in the study area, including the proposed MSC Projects, would not result in a cumulatively significant impact on cultural resources.

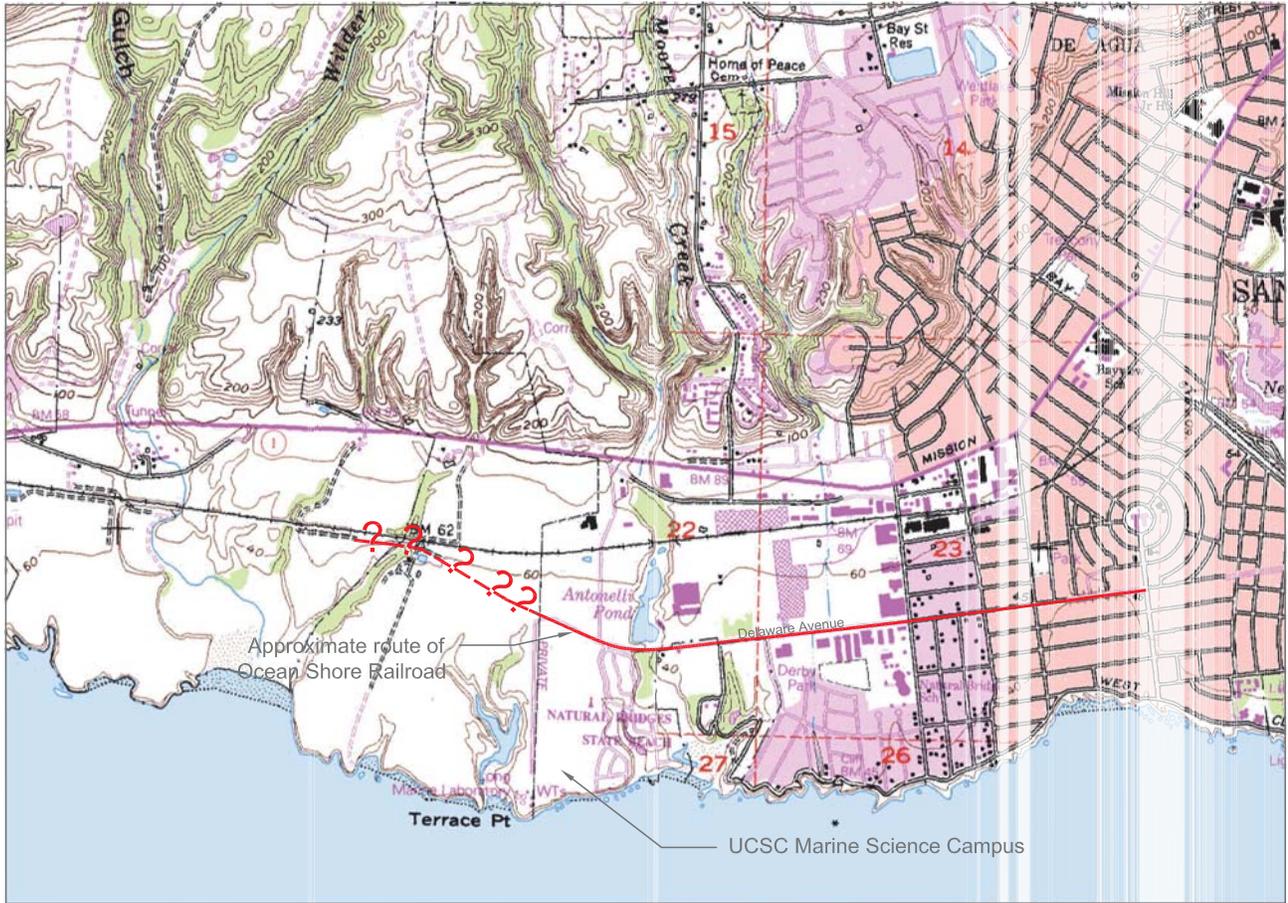
There may be occasions when a development project cannot avoid a significant cultural resource, or when the significance of such a resource is such that it cannot be fully mitigated through data recovery. However, it would be speculative to assume that there would be a large number of such instances in the study area and that the residual effects would combine to result in a cumulatively significant impact. As there are not data to suggest that such sites are present in the study area and would be affected, it is reasonable to assume that the potential for significant residual impacts is slight.

In summary, the cumulative impacts on cultural resources from development in the west side area, including development of the proposed MSC Projects under the CLRDP, would be less than significant.

### 3.6.4 References

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Based on USGS Santa Cruz, CA 7.5', 1:24,000

UC Santa Cruz Marine Science Campus  
 Coastal Biology Building and  
 Infrastructure Improvements  
 Final Environmental Impact Report Nov. 2011

Ocean Shore Railroad Route

Figure  
 3.6-1



**3.7 GEOLOGY, SOILS, AND SEISMICITY**

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Table 3.7-1	Active and Potentially Active Faults in the Santa Cruz Area
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**FIGURES**

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Figure 3.7-1	Active and Potentially Active Faults in the Santa Cruz Area
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## **3.7 GEOLOGY, SOILS, AND SEISMICITY**

This section of the MSC Projects EIR presents a description of the existing geology, soils, and seismic conditions in the project area and analyzes potential physical environmental effects of the proposed Projects related to seismic hazards, underlying soil characteristics, slope stability, erosion, and excavation of soils. This section provides project-level analysis and additional detail regarding geology and soils, and it supplements and augments the analysis provided in Section 4.6 of the CLRDP EIR, pursuant to CEQA Guidelines Section 15152.

### **3.7.1 Environmental Setting**

See CLRDP EIR Section 4.6 (pp. 4.6-3 to 4.6-14) for a comprehensive discussion of the geologic setting of the MSC.

#### **3.7.1.1 Geologic Setting of the Marine Campus**

##### ***Regional Context***

The MSC is located in the central portion of the Coast Ranges Physiographic Province of California. This province, a subdivision of the Pacific Mountain System as defined by the U.S. Geological Survey, parallels the coastline and stretches from the California/Oregon border to Santa Barbara. It contains a series of northwest-southeast-trending coastal mountain ranges, whose structures are primarily controlled by a complex of faults that forms the San Andreas Fault System. The Santa Cruz Mountains form the mountainous spine of the San Francisco Peninsula and extend 80 miles southeast from Daly City in the north to the Pajaro River, near Watsonville, where the range merges with the southern Gabilan Range.

The western margin of the Santa Cruz Mountains between San Francisco and the City of Santa Cruz is distinguished by the dramatic coastline formed where the bedrock uplands of the range meet the Pacific Ocean. Topography along this portion of the coast can be abrupt, with steep coastal terrain and rocky shores, or it can be more gradual, with flat, uplifted marine terraces that slope gently downward from mountainous uplands to sandy beaches. Much of the coastline in the Santa Cruz area is situated on an uplifted marine terrace, known as the “lowest emergent terrace,” which is the youngest in a series of marine terraces that form uplands east of Highway 1, along the coastal flank of Ben Lomond Mountain. Over time, as the sea level has fluctuated and the coast has been uplifted, stream courses that cross these marine terraces have incised small canyons that eventually reach the ocean and form the lagoons and beaches that exist today.

##### ***Topography***

The MSC lies on a portion of the lowest emergent terrace, which is relatively flat and truncated by a near-vertical sea cliff. The campus slopes gently (1 to 2 percent) to the south, varying in elevation from 51 feet above sea level at the northern edge of the site to 37 feet above sea level at the southern edge, where the coastal bluff drops sharply to the intertidal beaches below. The sea cliff is approximately 30 feet high and has an abrupt cliff edge. At the base of the sea cliff, a well-developed shore platform extends offshore.

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Two soil berms, approximately 10 to 12 feet high and 40 to 50 feet wide, were constructed along the top of the bank at the east side of Younger Lagoon in conjunction with the development of the LML at the site. Material to construct the berms was excavated from the western portion of the MSC during previous site development, which accounts for grade changes on this part of the site.

### **Geologic Materials**

The surficial materials beneath the MSC consist of Quaternary coastal terrace deposits made up of predominantly fine to coarse-grained sand and fine gravel, with varying fractions of silt and clay of low to intermediate plasticity. The density varies from loose to medium-dense. These deposits extend to depths of about 5 to 15 feet across the MSC.

The bedrock underlying the coastal terrace deposits is the Santa Cruz Mudstone, which is exposed in sea cliffs along the coast from West Cliff to the Santa Cruz–Santa Mateo County line. The Miocene- to Pliocene-age (approximately 15 million years old) bedrock unit consists of siliceous mudstone and sandy siltstone. The regional bedding of this geologic unit dips 2 to 5 degrees seaward (south). Although the compressive strength of the Santa Cruz Mudstone is considered comparable to that of concrete, the mudstone is weak and brittle and contains abundant, closely-spaced fractures that produce small angular slabs when disturbed by slope failure or excavation. The Santa Cruz Mudstone formation is approximately 200 feet thick at the MSC (Weber Hayes & Associates 2007).

Soils found on the subject property are generally characterized by a deep profile that extends between 40 and over 60 inches on slopes ranging from 0 to 9 percent. Two dominant soil series cover the subject property and are referred to as the Watsonville Series and Elkhorn Series. These soils are found primarily along old coastal terraces and valleys in weathered alluvium derived from numerous rock sources. The Watsonville Series is generally found in the Lower and Upper terraces and extends to the cliff area in the south. The Watsonville loams on 0- to 2-percent and 2- to 15-percent slopes, such as those found on the MSC, are poorly drained soils. During periods of heavy rainfall, these soils may form a perched water table above the clay-rich horizon (above 18 inches). Elkhorn Series soils cover the central portion of the MSC Middle Terrace. Generally, Elkhorn Series soils are well drained, with slow to rapid runoff and moderately slow permeability.

### **Geologic Hazards**

**Soil Erosion.** Erosion is the detachment and movement of soil materials through natural processes or human activities. Depending on the local landscape and climatic conditions, erosion may be very slow to very rapid. The detachment of soil particles can be initiated through the suspension of material in either a hydraulic (water) or eolian (wind) setting. The Mediterranean-type climate in Santa Cruz, exemplified by moist winters and dry summers, results in high wintertime soil erosion rates, while in the summer the area is more prone to wind erosion. The terrace portion of the MSC is essentially level with slopes of less than 2 percent, which greatly reduce the velocity of any surface runoff and therefore, the potential for soil erosion. The erosion hazard associated with the Watsonville and Elkhorn soil series ranges from low to high and increases with increasing slope.

**Coastal Erosion.** As explained in more detail in the CLRDP EIR (pp. 4.6-6 to 4.6-8), bluff erosion results from an episodic failure of a seacliff face undercut at the surf zone, severe wave attack (especially

during high tide), intense and/or prolonged rainfall, or seismic shaking. The rate of bluff erosion varies spatially and over time, depending on alongshore differences in the strength of materials (i.e., alluvium versus more competent bedrock), the presence of or absence of a protective beach and concentration of wave energy (Foxy, Neilson and Associates 1992). The Santa Cruz Mudstone is a siliceous sedimentary rock with fractures and joints sets that is relatively resistant to wave attack. A coastal erosion study was prepared for the Long Marine Lab in 1992 estimated that the average historical rate of sea cliff retreat at the site has been on the order of 0 to 0.2 feet per year, based primarily on comparison of historical aerial photographs from a 50-year period (Foxy, Neilson and Associates 1992). This rate corresponds well with rates observed or calculated for nearby sites, particularly sites with similar geologic conditions. Based on the average cliff retreat rate, FNA recommended a 50-year setback of 30 feet from the top edge of the terrace deposit and a 100-year setback of 50 feet for all proposed structures. The additional distances of 20 feet for the 50-year period and 30 feet for the 100-year period provide a factor of safety over the average retreat rate, particularly in light of possible failures due to earthquakes. The CLRDP land-use plan incorporates a coastal bluff setback of 100 feet for new development, with minor exceptions.

**Seismic Hazards.** The Coast Ranges of California contain both active and potentially active faults, and this is considered a region of high seismic activity. The 2010 California Building Code (CBC) places the entire Bay Area, which includes Santa Cruz County, within Seismic Risk Zone 4. Areas within Zone 4 are expected to experience maximum magnitudes and damage in the event of an earthquake. There are no known active or potentially active faults on or in the immediate vicinity of the MSC, so the possibility of ground rupture at the project site is considered negligible (Jennings 1994). There are four major faults near the project site that have the potential to produce major earthquakes (Figure 3.7-1). The San Andreas Fault Zone to the east and the San Gregorio Fault Zone to the west are the two principal active faults within the region; both have exhibited activity within the last 200 years. The northern extent of the Monterey Bay–Tularcitos Fault is approximately four miles south of the subject property, and trends southeast through the Monterey Bay. The Tularcitos Fault continues onshore to the south of Monterey. The Monterey Bay portion of this fault alignment has exhibited activity within the Holocene time (within the past 11,000 years), so it is considered active. The Sargent Fault is considered active. The Zayante-Vergeles Fault is considered potentially active (Jennings 1994). Table 3.7-1 lists the active and potentially active faults in the vicinity of the MSC, their distances from the MSC, and their seismic characteristics.

**Liquefaction and Settlement.** Liquefaction is a process whereby unconsolidated, granular, and saturated materials lose strength and fail when subjected to ground motion. The greatest potential for liquefaction occurs in those areas where the water table is less than 20 feet below ground surface and the materials are predominately clean, relatively uniform, low-density sands. The geotechnical report prepared for the MSC Projects concludes that there is a high potential for saturated sandy soils at the site to liquefy during strong seismic shaking. The seismically induced settlement could be as much as 4.5 inches (Pacific Crest Engineering 2010b).

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**Table 3.7-1**

**Active and Potentially Active Faults in the Santa Cruz Area**

<b>Fault Name</b>	<b>Distance (miles)</b>	<b>Distance (km)</b>	<b>Direction</b>	<b>Slip Rate (mm/yr)</b>	<b>Maximum Moment Magnitude Earthquake (Mw)</b>
San Andreas (1906 Segment)	13.6	21.9	Northeast	24	7.9
San Gregorio	7.5	12.0	Southwest	3	7.0
Zayante-Vergeles	10.4	16.8	Northeast	0.1	6.8
Monterey Bay-Tularcitos	3.9	6.3	Southwest	0.5	7.3
Sargent	14.5	23.4	Northeast	3	6.8

Source: Pacific Crest Engineering 2010b.

### **3.7.1.2 Regulatory Setting**

The following laws, ordinances, regulations, and standards would apply to MSC development and would minimize the potential for impacts related to geology and soils.

#### **Federal**

**Clean Water Act.** The Clean Water Act empowers the U.S. Environmental Protection Agency (EPA) with regulation of wastewater and storm water discharges into surface waters by using National Pollutant Discharge Elimination System (NPDES) permits and pretreatment standards. At the state level, these permits are issued by the Regional Water Quality Control Boards, but the U.S. EPA may retain jurisdiction at its discretion. The Clean Water Act's primary application for geology and soils is with respect to the control of soil erosion during construction.

#### **State**

**California Building Code.** The California Building Code (CBC) contains the minimum standards for grading, building siting, development, seismic design, and construction in California. Local standards other than the CBC may be adopted if those standards are stricter. The current edition of the CBC was approved in 2010, and is based on the 2009 International Building Code.

**Alquist-Priolo Earthquake Fault Zoning Act.** The Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code Section 25523(a); 20 CCR 1752(b) and (c); 1972 [amended 1994]) was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that a proposed building will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault, generally 50 feet.

**Seismic Hazards Mapping Act.** The California Public Resources Code Chapter 7.8, 1990 Seismic Hazards Mapping Act allows the lead agency to withhold permits until geologic investigations are conducted and mitigation measures are incorporated into plans. The Seismic Hazards Mapping Act addresses not only seismically induced hazards but also expansive soils, settlement, and slope stability. Although the mapping program has not yet completed seismic hazard evaluation and mapping for this area, the MSC is within an area considered to be high priority for mapping, and this is likely to occur during the development period of the proposed CLRDP. If located in an area determined to be susceptible to liquefaction and earthquake-induced landslides, development occurring after the area is zoned would be required to comply with the provisions of Seismic Hazards Mapping Act.

### **Local**

**University of California Policy.** The University of California Policy on Seismic Safety (revised 1995 and 2000) requires that new structures be designed to comply with the current seismic provisions of the CBC or local seismic requirements, whichever are more stringent. The policy also requires that nonstructural elements be anchored for seismic resistance, and that independent review of the structural seismic design of all capital improvement projects for human occupancy or that affect human safety must be performed.

**UC Santa Cruz Campus Standards Handbook.** The Campus Standards Handbook (<http://ppc.ucsc.edu/standards>) contains a set of standards that are provided to UC Santa Cruz consultants for guidance in the preparation of construction documents. The Handbook includes building and site requirements, as well as standards for soil treatment, earthwork, and erosion control.

**CLRDP.** A Drainage Concept Plan has been incorporated into the CLRDP (Appendix D) to address localized erosion and sedimentation issues associated with project construction and operation and post-development. This plan is discussed in detail in Section 3.9, *Hydrology and Water Quality*.

To mitigate geologic hazards associated with the subject property, the CLRDP includes coastal bluff protection measures (Policy 3.7 and Implementation Measure 3.7.1) that restrict new development within 100 feet of the coastal bluff, with the exception of new access and recreation amenities, infrastructure improvements necessitating a location near the bluff edge, minor non-building research infrastructure, habitat restoration/enhancement, and directly related minor structures that are consistent with the CLRDP. The 100-foot bluff setback is incorporated into the CLRDP land-use plan.

**City of Santa Cruz.** The City of Santa Cruz requires that site-specific geologic investigations be performed by qualified professionals for proposed development in areas known to have potential for liquefaction and other seismic hazards, and requires developments to incorporate the mitigations recommended by the investigations. The policy also requires that all new construction conform to the latest edition of the CBC. Under the University's policy, described above, local seismic requirements are applicable only if they are more stringent than the CBC.

The City of Santa Cruz Seismic Hazards Ordinance (Municipal Code Chapter 24.14, Section 70) applies to projects in areas with potential for liquefaction, as designated in the Safety Element of the General Plan (Map S-6). The City's current liquefaction hazard map (<http://www.cityofsantacruz.com/Modules/ShowDocument.aspx?documentid=9193>) shows a "very high" liquefaction potential for a

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portion of Younger Lagoon, but not for the terrace portions of the MSC, where all of the proposed development would be located.

### **3.7.2 Relevant Project Characteristics**

The geotechnical investigation for the CBB Project determined that there is a high potential for saturated sandy soils above the bedrock at the proposed CBB site to liquefy during strong seismic shaking (Pacific Crest Engineering 2010b). Therefore, as recommended by the project geotechnical report, the foundation for the CBB building would be constructed of drilled, cast-in-place, reinforced concrete piers in conjunction with reinforced concrete grade beams. The piers would be embedded at least 5 feet into the Santa Cruz Mudstone bedrock, so the piers would be approximately 10 to 25 feet deep. Soils beneath the planned roads, equipment slabs, greenhouses, and paved pedestrian or bicycle trails would be compacted to depths of 8 to 18 inches.

The proposed MSC Infrastructure (MSCI) Project would include realignment of Delaware Avenue Extension, conversion of the abandoned roadway to a pedestrian/bike trail, installation of new utilities, including a sewer line that would be up to 26 feet deep, and development of a Storage Yard on the Upper Terrace and a Utility Yard on the Middle Terrace. The proposed NEF project would include a new parking lot at the entrance to the campus, and improvement of trails and other public access amenities. The SRP Phase 1B Project would include minor grading and restoration planting for wetland restoration. Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the MSCI Projects, to clarify CLRDP language, to address minor changes to CLRDP language during the Coastal Commission approval process, and to respond to the evolution of the CLRDP Resource Management Plan under the guidance of the Scientific Advisory Committee that was established to guide YLR restoration efforts, as required by the CLRDP.

### **3.7.3 Applicable CLRDP EIR Mitigation Measures**

There are no CLRDP EIR Mitigation Measures related to geology and soils that are applicable to the proposed projects.

### **3.7.4 Impacts and Mitigation Measures**

#### **3.7.4.1 Standards of Significance**

The following standards of significance are based on Appendix G (CEQA Checklist) of the CEQA Guidelines. For the purposes of this EIR, the project would have a significant impact with regard to geology, soils, or seismicity if it would:

- Expose people or structures to potential substantial adverse effects involving strong seismic ground shaking.

- Expose people or structures to potential substantial adverse effects involving seismic-related ground failure, including liquefaction.
- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides.
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, creating substantial risks to life or property.

The potential for the Projects to result in soil erosion and loss of topsoil on water quality are assessed in Section 3.9 of this EIR, *Hydrology and Water Quality*.

**3.7.4.2 Analytical Method**

The potential for impacts associated with site geologic conditions were evaluated through review of the existing information on the geologic setting and geological hazards on the MSC and on the CBB Project site specifically, the project geotechnical reports, and the proposed project plans.

**3.7.4.3 Project Impacts and Mitigation Measures**

***Surface Fault Rupture***

**Previous Analysis.** The CLRDP EIR (p. 4.6-17) determined that surface fault rupture is not a potential seismic hazard on the MSC because there is no known active fault on the MSC and the campus is not located within an earthquake fault zone designated under the Alquist-Priolo Earthquake Fault Zoning Act.

**Project Impact.** There are no known active faults on the MSC. The potential for fault rupture at the ground surface is low; therefore construction of the proposed MSC Projects would not result in a hazard associated with surface fault rupture (Pacific Crest Engineering 2010a).

***Earthquake-Induced Ground Shaking***

<b>MSC Projects Impact GEO-1</b>	The CBB lab building and Greenhouse Complex would be subject to seismic shaking, which could create hazards to people or property.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building and greenhouses)
<b>Significance</b>	Less than significant

<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR determined that, although seismic ground shaking in the event of a major earthquake in the region could potentially expose people and property on the MSC to injury and structural damage, this hazard would not constitute a significant environmental impact because buildings constructed under the CLRDP would be designed and constructed in accordance with provisions of the California Building Code (CBC) (Title 24 of the California Code of Regulations) and the recommendations of geotechnical and structural engineers. Compliance with the CBC and incorporating recommendations of the geotechnical engineer into the project design would not wholly eliminate damage or injury during an earthquake but in reducing the incidence of collapse of a structure, would reduce the impact of ground motion to an acceptable level (CLRDP EIR, pp. 4.6-17 to 4.6-18).

**Project Impact.** The proposed NEF and SRP 1B projects would not create hazards to people or property as a result of seismic shaking. The geotechnical reports for the proposed CBB Project and MSC Project provide recommendations that would reduce the potential for structural damage from seismic ground shaking to the CBB lab building and Greenhouse Complex and the infrastructure that would be developed under the MSC Project to an acceptable level, although seismic shaking could result in some incidental architectural damage to the proposed CBB building. The buildings and other CBB and MSC project elements would be constructed in accordance with the recommendations of the geotechnical report as well as the CBC. The impact would be less than significant.

***Seismically Induced Ground Failure and Liquefaction***

<b>MSC Projects Impact GEO-2</b>	Liquefiable soils present beneath the site of the proposed CBB lab building could result in differential settlement of building foundations, cause downward warping in roadways and parking lots, and disrupt underground utilities in the event of a major earthquake.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building and greenhouses) MSC Project (roads, underground utilities)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.6-18 to 4.6-19) determined that, although liquefiable soils may underlie portions of the MSC, the potential hazards would not constitute a significant environmental impact. Liquefaction could result in differential settlement of building foundations, cause downward

warping in roadways and parking lots, and disrupt underground utilities. However, liquefiable soils would be recognized during site-specific geotechnical investigations, and standard engineering practices are available to mitigate the potential impact of liquefaction. Therefore, the CLRDP EIR concluded that site-specific geotechnical studies for future development at the MSC would ensure that impacts related to liquefaction are less than significant.

**Project Impact.** The proposed NEF and SRP 1B projects do not include built features that could create hazards to people or property as a result of seismic shaking. The geotechnical study for the proposed CBB project identified liquefiable soils beneath the CBB lab building site (Pacific Crest Engineering 2010b). As recommended by the geotechnical study, the foundation for the proposed CBB building would be constructed of drilled, cast-in-place, reinforced concrete piers in conjunction with reinforced concrete grade beams. The piers would be embedded at least 5 feet into the Santa Cruz Mudstone bedrock. Liquefaction could potentially result in cracking and/or warping of the pavement in the adjacent parking lot, but this would not result in a significant hazard. The impact would be less than significant.

***Seismically Induced Slope Failure***

**Previous Analysis.** As discussed in the CLRDP EIR (p. 4.6-20), there is a potential that a major earthquake could produce a significant landslide at the MSC by dislodging portions of the coastal bluffs and the cliffs adjacent to Younger Lagoon. However, the CLRDP EIR determined that the setback of 100 feet from bluffs for buildings and facilities would reduce the potential for seismically induced ground failure and ensure that impacts related to seismically-induced slope failure are less than significant.

**Project Impact.** As required by the CLRDP, the proposed CBB, greenhouses, and other structures constructed as part of the proposed Projects would be outside the 100-foot setback from the bluffs, and would not be affected by the potential for seismically-induced ground failure. No impact would occur.

***Soil Erosion and Loss of Topsoil***

<b>MSC Projects Impact GEO-3</b>	Construction activities for the proposed MSC Projects could result in erosion of site soils.
<b>Applicable CLRDP Mitigation/Implementation Measures:</b>	None
<b>Applicable Projects/ Project Elements</b>	Construction activities for all projects.
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** As discussed in the CLRDP EIR (p. 4.6-21), the potential for soil erosion at the site is relatively low because the terrace is nearly flat, with an overall slope of about 2 percent. Minor soil

erosion could occur in the short-term during construction, but this would be reduced by standard construction and engineering practices, including winterizing construction sites and protecting exposed soil during heavy rainfall.

**Project Impact.** To comply with the NPDES requirements, the construction contractor for the proposed MSC Projects would be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) using a template provided by UC Santa Cruz (<http://ppc.ucsc.edu/standards/swppptemplate/>). Appropriate erosion-control measures would be incorporated into the SWPPP and implemented during site preparation, grading, and construction. These measures would include, but would not limited to, the following: design and construction of cut and fill slopes in a manner that will minimize erosion; protection of exposed slope areas; control of surface flows over exposed soils; use of wetting or sealing agents or sedimentation ponds; limiting soil excavation in high winds; construction of berms and runoff diversion ditches; and use of sediment traps, such as hay bales. In addition, as described in Chapter 2, elements of the MSCCI and SRP Phase 1B projects would entail work in federal jurisdictional wetlands, which will require a Clean Water Section 404 permit from the Army Corps of Engineers. The Campus would implement any additional erosion and sediment control measures required by the permit.

Implementation of the construction erosion control measures included in Campus Standards Handbook, the SWMP, and the NPDES requirements would ensure that construction of the proposed MSC Projects does not result in significant soil erosion. The impact would be less than significant, and no project-level mitigation is required.

### 3.7.4.4 Cumulative Impacts and Mitigation Measures

#### ***Seismic Hazards***

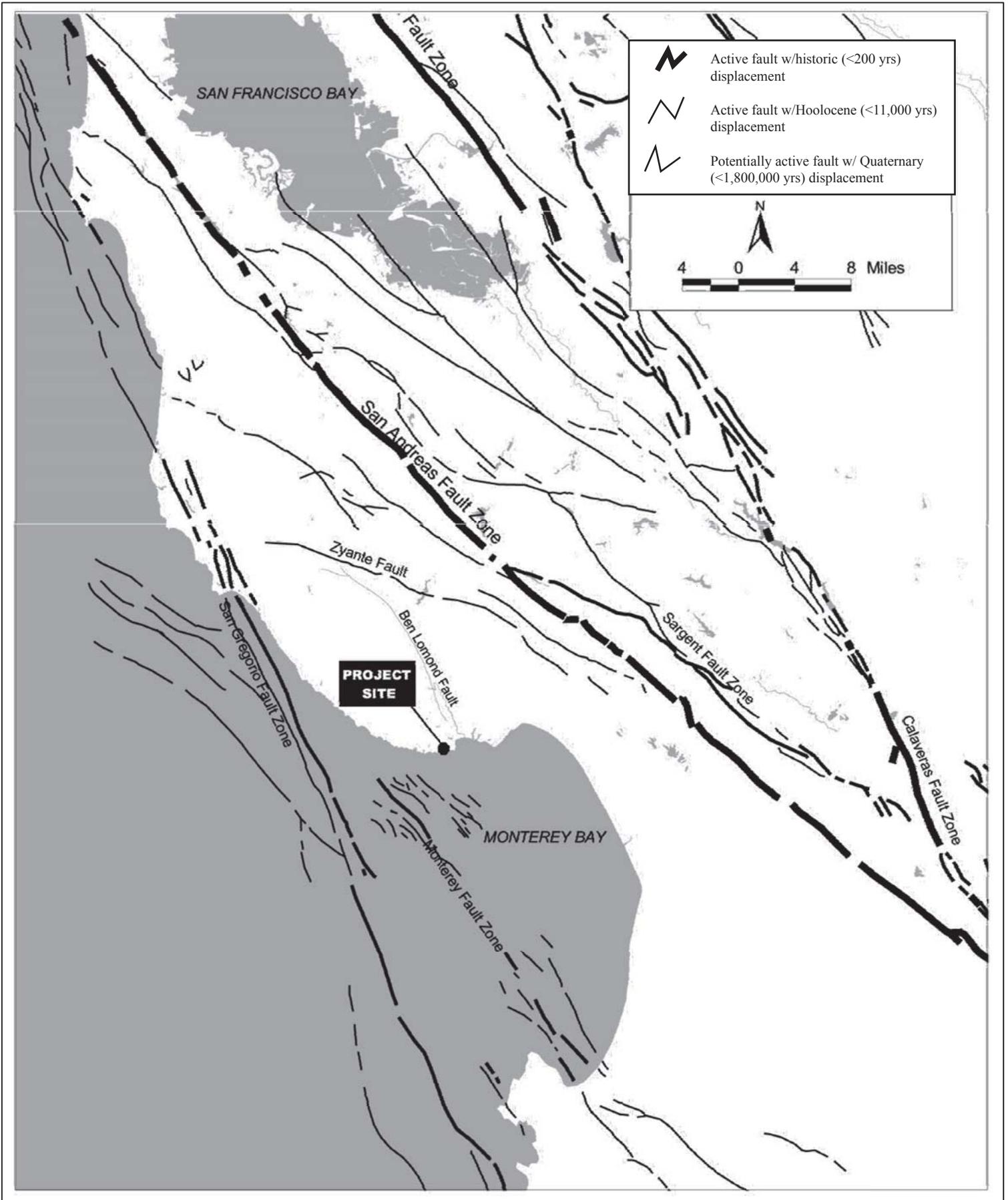
<b>MSC Projects Impact GEO-4</b>	The proposed CBB and MSCCI projects, in conjunction with other planned or foreseeable future projects in the site vicinity, would create cumulative geologic and seismic impacts by increasing the numbers of people and/or structures exposed to the risks of earthquakes and their associated geologic hazards.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building and greenhouses) MSCCI Project (roads, underground utilities)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The proposed CLRDP in conjunction with other planned or foreseeable future projects in the site vicinity would create cumulative geologic and seismic impacts by increasing the numbers of people and/or structures exposed to the risks of earthquakes and their associated geologic hazards. The CLRDP EIR (pp. 4.6-23 to 4.6-24) determined that the cumulative impact would be less than significant because the seismic hazard in this area is similar to that in other parts of northern California, and the majority of persons who would be exposed to the hazard at this site are likely similarly exposed to the risk at other locations where they would be residing or working prior to moving to this area. Furthermore, new construction would comply with current building codes and incorporate seismic safeguards that would minimize the risk, and therefore the impact would not be cumulatively significant.

**Project Impact.** The proposed CBB and MSCI projects would expose people and structures to hazards associated with seismic shaking and liquefaction. The proposed projects would be designed and constructed in conformance with the CBC and the recommendations of the projects' geotechnical studies, which would ensure that the hazards would be acceptable and a significant impact would not occur. For the reasons discussed in the CLRDP EIR (pp. 4.6-23 to 4.6-24) and summarized above, the cumulative impact would be less than significant.

### **3.7.5 References**

- Foxx, Neilson and Associates. 1992. *Geologic and Coastal Erosion Study, Long Marine Laboratory Addition, University of California, Santa Cruz*. December 15.
- Jennings, C.W. 1994. *Fault Activity Map of California and Adjacent Areas*. California Division of Mines and Geology, Geologic Data Map No. 6, 1:750,000, 1994.
- Pacific Crest Engineering, Inc., 2010a. *Geotechnical and Geologic Feasibility for Marine Science Campus Infrastructure, Santa Cruz, California*. September 10.
- Pacific Crest Engineering, Inc., 2010b. *Geotechnical Investigation for Coastal Biology Building, Marine Science Campus, Santa Cruz, California*. September 30.
- Weber Hayes & Associates, 2007. *UCSC Marine Science Campus Potential for Alternative Water Supply from Groundwater, and Review of Potential Impacts*. December 12.



**3.8 HAZARDS AND HAZARDOUS MATERIALS**

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## 3.8 HAZARDS AND HAZARDOUS MATERIALS

This section evaluates the potential impacts related to hazards and hazardous materials that could result from construction and occupancy of the MSC Projects. This section provides project-level analysis and additional detail regarding hazards and hazardous materials. It supplements and augments, pursuant to CEQA Guidelines Section 15152, the analysis provided in Section 4.7 of the CLRDP EIR.

In response to the Notice of Preparation, commenters noted the potential for the release of asbestos during demolition of the existing greenhouses.

### 3.8.1 Environmental Setting

#### 3.8.1.1 Definitions

This EIR uses the definition of “hazardous material” given in California Health and Safety Code Section 25501(n) and (o), which defines hazardous material as:

*[A]ny material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. “Hazardous materials” include, but are not limited to, hazardous substances, hazardous wastes, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.*

By convention, most hazardous materials are thought to be hazardous chemicals, but certain radioactive materials and biohazardous materials are also hazardous, as defined here. This EIR considers hazardous materials to include hazardous chemicals, radioactive materials, and biohazardous materials.

#### 3.8.1.2 Regulatory Setting

UC Santa Cruz is subject to substantial government health and safety regulations applicable to the use and disposal of all forms of hazardous materials. This section provides an overview of the regulatory setting applicable to health and safety at UC Santa Cruz and introduces its established health and safety policies and procedures.

Research activities are subject to numerous laws and regulations at all levels of government. In order to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs, the State of California developed the Unified Program to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for certain environmental and emergency management programs. The Unified Program is implemented at the local government level by Certified Unified Program Agencies (CUPA). Certain state regulations have been delegated to Santa Cruz County through the CUPA program,

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including the Business Plan, the Hazardous Waste Control Law, and the Underground Storage Tank (UST) program. A summary of applicable laws and regulations related to the storage, use, and disposal of hazardous materials and to safety hazards at the project site and a summary of Campus policies and procedures is provided below.

**Applicable Regulations**

**Worker Safety Requirements.** The California Occupational Safety and Health Administration (Cal/OSHA) and the Federal Occupational Safety and Health Administration (Fed/OSHA) are the agencies responsible for ensuring worker safety in the handling and use of chemicals in the workplace. In California, Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations. These regulations concern the use of hazardous materials in the workplace, including requirements for employee safety training; availability of safety equipment; accident and illness prevention programs; hazardous substance exposure warnings; and emergency action and fire prevention plan preparation. Cal/OSHA also enforces hazard communication program regulations, including procedures for identifying and labeling hazardous substances, and requires Material Safety Data Sheets (MSDSs) to be available for employee information and training programs.

**Hazardous Materials Management Planning.** State law requires detailed planning to ensure that hazardous materials are properly handled, used, stored and disposed of, and to prevent or mitigate injury to health or the environment in the event that such materials are accidentally released. The California Office of Emergency Services implements these requirements. Federal laws such as the Emergency Planning and Community-Right-To-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act or SARA) impose similar requirements.

The State Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires that any business that handles hazardous materials prepare a Business Plan, which must include an inventory of hazardous materials that are handled or stored on the site, an emergency response plan, and a training program. Under the Business Plan Act, state agencies are required to submit business plans to designated local agencies. For UC Santa Cruz, the designated local agency is the Santa Cruz County Department of Environmental Health (SCCDEH).

**Hazardous Substances Transportation.** Under Title 49 of the Code of Federal Regulations (CFR), the U.S. Department of Transportation (DOT) has the regulatory responsibility for the safe transportation of hazardous materials between states and to foreign countries. DOT regulations govern all means of transportation, except for those packages shipped by mail, which are covered by U.S. Postal Service regulations. The federal Resource Conservation and Recovery Act of 1976 (RCRA) imposes additional standards for the transport of hazardous wastes. The California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies.

**Hazardous Waste Handling Requirements.** In 1980, RCRA created a major federal hazardous waste regulatory program that is administered by the U.S. Environmental Protection Agency (U.S. EPA). Under RCRA, EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous wastes from “cradle to grave.” Under RCRA, individual states may implement their own hazardous waste programs. In 1992, EPA approved California’s program called the Hazardous Waste Control Law

(HWCL), administered by the California Environmental Protection Agency Department of Toxic Substances Control (DTSC). For UC Santa Cruz, the agency delegated to implement these requirements locally is the SCCDEH.

**Radioactive Materials.** The Atomic Energy Act of 1954 and its implementing regulations establish the principal mechanism for regulating the possession and use of radioactive materials. The Energy Reorganization Act of 1974 vested regulatory functions, other than those pertaining to nuclear weapons and nuclear energy, in the Nuclear Regulatory Commission (NRC). Except for matters over which the Atomic Energy Act establishes exclusive federal jurisdiction,<sup>1</sup> the NRC may delegate its regulatory authority to a state agency.

The California State Radiological Health Branch of the Department of Health (CDPH) regulates the possession and use of radioactive materials at facilities in California, except for federal installations, which remain under NRC control. At UC Santa Cruz, users of radioactive materials must comply with the California Radiation Control Law and its implementing regulations, and the Campus' license granted under the law. This law requires that any person desiring to possess, use, or transfer any radioactive material must have a license. UC Santa Cruz holds a "Broad scope" license, under the California Radiation Control Law, that governs the uses of radioactive materials in laboratories at UC Santa Cruz, including those at the MSC. A broad scope license authorizes an institution to use radioactive materials for specified general purposes such as research and development. The institution in turn operates a program that approves and oversees each particular use of radioactive material within the institution.<sup>2</sup> In order to receive a broad scope license, the institution must have considerable experience with large and varied radioisotope programs, a well-developed health physics group that is capable of evaluating and dealing with radiation safety problems that might be encountered, and detailed procedures for evaluating proposed specific uses of radioactive materials and for maintaining surveillance over approved uses.

Each user's compliance with the terms of the Campus' license is ensured through administrative procedures outlined in the University's Radiation Use Authorization. All uses of radiation on UC Santa Cruz' Main Campus and also on the Marine Science Campus are subject to review and approval by the Radiation Safety Committee and/or the Radiation Safety Officer prior to acquisition of radioactive materials. The Radiation Safety Officer is the head of the Radiation Safety Program, which oversees the daily use of radioactive materials. In effect, CDPH has delegated to UC Santa Cruz the authority to issue specific licenses to specific persons for specific uses of radioactive material on its campus. Therefore, in order to receive its broad scope license, UC Santa Cruz must assure CDPH that the University's authorization procedures are compatible with the regulations governing the issuance of specific licenses.<sup>3</sup>

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<sup>1</sup> The NRC, for example, must retain authority over the export and import of radioactive materials, the ocean disposal of radioactive waste, and construction and operation of any facility whose primary purpose is to produce or use radioactive materials. 42 U.S.C § 2021(c).

<sup>2</sup> California regulations do not specifically provide for broad scope licenses. The regulations distinguish between general and specific licenses. A broadscope license is a kind of specific license issued by CDPH to institutions, like UC Santa Cruz, that have an established radiation safety program. General licenses, on the other hand, are effective without the filing of an application or the issuance of documents. 17 C.C.R. § 30190. Use of radioactive material in certain equipment, for example, is authorized under a general license as specified in the regulations. 17 C.C.R. § 30192.1.

<sup>3</sup> 17 C.C.R. §~ 30194-30195.

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UCSC's Environmental Health and Safety (EH&S) Office must maintain records of authorizations for all individual projects. These records must include the following information: location of use; names of all independent users, in addition to the name of the principal investigator; résumé of each independent user's training and experience with respect to use of radioactive materials; description of the nature and purpose of the proposed use; a specification of isotopes, forms, activity per procedure, and possession limits adequate to cover the proposed use; a description of major steps in the processing and handling of the isotopes including disposal; records of receipt, transfer, and disposal; description of facilities and equipment to be used in processing and storing the isotopes; a copy of the authorization from RSC to user which permits the use in question and contains conditions under which the use may be conducted; the results of all internal inspections of the operating program; the exposure (and bioassay) histories of the users; leak test records; and histories of incidents and unusual occurrences. EH&S reviews such authorizations annually.

**Biosafety Standards.** At this time there are no Risk Group 2 biological agents or recombinant DNA being studied at the MSC. Any proposed research that would involve the use of these materials would need to be reviewed and approved by the Institutional Biosafety Committee. Due to the design of the labs at the MSC, designated research using biohazardous materials would be limited to approved Biosafety Level 2 operations.

The removal and handling of asbestos-containing materials is governed by EPA regulations under Title 40 Code of Federal Regulations and Cal/OSHA standards. The Monterey Bay Unified Air Pollution Control District provides local oversight of the National Emissions Standards for Hazardous Air Pollutants (NESHAPs), which includes designated demolition and renovation activities impacting materials containing asbestos. Cal/OSHA, under Title 8 Code of California Regulations, regulates the disturbance, removal, and renovation of materials containing asbestos. The NESHAPs and Cal/OSHA regulations require facilities to take appropriate precautions to protect employees and the public from exposure to asbestos.

The Cal/OSHA lead standard for construction activities is implemented under Title 8 Code of California Regulations. The standard applies to any construction activity (such as removal of lead-based paints) that may release lead dust or fumes (for example, from lead-based paints that may be present in older buildings), including, but not limited to, manual scraping, manual sanding, heat gun applications, power tool cleaning, rivet busting, abrasive blasting, welding, cutting, or torch burning of lead-based coatings. Unless otherwise determined by approved testing methods, all paints and other surface coatings are assumed to contain lead, depending on the application date of the paint or coating.

**Water Quality Control Standards.** The Porter-Cologne Water Quality Control Act, codified in the California Water Code, authorizes the State Water Resources Control Board to implement programs to control pollution into state waters. This law, in part, implements the requirements of the Federal Clean Water Act. The Regional Water Quality Control Board establishes the allowable concentrations of a number of specific hazardous substances in treated wastewater discharged from the campus. Wastewater produced on campus is conveyed via the campus sewer system, without treatment, to the City of Santa Cruz Wastewater Treatment Plant.

**UC Santa Cruz Policies and Procedures**

**Campus Hazardous Materials Handling.** UC Santa Cruz has charged EH&S with compliance monitoring to ensure a safe and healthy campus environment and with coordinating the management of hazardous materials on campus. EH&S has the authority to require abatement of any condition or operation that could endanger people or facilities on campus or result in violations of pertinent federal or state laws or campus policies concerning health and safety. EH&S develops specific policies and programs in the following areas: industrial hygiene, chemical safety, physical safety, radiation safety, biohazard safety, hazardous waste management, and environmental protection.

EH&S facilitates Cal/OSHA and Fed/OSHA compliance efforts on campus. EH&S prepared a model Injury and Illness Prevention Plan, which is used by individual campus units as the basis for preparing unit-specific plans; these plans set forth processes and procedures for employee training, workplace inspection, hazard reporting, and required documentation. Units or laboratories handling hazardous materials must also incorporate a Chemical Hygiene Plan and other specific features in their Injury and Illness Prevention Program that address the particular hazards of their operations. Emergency response plans are also prepared by individual units and by the campus as a whole. In accordance with the Business Plan Act, the Campus has prepared a business plan to address hazardous materials handling at UC Santa Cruz, which has been submitted to the Santa Cruz County Department of Environmental Health. Routine audits for plan compliance are performed by County inspectors.

To support compliance with all applicable health and safety policies and regulations, EH&S distributes written guidelines addressing health and safety issues (e.g., the use and handling of hazardous materials, including radioactive materials). Individual departments are assigned the responsibility for implementing specific training programs and keeping adequate records. In addition, EH&S publishes information (e.g., fact sheets) for distribution to Injury and Illness Prevention Plan coordinators. EH&S also maintains a web page that contains a variety of health and safety information.

In accordance with the UC Santa Cruz Radioactive Materials License, laboratories in which radioactive materials are used are subject to inspection by EH&S staff one to four times per year. EH&S personnel use a facility audit checklist when inspecting labs and other UC Santa Cruz facilities where radioactive materials are used. The inspections are conducted to ensure compliance with applicable codes and policies and to be certain of conformity with applicable standards.

UC Santa Cruz EH&S requires that any laboratory wanting to work with biohazardous agents, recombinant DNA organisms, select agents<sup>4</sup> (as defined by the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services), or material requiring Biosafety Level 2 or above, must contact the UC Santa Cruz Biosafety Officer, fill out the UC Santa Cruz Biological Agent Use Authorization Form, and receive approval from the Institutional Biosafety Committee before beginning work.<sup>5</sup>

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<sup>4</sup> Select agents are 36 specific biohazardous materials that could “cause substantial harm to human health.”

<sup>5</sup> UC Santa Cruz Environmental Health and Safety, [http://ehs.ucsc.edu/Lab\\_Research\\_Safety/ehs.asp?page=BioSafety](http://ehs.ucsc.edu/Lab_Research_Safety/ehs.asp?page=BioSafety), accessed November 5, 2002.

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**Campus Hazardous Waste Disposal.** EH&S advises UC Santa Cruz departments on and establishes procedures for handling, storage, and disposal requirements for all hazardous chemical, radioactive, and biological wastes. Hazardous wastes are collected and brought to a central hazardous waste storage area (where materials are held for less than 180 days), packaged in accordance with federal and state requirements, and shipped via authorized transport services for recycling, treatment, and/or disposal at authorized sites.

**Campus Emergency Response/Evacuation Planning.** UC Santa Cruz maintains an Emergency Response Plan describing the roles and operation of the different units of the Campus during an emergency. The plan sets forth standard operating procedures adopted by UC Santa Cruz for handling emergencies resulting from fires, floods, storms, earthquakes, hazardous material incidents and other potential disasters. The Emergency Response Plan uses a management system widely known as the Incident Command System. The Incident Command System provides an organizational structure capable of responding to all levels of emergencies from simple to complex. It also provides the flexibility to respond to an incident as it escalates in severity. Each division is responsible for ensuring that its reporting units have in place evacuation plans, personnel accountability systems, plans for continuity of operations/recovery, and plans for dissemination of information and training. Each unit is responsible for ensuring that its employees and students are trained in how to react to an emergency, and, during an emergency, for ensuring that its employees, students, and visitors have evaluated the workplace, accounting for those evacuated, and communicating needs to the appropriate Incident Commander, Divisional Operations Center, or Emergency Operations Center. All employees are expected to be familiar with Campus, building, and unit emergency plans, including evacuation procedures. A Building Coordinator, who is responsible for preparing a Building Emergency Plan and identifying an Emergency Assembly Point, is assigned to each building. Personnel may be required to evacuate a building, a region of campus, or the entire campus. The decision to evacuate generally resides with the Disaster Director, although lower levels of personnel such as Fire, Police, or EH&S staff may order evacuation if the incident requires it.

### **3.8.1.3 Existing Conditions**

#### **Hazardous Materials Use, Storage, and Disposal**

This section describes the existing hazardous material use, storage, and disposal for the campus and the existing controls in place to reduce the risks.

**Hazardous Chemicals.** Three broad areas of research are presently supported by existing MSC facilities: marine vertebrate studies, marine invertebrate biology, and marine aquatic toxicology. Research activities associated with the MSC currently use a variety of chemicals. A small portion of the hazardous chemicals used at the site evaporates and disperses into the air through laboratory fumehoods and the building ventilation system. The hazardous chemicals that are used and their airborne emissions are analyzed under Toxic Air Contaminants in Section 3.3, *Air Quality*, of this document. In addition to hazardous wastes generated in laboratories, marine maintenance and outfitting activities also result in hazardous waste, primarily due to the paints and metals used to protect the vessels and equipment used in marine research. Existing chemical use at the MSC resulted in the generation of approximately 1,984 pounds of

hazardous wastes in 2010, based on 2010 Uniform Hazardous Waste Manifests maintained by EH&S. This represents about 3 percent of all UC Santa Cruz hazardous wastes shipped. The quantity of wastes fluctuates somewhat from year to year, but this figure is representative of the quantity of wastes currently generated. These hazardous wastes include formalin, methanol, methylene chloride, hexane, hydrochloric acid, acetone, ethyl ether, xylene, trichloroethane, and butanol (Blunk 2011).

Currently, hazardous waste storage areas and storage procedures are periodically inspected by EH&S, the University of California Fire Department (UCFD) fire marshal, and the Santa Cruz County Department of Environmental Health. The stored materials are collected at least every 180 days by a licensed hazardous waste hauler contracted by EH&S. The materials are recycled, treated, and/or disposed of offsite at approved licensed facilities.

**Radioactive Materials.** Researchers at the Marine Science Campus use only small amounts of unsealed radioisotopes. Generally, the radionuclides most often encountered at the MSC include  $^{14}\text{C}$ ,  $^3\text{H}$ ,  $^{125}\text{I}$ ,  $^{32}\text{P}$ , ( $^{33}\text{P}$ ), and  $^{35}\text{S}$  (CHIPS) all in millicurie<sup>6</sup> quantities or less. The use of radioactive material at MSC is regulated under UC Santa Cruz's broad scope license, issued by the CDPH. This license allows for the use of both sealed and un-sealed radioisotopes at MSC beyond what is presently in use.

All current, and any future, radioisotope use is reviewed by the Campus Radiation Safety Officer and the Campus Radiation Safety Committee as indicated in Radiation Safety Manual. This review includes an evaluation of the technical proficiency of the researchers, their knowledge of UC Santa Cruz radiation safety programs, and the adequacy of the facility for conducting the research. All applications are reviewed for compliance with Title 17 of the California Code of Regulations and the conditions in the UC Santa Cruz radioactive materials license.

#### **Residual Pesticides in Surface Soils**

As described in detail in the CLRDP EIR (pp. 4-7-10 to 4.7-12), three investigations of residual pesticides from historical agricultural uses have been conducted at the Marine Science Campus. The first study, in 1995, concluded that the pesticides dieldrin, DDT, DDD, and DDE were present in the surficial soils (Steven Raas & Associates 1995). A follow-up study was performed in 1997 to estimate the health risk posed by residual pesticides detected at the site (Applied Science and Engineering 1997). The third assessment, which was conducted in September and October 2002, was performed in accordance with the "Interim Guidance for Sampling Agricultural Soils," prepared by the California DTSC to supplement the DTSC "Preliminary Endangerment Guidance Manual." The guidance manual was developed for evaluating soils at proposed new school sites and/or new school construction expansion projects and serves as a conservative sampling approach to collecting data for health risk assessment modeling. All constituents of organochlorine pesticides detected during the 2002 assessment were well below the U.S. EPA's Preliminary Remediation Goals (PRGs) for residential land use.

The CalTOX Multimedia Exposure Model was used to model the human health risk associated with the residual pesticides detected at the site in 1997, using the soil data collected in 1995 and 1997, and again in 2002, using the new data collected that year. Both model applications indicated that residual pesticides

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<sup>6</sup> A millicurie is one-thousandth of a Curie, a measure of the rate of radioactive decay. A millicurie is equal to 37 megabecquerels (Mbcq).

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measured in the soil at the Marine Science Campus pose a level of risk to human health that is well below normally accepted values (CLRDP EIR, p. 4.17-12).

### **Wildland Fire Hazards**

For a discussion of fire protection services, see Section 3.13, *Public Services*. The original Younger Lagoon Reserve and the Moore Creek corridor are identified as fire hazard areas on Map S-11 of the Santa Cruz General Plan's Safety Element. However, the risk of wildland fires is low due to the coastal location of the project site, the low-lying vegetation, and the presence of various building structures.

### **Airports and Airstrips**

The MSC site is not located within an airport land-use plan and is not within 2 miles of a public airport or public-use airport. Additionally, the project site is not within the vicinity of a private airstrip.

## **3.8.2 Relevant Project Characteristics**

The proposed CBB Project includes development of a new, 40,000-gsf lab building, two new parking lots, a Greenhouse Complex, and associated utilities and storm water system. The proposed MSC Project consists of utility and circulation improvements to serve both the CBB Project and future development under the CLRDP. The proposed NEF Project would develop a complex of public access and interpretive facilities, including pedestrian access trails and associated public access parking, an interpretive program shelter, educational signage, and outdoor exhibits. Under the proposed SRP 1B Project, CLRDP-mandated wetland restoration and habitat improvements would be implemented. CLRDP Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the MSC Projects, to clarify CLRDP language, to address minor changes to CLRDP language during the Coastal Commission approval process, and to respond to the evolution of the CLRDP Resource Management Plan under the guidance of the Scientific Advisory Committee that was established to guide YLR restoration efforts, as required by the CLRDP.

Research lab activities, like those in existing labs at the Ocean Health Building at the MSC and the Earth and Marine Sciences Building at the Main Campus, would involve the storage, use, and disposal of small quantities of hazardous materials. These materials could include small quantities of radioactive materials; flammable chemicals such as alcohols and ether; corrosives such as hydrochloric, nitric, and sulfuric acids; oxidizers such as nitrate; and chemicals that pose health hazards such as carcinogens and tetragens. Small quantities of pesticides would be stored in the greenhouse research facility and used in the greenhouses.

The labs in the CBB would be designed to accommodate research at Biosafety Level 2 (BSL-2), as defined by the Center for Disease Control manual, *Biosafety in Microbiological and Biomedical Laboratories* (5<sup>th</sup> edition). BSL-2 is suitable for work involving agents that pose moderate hazards to personnel and the environment. At BSL-2, laboratory personnel must have specific training in handling pathogenic agents and are supervised by scientists competent in handling infectious agents and associated procedures; access to the laboratory is restricted when work is being conducted; and all procedures in which infectious aerosols or splashes may be created are conducted in biosafety cabinets or other physical containment equipment.

Phase A of the MSCI Project would involve installation of a small unit for storage of regulated waste awaiting off-site disposal, in the Utility Yard in Subarea 2 of the Middle Terrace Development Zone. The new regulated materials storage unit would be used for accumulation and temporary storage of hazardous wastes from the new lab building, greenhouses, and other existing and future research and education facilities, as well as waste oil and other regulated wastes generated by landscape and building maintenance at the MSC. No waste bulking or aggregation would occur at the storage unit.<sup>7</sup> The wastes would be stored in closed drums, boxes, containers, and packaging to prevent accidental damage and leaks. Stored materials would be segregated by hazard category and compatibility to prevent chemical reactions, fires, and heat release that would otherwise occur if incompatible wastes are mixed or come into contact during emergency events. Waste would be picked up regularly from satellite accumulation areas at each lab and transported to the storage unit by qualified staff. A certified regulated waste contractor then would regularly pick up waste from the storage unit.

The proposed regulated waste storage unit would be a prefabricated, steel-walled building of approximately 150 square feet. The building would be surrounded by a fence and secure gates with warning signs and a system for tracking personnel movement in and out of the area. The interior of the storage unit would be equipped with multiple hazardous chemical storage units for materials segregation, natural convection vents to prevent accumulation of hazardous vapors, and electrical grounding to prevent accumulation of static electricity. The storage unit also would be equipped with an integral secondary containment sump. The structure would include fire protection systems as required by applicable codes and regulations. These features would minimize the risk of accidental release or exposure of the public or the environment to any hazardous materials.

Neither the NEF Project nor the SRP 1B Project would result in increased use or disposal of hazardous materials. CLRDP Amendment #1 does not have any implications for hazards or hazardous materials. Therefore, the NEF Project, SRP 1B, and CLRDP Amendment #1 are not discussed further in this section.

### **3.8.3 Applicable CLRDP EIR Mitigation Measures**

There are no CLRDP EIR mitigation measures related to hazards and hazardous materials that are applicable to the proposed projects.

### **3.8.4 Impacts and Mitigation Measures**

#### **3.8.4.1 Standards of Significance**

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, an impact is considered significant if campus growth under the 2005 LRDP would:

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<sup>7</sup> “Bulking” hazardous waste refers to the combination of chemically compatible liquid chemicals into drums from smaller containers. “Aggregation” of hazardous waste involves the collection of small accumulations of waste in a larger container.

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- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

The MSC is not within 2 miles of a public airport or near a private airstrip. Therefore, the CEQA Checklist items that address safety hazards associated with airports are not analyzed below.

### 3.8.4.2 Project Impacts and Mitigation Measures

#### ***Hazardous Materials Use, Transport, and Disposal***

<b>MSC Projects Impact HAZ-1</b>	The proposed CBB Project would result in an increase in the use, storage, and disposal of petroleum products and hazardous materials on the campus.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	Implementation Measure 3.10.1 – Hazardous materials management
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab building, greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.7-15 to 4.7-17) anticipated that operation of the proposed CLRDP development projects would result in an increase in the use, storage, and disposal of petroleum products and hazardous materials at the MSC. Increasing the number of laboratories at the MSC would result in an overall increase in use of the types of chemicals already used in the Ocean Health Building’s existing laboratories. Facility operation would require the use and/or storage of small quantities of potentially hazardous materials in commercially available receptacles. The EIR determined that the hazards associated with the increase in the quantities of hazardous materials used on the MSC would not

create a significant environmental impact because UC Santa Cruz complies with all federal and state laws regulating petroleum products and other hazardous materials.

**Project Impact.** The proposed CBB Project would result in an increase in the use, storage, and disposal of petroleum products and hazardous materials on the campus. The types of materials used generally would be similar to those used in existing research labs and in building and site maintenance operations on the MSC. In addition, small amounts of pesticides would be stored in the greenhouse research facility. Consistent with existing Campus policies and procedures, hazardous waste generated at various locations on the MSC would be picked up by qualified staff, who would transport the wastes to the storage unit that is proposed as part of the MSCI Project. The increase in hazardous materials use, storage and disposal associated with the proposed CBB Project would not exceed that analyzed in the CLRDP EIR. Therefore, the impact would be less than significant.

***Hazardous Materials Release***

<b>MSC Projects Impact HAZ-2</b>	The proposed CBB Project would slightly increase the risk of hazardous materials release at the MSC.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	Implementation Measure 3.10.1 – Hazardous materials management
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab, greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.7-17 to 4.7-18) anticipated that development of the CLRDP building program would incrementally increase the risk of accidental spillage of hazardous substances, but that hazardous materials management requirements included in the CLRDP would ensure protection against hazardous materials spillage and effective containment and cleanup facilities and procedures for accidental spills. In addition, UC Santa Cruz would continue to comply with all federal and state laws regulating petroleum products and hazardous materials. Therefore, CLRDP EIR determined that the increased hazard associated with the potential release of hazardous materials by UC entities would not be a significant environmental impact.

**Project Impact.** The CLRDP EIR anticipated the development under the CLRDP of up to 254,000 sf of building space for marine research and education. These facilities would house research and teaching laboratories that would use hazardous chemicals and small quantities of radioactive materials similar to those used in existing marine vertebrate studies, marine invertebrate biology, and marine aquatic toxicology labs at the MSC. The proposed CBB lab building and greenhouses, which would be occupied by the UC Santa Cruz Ecology and Evolutionary Biology Department, would be the first marine research and education buildings constructed under the CLRDP. The hazardous materials used by researchers of

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the Ecology and Evolutionary Biology Department would be similar to those currently in use in labs at the MSC. Therefore, the increase in hazardous materials use, storage and disposal associated with the proposed CBB Project would not exceed that analyzed in the CLRDP EIR. Consistent with CLRDP Implementation Measure 3.10.1 and with existing Campus policies and procedures, the Campus would manage the use of hazardous materials, and the containment and cleanup of any spills of hazardous materials, in compliance with federal and State regulations related to the storage, disposal, and transportation of hazardous substances. Therefore, although the CBB Project would slightly increase the risk of accidental spillage of hazardous substances at the MSC, the project impact would be less than significant.

### **Proximity to Schools**

**Previous Analysis.** As discussed in the CLRDP EIR (p. 4.7-19), the closest schools to the MSC—Natural Bridges Elementary School, located at 255 Swift Street, and Ark Alternative High School, located at 313 Swift Street—are approximately  $\frac{3}{4}$  mile from the MSC. Therefore, development under the CLRDP would not result in hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or wastes within  $\frac{1}{4}$  mile of a public or private elementary, middle, or high school.

**Project Impact.** No new public or private elementary, middle, or high schools have been developed within  $\frac{1}{4}$  mile of the MSC since the CLRDP EIR was certified in 2004. The increased use of hazardous materials associated with the MSC Projects was taken into account in the CLRDP EIR. Therefore, the MSC Projects would not result in hazardous emissions or the handling of hazardous or acutely hazardous materials within  $\frac{1}{4}$  mile of a school

### **Listed Sites**

**Previous Analysis.** A search of government records on hazardous waste sites in the vicinity of the MSC performed for the CLRDP EIR revealed that the project site is not listed as a contaminated site on any of the databases searched (CLRDP EIR p. 4.7-19). The project site was identified in the HAZNET database, a DTSC database that records annual hazardous waste shipments, as required by RCRA. All businesses that use and dispose of hazardous materials are entered into the HAZNET database, and each occurrence of a disposal and/or transfer of a hazardous waste is entered into the database as a record. As discussed above, the pesticides dieldrin, and DDT and its breakdown products are present in the surficial soils at the MSC. Two health risk assessments have been performed; both indicate that the residual pesticides measured in the soil at the Marine Science Campus pose a level of risk to human health that is well below normally accepted values. The CLRDP EIR determined that, because the site is not listed as a contaminated site, no significant hazard to the public or the environment would be created as a result of site development under the CLRDP.

**Project Impact.** The proposed MSC Projects and the project sites are within the CLRDP development program and area of disturbance analyzed in the CLRDP EIR. Therefore, the development of new facilities would not result in a significant health risk associated with exposure of future site occupants to residual pesticides in the site soils. The potential health risks associated with dispersion of these pesticides as toxic air contaminants is analyzed in Section 3.3, *Air Quality*. Several existing greenhouses would be demolished as part of the proposed CBB Project. Based on their age, it is possible that lead paint and/or asbestos-containing building materials are present. To comply with federal and State regulations, UC Santa Cruz EH&S conducts surveys for potential lead paint and asbestos-containing

materials in buildings that are planned for demolition or remodeling. If EH&S determines that these hazardous materials are present, the Campus either completes the necessary abatement before any demolition or renovation work is performed, or notifies the contractor of the presence of these materials and requires that the contractor comply with all federal, state and local laws and regulations when working with them. These procedures would be implemented for the proposed Projects, which would minimize the potential that that demolition of existing structures as part of the proposed Projects would expose construction workers and campus occupants to contaminated building materials.

For the reasons discussed above, the potential risks associated with developing the new facilities on contaminated soil and with demolition of existing facilities that may contain lead paint and/or asbestos, would be a less-than-significant impact.

***Adopted Emergency Response Plans***

**Previous Analysis.** As analyzed in the CLRDP EIR (p. 4.7-20), the proposed CLRDP would not interfere with the City of Santa Cruz Emergency Management Plan. Additionally, compliance with CLRDP Implementation Measure 3.10.1, Hazardous Materials Management (see Appendix C for the full text of this measure), would ensure compliance with any state or federal emergency response plan, such as the California Office of Emergency Services’ Emergency Response Plan. Therefore, the CLRDP EIR concluded there would be no impacts associated with the interference of an adopted emergency response plan as a result of the development under the CLRDP.

**Project Impact.** The facilities that would be developed under the proposed MSC Projects are within the development areas and (as discussed in Section 3.1, *Aesthetics*) are consistent with the mass and scale of the development program analyzed in the CLRDP EIR. The projects would not interfere with an emergency response plan and no impact would occur.

***Wildland Fires***

<b>MSC Projects Impact HAZ-3</b>	The proposed CBB Project would construct new facilities adjacent to the original Younger Lagoon Reserve, which is designated as a fire hazard zone in the City’s General Plan Safety Element.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB Project (lab, greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (p. 4.7-20) determined that, although the original Younger Lagoon Reserve and the Moore Creek corridor are located within a designated fire hazard zone in the City’s

General Plan Safety Element, the risk posed to facilities by wildland fire is relatively low, due to the nature of the development constructed on the site and its coastal location. Therefore, the risk of wildland fire would not be a significant impact.

**Project Impact.** The proposed MSC Projects are within the scope of the development program analyzed in the CLRDP EIR. The proposed Projects would be built adjacent to the original Younger Lagoon Reserve but are on the terrace lands. The types of vegetation on the terraces have relatively low susceptibility to wildfire. The risk of wildfire at the site is relatively low and the impact would be less than significant.

### 3.8.4.3 Cumulative Impacts and Mitigation Measures

#### ***Risk of Hazardous Materials Release***

<b>MSC Projects Impact HAZ-4</b>	The proposed CBB Project, in conjunction with future industrial development, would increase the use, transportation, and storage of hazardous materials and hazardous waste, which could increase the risk of hazardous materials release.
<b>Applicable CLRDP Mitigation/ Implementation Measures</b>	None
<b>Applicable Project/ Project Elements</b>	CBB Project (lab, greenhouses)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None required
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** As discussed in the CLRDP EIR (pp. 4.7-20 to 4.7-22), most future development in the Santa Cruz Westside study area would be residential, with minimal effect on use of hazardous materials. Although some additional industrial development could occur in the area, which could increase the use, transport, and disposal of hazardous materials, all future development in the project vicinity would be required to provide for the safe use, storage, and disposal of hazardous materials. Therefore, although the amount of hazardous material that would be used, transported, and disposed of cumulatively would increase, the impact of those increases would be less than significant.

Similarly, although the quantities of hazardous material that could be present within the Santa Cruz Westside study area due to future industrial development would increase, the accidental release of hazardous materials from a facility would not necessarily be linked to potential accidental releases at other facilities; nor would there be a mechanism by which the effects of those releases would necessarily accumulate. The individual facility emergency response plans prepared under the Business Plan Act would be adequate to mitigate the adverse effects of each and every release to a less than significant level.

**Project Impact.** As discussed in Section 3.8.4.2, above, the anticipated increase in hazardous materials use, storage and disposal associated with the entire program of development described in the CLRDP, including the proposed MSC Projects, was taken into account in the CLRDP EIR and would not result in a significant hazard to the public or the environment. There are two proposed or approved industrial development projects in the Westside study area: the City's planned desalination plant; and the UC Santa Cruz 2300 Delaware Avenue Project, which will include future redevelopment of a former semiconductor manufacturing facility as research laboratories. The City is currently considering two alternative sites for the desalination plant, both of them in the Westside study area. The environmental impacts of developing the desalination plant were analyzed at a program level in the City's Integrated Water Plan Program EIR (IWP pEIR); the City is currently preparing a project EIR for the proposed desalination plant and associated facilities. The IWP pEIR (pages 5.11-7 and 5.11-9 to 5.11-10) determined that potential effects related to accidental release of, or exposure to, hazardous materials as a result of construction and operation of the proposed project would not be significant with the implementation of identified mitigation measures. The City's desalination project EIR will further analyze this impact based on project-specific design, construction, and operational details to be developed during the EIR process. The 2300 Delaware Avenue Project was analyzed in the 2005 LRDP EIR, which determined that the hazardous materials impacts of the project would be less than significant with implementation of two mitigation measures that would provide for appropriate handling and disposal of hazardous materials. These mitigation measures were adopted by the University in 2007 in conjunction with approval of the 2300 Delaware Avenue Project.

As discussed in the CLRDP EIR, the accidental release of hazardous materials from the MSC, from the desalination plant, or from 2300 Delaware Avenue, is not likely to be linked to potential accidental releases at other new or future facilities. The individual facility emergency response plans prepared under the Business Plan Act would be adequate to mitigate the adverse effects of each and every release at any of these facilities to a less than significant level. Therefore, the cumulative impact would be less than significant.

### **3.8.5 References**

- Applied Science and Engineering, Inc. 1997. *Health Risk Assessment of Residual Pesticides Detected in Surface Soils at Terrace Point, Santa Cruz, California*. Prepared for Wells Fargo Bank. June 23.
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- Steven Raas & Associates. 1995. *Residual Pesticide Investigation Terrace Point Site, Santa Cruz, California*. August.

**3.9 HYDROLOGY AND WATER QUALITY**

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## 3.9 HYDROLOGY AND WATER QUALITY

This section of the EIR addresses the potential impacts on hydrology and water quality from the development of the proposed MSC Projects. It includes an assessment of the effects of the Projects on on-site and off-site groundwater resources, surface water resources, campus drainage patterns, erosion, and sedimentation.

This section provides project-level analysis and additional detail regarding hydrology and water quality and, pursuant to Section 15152 of the CEQA Guidelines, supplements and augments the analysis provided in Section 4.8 of UC Santa Cruz' CLRDP EIR.

- Public comments related to hydrology and water quality received during the scoping period of this EIR requested that the EIR address the following issue:
- Treatment of storm water runoff from parking lots.
- This issue is addressed in the analysis in this section.

### 3.9.1 Environmental Setting

See CLRDP EIR Section 4.8.1 for a comprehensive discussion of the hydrology and water quality setting of the entire Marine Science Campus (MSC). The hydrology and water quality setting for the proposed MSC Projects is described below.

#### 3.9.1.1 Regulatory Setting

Water quality objectives for all California waters are established under the Federal Clean Water Act (CWA) and California's Porter-Cologne Water Quality Control Act. Discharges to surface or groundwater are also covered by regional basin plans. These regulations are summarized below and described in more detail in the CLRDP EIR (Section 4.8.1).

##### Clean Water Act

The CWA (United States Code, Title 33) requires the EPA to establish effluent limitations for municipal sewage plant and industrial facility discharges. The CWA provides for two types of pollution control limits:

- Limits to the quantity of pollutants discharged from a point source such as pipe, ditch, or tunnel into a navigable body of water.
- Ambient water quality standards for navigable waters of the United States.

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In addition, the CWA requires each state to develop and implement a program to control nonpoint source pollution.<sup>1</sup> The primary method by which the CWA imposes pollutant control limits is the National Pollutant Discharge Elimination System (NPDES) permit program established under Section 402 of the act. Under the NPDES program, any point source discharge of a pollutant or pollutants into any waters of the U.S. is subject to a permit. In California, the state's Regional Water Quality Control Boards (RWQCBs) administer the NPDES program. Through the NPDES Waste Discharge Requirements, the RWQCB sets limits on the levels of pollutants that may be discharged into navigable waters of the U.S. The limits are designed to meet the water quality objectives established in the Basin Plan.

Under the NPDES program, UC Santa Cruz is required to develop and implement a Storm Water Management Program (SWMP). The purpose of the SWMP is: 1) to identify pollutant sources potentially affecting the quality and quantity of storm water discharges; 2) to provide Best Management Practices (BMPs) for municipal and small construction activities; and 3) to provide measurable goals for the implementation of the SWMP to reduce the discharge of the identified pollutants into the storm drain system and associated waterways. The goal of the SWMP is to reduce the discharge of pollutants to the Maximum Extent Practicable (MEP), as defined by the U.S. Environmental Protection Agency (EPA).

The Phase II NPDES rule also requires that a Storm Water Pollution Prevention Plan (SWPPP) be developed and implemented for each project that disturbs more than one acre of soil. The SWPPP must identify potential sources of pollution and describe runoff controls that will be implemented both during construction and after the building is complete.

The MSC seawater discharge is subject to NPDES regulations, and is permitted under the General Permit No. CAG993003 for Discharges from Aquaculture and Aquariums, which was issued by the RWQCB. The Campus is required to monitor and report on the discharge under Monitoring and Reporting Program No. R3-2002-0076.

#### Coastal Zone Act Reauthorization Amendments

In 1990, the U.S. Congress enacted Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) to help address the problem of nonpoint-source pollution in coastal waters. These amendments require coastal states to develop a nonpoint pollution control program to restore and protect coastal waters. The objective of the amendments is to update and expand the coastal portion of state nonpoint-source management programs under Section 319 of the federal Clean Water Act (see further discussion of the Clean Water Act above). State coastal zone management agencies and state water quality agencies have dual and equal roles and responsibilities in developing the program. The U.S. EPA's guidance document for state coastal zone management agencies and state water quality agencies identifies 56 management measures to prevent nonpoint-source (NPS) pollution. The State Water Resources Control

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<sup>1</sup> A nonpoint source is a diffuse source such as land runoff, precipitation, deposit from the atmosphere, or percolation. Major nonpoint sources of water pollution are agriculture, mining, oil and gas extraction, pastureland and feedlots, land disposal, and urban runoff. The State requires implementation of site-specific best-management practices (BMPs) to control nonpoint sources. These individual or combined measures are most practical and effective when applied to minimize the potential release of significant amounts of toxic or hazardous pollutants to surface waters.

Board (SWRCB) and the California Coastal Commission prepared the California Management Measures for Polluted Runoff (CAMMPR) in July 1998 to conform with the EPA guidance. The CAMMPR measures management for urban areas and wetland and riparian measures are applicable to the CLRDP.

#### Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 authorized the SWRCB to provide comprehensive protection for California's waters through water allocation and water quality protection. The SWRCB implements the requirement of CWA Section 303 that water quality standards be set for certain waters by adopting water quality control plans under the Porter-Cologne Act. In addition, the Porter-Cologne Act established the responsibilities and authorities of the nine RWQCBs, which include preparing water quality plans for each region within the state (Basin Plans); identifying water quality objectives; and issuing NPDES permits and Waste Discharge Requirements (WDRs). Water quality objectives are defined as limits or levels of water quality constituents and characteristics established for reasonable protection of beneficial uses or prevention of nuisance. NPDES permits, issued by RWQCBs pursuant to the CWA, also serve as WDRs issued pursuant to the Porter-Cologne Act. WDRs are also issued for discharges that are exempt from the CWA NPDES permitting program; discharges that may affect waters of the state that are not waters of the United States (i.e., groundwater); and/or wastes that may be discharged in a diffused manner. WDRs are established and implemented to achieve the water quality objectives (WQOs) for receiving waters as established in the Basin Plans, as described below. Sometimes WDRs/NPDES permits are combined.

#### Central Coast Regional Water Quality Control Plan

The UC Santa Cruz campus is within the jurisdiction of the Central Coast RWQCB (Region 3). The CCRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters located within its jurisdiction. Beneficial uses of inland surface waters and water quality objectives for the region are specified in *The Water Quality Control Plan for the Central Coast Basin* ("Basin Plan") prepared by the CCRWQCB in compliance with the federal CWA and the State Porter-Cologne Water Quality Control Act. The objective of the Basin Plan is to show how the quality of the surface and ground waters in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The RWQCB implements the Basin Plan by issuing and enforcing waste discharge requirements to individuals, communities, or businesses whose waste discharges can affect water quality. These requirements can either be State WDRs for discharges to land, or federally delegated permits for discharges to surface water.

#### UC Santa Cruz Storm Water Management Program

The RWQCB approved the UC Santa Cruz SWMP on April 3, 2009. In addition to six Minimum Control Measures (MCMs) mandated by the U.S. EPA, MCM #7 of the UC Santa Cruz Final Draft SWMP identifies measures specific to UC Santa Cruz. The BMPs in MCM #7 include measures to encourage alternative transportation and storm water-related research. To minimize the impacts of new development at the MSC on water quality, the SWMP relies primarily on the provisions for storm water management

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and watershed protection contained in the Drainage Concept Plan and other elements of the CLRD. Operations at the MSC are also subject to many of the BMPs in the SWMP.

For sediment and erosion control at construction sites, UC Santa Cruz uses the construction contract document package, which is a legally binding document between the contractor and UC Santa Cruz, to ensure that adequate storm water controls are in place. The Campus' standard contract specifications include requirements for contractors to control erosion and sediment and construction site waste, which are incorporated into the SWMP. The Campus implements an extensive plan review process before Contracts are issued, and construction contract administration procedures as well as University inspections are used to ensure contract compliance.

### 3.9.1.2 Local and Regional Context

#### Regional Physiography and Climate

The Santa Cruz area enjoys the Mediterranean climate typical of many California coastal regions. Summers are dry and warm, although 30 to 40 percent of days are foggy, primarily in the night and early morning hours. Winters are cool and wet. Total precipitation in the region, which falls primarily between November and March, averages approximately 30 inches per year. Summer winds are generally from the west, while winter storm winds are generally from the southwest. Due to its exposed setting at the north end of Monterey Bay, the MSC and vicinity have somewhat stronger wind velocities and more days with summer fog than other parts of the City of Santa Cruz. The MSC also is exposed to salt spray from the ocean.

Precipitation is the primary source for surface water and groundwater at the MSC. The campus typically receives between 25 and 35 inches of rainfall per year. In a typical year, the campus begins to receive significant rainfall in October or November, and about 70 percent of the annual total falls in January and February. Rainfall continues through May and very little, if any, rainfall occurs from May to October.

The MSC is situated on one of several uplifted marine terraces that form the uplands east of Highway 1 along the coastal flank of Ben Lomond Mountain (see Section 3.7, *Geology, Soils, and Seismicity*). Streams flow through deep canyons incised into the marine terraces from the uplands to the north and eventually empty into the Monterey Bay or the Pacific Ocean. Lagoons and beaches built by sediment carried in the creeks have formed at the coast where these creeks and canyons meet the Pacific Ocean. Ongoing accretion of sediment transported by creeks, and coastal erosion processes, continue to sculpt the rugged Santa Cruz coastline.

#### Surface Water Drainage

Surface water enters the MSC primarily from a culvert at the railroad tracks near the northwest corner of the site and through on-site precipitation (The Huffman-Broadway Group, Inc. 2004). The culvert at the railroad tracks drains a former industrial site immediately north of the tracks, and the agricultural lands beyond. Highway 1 and the railroad berm divert to the east and west other runoff that, historically, likely

would have flowed to the MSC site. Natural drainage patterns on the MSC have been altered by drainage ditches and roads developed in conjunction with past farming activities as well as by UC Santa Cruz development. Storm water runoff from the terrace lands flows overland to Younger Lagoon and to the ocean through the seawater discharge system and by way of an 18-inch culvert that conveys water to the creek flowing through the De Anza Santa Cruz residential community.

#### On-site Drainage Basins

The terrace lands of the MSC are relatively flat. The ground surface slopes gently toward the ocean, with an overall gradient of between 1 and 2 percent. Shallow depressions capture most of the precipitation and allow it to infiltrate to the shallow groundwater, despite the generally poorly drained soils. Portions of the site experience saturated soil conditions and temporary shallow inundation during the wet season (November through March). In undeveloped areas of the site, surface water runoff develops after the soils are saturated or when the intensity of the rainfall exceeds the capacity of the surface soils to absorb the water. On impervious surfaces, the water collects and immediately flows as storm water runoff.

The MSC can be segregated into 11 distinct hydrologic “basins” (see Figure 3.9-1), which are divided by a combination of natural and man-made topographic features. The 11 basins are described below. Additional information regarding the hydrology of each of the sub-basins can be found in the CLRDP, in Appendix D, and in the CLRDP EIR (pp. 4.8-7 to 4.8-11) (See full citations to documents available online in the Introduction to this EIR). As shown on Figure 3.9-2, the basin boundaries shown on Figure 3.9-1 (which depicts hydrologic basins as interpreted in the CLRDP Stormwater Concept Plan) have been adjusted based on a detailed topographic survey of the campus prepared for the proposed MSC Projects.

**Basins 1 and 2** are located north of the existing Delaware Road Extension (the existing main entry road to the MSC) on the campus’ Upper Terrace, and together cover a total of approximately 16 acres of undeveloped land. These basins extend northward to the railroad berm that forms the northern boundary of the MSC. These basins are divided by a grade break that bisects the area north of Delaware Avenue Extension from the northeast corner to the southwest corner. Delaware Avenue Extension, which is slightly elevated above the level of the adjacent land, serves as a barrier to surface flow and therefore demarcates the southern boundary of the two basins. Basin 2 covers 8.17 acres adjacent to Shaffer Road, and Basin 1 covers 7.7 acres to the west of Basin 2. Both basins have good ground cover conditions provided by healthy grass growth and coyote brush. The soil surface contains numerous small, shallow depressions and rodent burrows, which provide runoff storage and some infiltration during rain events. Storm water runoff travels in overland flow in a southwest direction. Basin 1 drains to a former agricultural drainage ditch (wetland W1) along the western boundary of the MSC. Runoff from Basin 2 flows south towards Delaware Avenue Extension, then travels along a grassy swale that parallels the road and joins with runoff from Basin 1 at the same drainage ditch.

Wetlands W1, W2, and W3 are prominent hydrological features in Basins 1 and 2. Wetlands W1 and W2 both receive water from a culvert that runs under the berm at the railroad tracks and discharges to Basin 2 near the northwestern corner of the terrace lands, where runoff ponds along the foot of the railroad berm. Water flows in a north-to-south direction along the northwestern property boundary, and then veers to the

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southwest before discharging to the eastern arm of Younger Lagoon. Wetland W1 is an agricultural drainage ditch that originates from the railroad track culvert and ponded areas in the northwestern corner of the site, flows in a north-south direction along the northwestern boundary of the MSC, and then veers to the southwest before discharging to the northeastern finger of Younger Lagoon (The Huffman-Broadway Group 2004).

Wetland W2 is a shallow swale in the northwestern portion of the property and connects with W1 at its northern and southern ends. It is separated from the adjacent wetland W1 and the agricultural lands to the west by a narrow berm. Wetland W2 receives water both from the culvert at the railroad tracks and as sheet flow from upland areas to the east. Historical aerial photographs show that wetland W2 previously included a man-made drainage ditch feature, but active management of the ditch apparently stopped in the early 1980s. The channel gradually filled in with sediment, and wetland W2 has spread out and no longer contains a clearly defined bed and bank, making it difficult to define its lateral boundaries. As delineated in 2001, it diverges from its origin near the culvert into two narrow bands, one extending south to just north of Delaware Avenue Extension, and the other extending west and east along the northern campus boundary. Wetland W3 is a large seasonal wetland, also on the Upper Terrace just north of Delaware Avenue Extension. The wetland is slightly lower in elevation than the surrounding land and receives runoff from upslope areas to the north. The elevated roadbed of Delaware Avenue Extension prevents surface flow to the south; as a result water ponds north of the Delaware Avenue Extension in wetlands W2 and W3 after significant rainfall events. Historical aerial photos indicate that W3 was at one time part of a larger drainage that flowed from west to east and eventually discharged into Moore Creek in the vicinity of what is now Antonelli Pond (an artificial feature created on Moore Creek, early in the 20<sup>th</sup> century, as a log pond).

**Basin 3** is a small basin, covering 2.9 acres of undeveloped land south of Delaware Avenue Extension and east of McAllister Way on the MSC's Middle Terrace. The eastern edge of the basin is an indistinct grade break, formed by placement of fill soils that separate it from Basin 4. The basin has good ground cover conditions provided by healthy grass growth. Scattered small, shallow depressions provide runoff storage and infiltration during rain events. Storm water runoff from Basin 3 flows southwest towards a small, overgrown drain inlet on the east side of McAllister Way (opposite the CDFG building). This inlet empties into a 12-inch plastic pipe that crosses under McAllister Way and discharges to a small swale. This swale is a tributary to the same drainage ditch that drains Basins 1 and 2, which in turn flows to the upper eastern arm of Younger Lagoon.

Wetlands W8 and W9 are small depressional wetlands in Basin 3. W8, which lies at the road edge of the Delaware Avenue Extension, may have been created by vehicle tracks, and is subject to periodic disturbance by passing vehicles whose tires leave the paved roadbed. The depressional area supports wetland hydrologic conditions during the rainy season (particularly within the tire ruts). Because W8 and W9 are hydrologically isolated from other wetlands on the site by Delaware Avenue Extension, they do not meet the criteria for federal jurisdictional waters and are not subject to Section 404 of the Clean Water Act. However, they are subject to California Coastal Act wetland protection policies because Coastal Commission wetland criteria for hydrology and soil are met.

**Basin 4**, which encompasses 17.9 acres on the central and western portions of the Middle Terrace, is the largest of the 11 basins on the MSC. This basin drains by overland flow toward a wetland area (wetland W4) in the southeast corner of the basin. Much of this basin is covered by a mix of grasses and coyote brush. An 18-inch, corrugated-metal culvert on the eastern end of wetland W4 discharges to the De Anza Santa Cruz residential community's storm drain system. This culvert extends for a short distance beneath the residential neighborhood and then empties into a pond and creek that eventually flows to the ocean. The pipe is located below grade at the eastern boundary of the MSC and has sustained damage that restricts the opening to approximately 12 inches, but this does not appear to have affected the function of the culvert or hydrology of the adjacent wetland W4. Drainage discharge in Basin 4 is free of significant erosion problems. The recent topographic survey of the campus revealed that an area of approximately 0.4 acre in the southwest corner of this basin actually drains to Younger Lagoon by way of the NOAA outfall at the southern end of Basin 8, and therefore should appropriately be considered a part of Basin 8, as delineated on Figure 3.9-2.

Wetland W4 is a seasonal drainage swale that originates in the central part of the terrace, approximately 300 feet northeast of the NOAA facility. During rainfall events, water accumulates in the upper portion of the swale and flows to the culvert at the eastern end of the wetland. Historical aerial photographs indicate that, before the construction of the De Anza Santa Cruz residential community in the late 1960s or early 1970s, the swale was part of a continuous drainage that flowed to Natural Bridges Lagoon, east of the De Anza Santa Cruz residential community. The upper portions of the swale were disturbed by agricultural activities.

**Basin 5** covers approximately 1.8 acres and includes the NOAA facility. The drainage system for the NOAA facility consists of an underground percolation system and retention chamber located south of the facility. Overflows from this system discharge to a seasonal pond (wetland W5) located in Basin 6, which is south of Basin 5. A swale and an 18-inch reinforced-concrete pipe culvert inlet are located at the western edge of Basin 5, at the east side of McAllister Way. The swale and culvert are designed to conduct flows from neighboring Basin 6 under McAllister Way to Younger Lagoon, via a small drainage west of McAllister Way, southwest of the NOAA building. Drainage from Basin 5 does not flow to this outfall, but drainage from Basin 5 causes overflows in Basin 6 during heavy wet periods, which may eventually discharge to Younger Lagoon.

**Basin 6** covers 7.8 acres south and east of the NOAA facility on the Middle Terrace. Wetland W5, which occupies a modest topographic depression, dominates the hydrology of this basin, acting as a detention/retention area for runoff from Basin 5 as well as Basin 6. Storm water from Basin 6 is in large part retained in this seasonal pond. When capacity of the pond is exceeded, excess flows drain to a grassy swale at the western edge of the basin. This swale drains toward the north, narrowing to a narrow ditch when it reaches Basin 5, where it discharges through an 18-inch reinforced concrete pipe culvert under McAllister Way to Basin 8. From this point it discharges into the original YLR. Construction activity at the NOAA facility has resulted in deposition of sediment into the northern portion of the swale and the 18-inch pipe; only the upper 6 inches of the pipe remain open. The partial filling of the swale has significantly reduced its ability to clean storm water flowing into Basin 8 and the YLR.

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Wetland W5 has been a persistent feature on the site for more than 80 years. A previous landowner or tenant excavated a small drainage ditch to drain water from the area to the bluffs overlooking Monterey Bay, but the ditch filled rapidly and ceased to function once it was no longer maintained. The W5 basin and the upper portion of the ditch continue to support wetland hydrology conditions.

**Basin 7** is located west of McAllister Way and occupies 2.4 acres with a gentle slope southward of 0.5 percent. The basin is bounded on the west and northwest by the top of the Younger Lagoon bluff, on the south by Basin 8, and on the east by McAllister Way. This basin contains the CDFG building and a portion of the Avian Facility. It is almost completely covered by buildings or gravel. Runoff from the west side of the CDFG building is discharged to Younger Lagoon via an unlined swale at the north end of the basin. Runoff from adjacent portions of McAllister Way and the east side of the CDFG building are routed to a small retention pond at the southeast corner of the CDFG building through a series of small drain inlets. The retention pond has no visible outlet. Storm water that overflows the pond flows overland through Basin 8, to the south, where it discharges into Younger Lagoon. Runoff from a 0.4-acre area in the southeastern corner of the Basin 7 drains to a storm drain that discharges to the ocean through the campus' piped filtered seawater return system.

Wetland W6 is a seasonal wetland complex located in Basin 7 just north of the CDFG facility. A berm that once partly surrounded the wetland is still visible. Historically, the area may have been used to retain water for irrigation or grazing.

**Basin 8** covers 2.96 acres adjacent to the east slope of Younger Lagoon, directly south of Basin 7. The existing greenhouses, as well as several other small buildings (including a portion of the Avian Facility), are located in Basin 8. This basin is a primary discharge point for storm water from the terrace lands into Younger Lagoon. Sparse vegetation has grown around the buildings and inside some of the abandoned greenhouses. Storm water discharges from Basin 8 to Younger Lagoon at three locations. The first, located at the southwestern corner of the proposed Greenhouse Complex site, is a broad grassy swale that effectively serves to dissipate storm water energy. The second discharge point, approximately 200 feet east of the first discharge, is a percolation trench with a berm that acts as a levee to prevent direct discharge into Younger Lagoon. The third discharge point is the 18-inch reinforced-concrete pipe culvert that carries overflow to Basins 5 and 6, as described above. The drainage channel below this third discharge point is wetland W11, which has been determined to be "Other Waters of the U.S."

Prior to the installation of the percolation trench at the second of the three discharge points described above, storm water discharged into a narrow swale that became eroded over time. While this earlier damage has been arrested by the installation of a percolation trench and berm, the protective berm has failed repeatedly as a result of rodent activity. The rodents' burrows create pathways for water that enlarge rapidly with heavy storm water flows. The third discharge point has caused significant erosion and deposition in and adjacent to Younger Lagoon, some of which dates back to before the University's acquisition of the property.

**Basin 9** is a 6.4-acre area on the Lower Terrace of the Campus that contains the original Long Marine Lab buildings, the Ocean Health Building, and the Seymour Marine Discovery Center facilities. This

basin extends northward along McAllister Way to the southern end of Basin 8. The west side of the basin is marked by a berm along the top of the bluff above Younger Lagoon. The basin extends south to the coastal bluff. Runoff from this basin drains to the campus' piped filtered seawater discharge system via a Stormceptor™ unit. A small detention pond to the south of the Seymour Marine Discovery Center serves to attenuate peak flows from this building before they are discharged to the Stormceptor™ and seawater return system.

**Basins 10 and 11** are located at the southern end of the MSC and cover 4.0 and 4.7 acres, respectively. Basin 10 is bounded by Basin 9 on the west, Basin 11 on the east, and the coastal bluff on the south. Basin 11 is bounded on the west by Basin 6 and Basin 10, by the eastern property line of the campus on the west, and by the coastal bluff on the south. Healthy grass growth provides good ground cover conditions in both basins. These basins drain by overland flow to the coastal cliff, but small depressions in both basins hold water during storms, forming wetlands W10 and W12. Wetland W10 is a small (4 sf) wetland adjacent to the eastern property line in Basin 11. W12 is a complex of small wetlands south and east of the W5, with a total area of approximately 0.21 acre. Drainage from Basins 10 and 11 cause minor erosion and gullyng at various points along the coastal bluff.

**Younger Lagoon Reserve (YLR) Basin** consists of agricultural lands that drain from the west and north and the MSC from the east. The lagoon is fed primarily by precipitation, agricultural runoff, and groundwater. A natural sand barrier separates the lagoon from the ocean during most of the year and reduces the mixing of ocean and fresh water. Periodically, however, the storm waves and high surface water flows from the watershed cause the sand barrier to breach. Shallow groundwater percolates from the terrace into the lagoon through seeps that form along the bluffs at the interface between the Santa Cruz Mudstone and the overlying terrace deposits (see Section 3.7, *Geology, Soils, and Seismicity*). Groundwater flow from the seeps in the bluffs varies depending on season and groundwater depth. As discussed further below, groundwater that supplies the seeps is likely recharged by surface water infiltration in undisturbed areas on the campus west of McAllister Way.

### Water Quality

#### Erosion

Erosion is the detachment and movement of soil materials through natural processes or human activities. Soils mapped on the project site are the Watsonville Series and Elkhorn Series.<sup>2</sup> Watsonville Series soils are generally mapped in the MSC's lower and upper terraces and extend to the cliff area in the south. The Elkhorn Series soils are mapped in the central portion of the MSC (Middle Terrace). The erosion hazard for the Elkhorn loam is "slight" while the erosion hazard for the Watsonville loam is "slight to moderate" (CLRDP EIR, p. 4.6-5). On steeper slopes (15 to 30 percent), the erosion hazard for the Watsonville loam is "high." The terrace portion of MSC is essentially level with gradual slopes of less than 2 percent, which greatly reduces the velocity of any surface runoff, and therefore the potential for soil erosion on the terrace lands (not including erosion of the coastal bluffs, on the terrace edge) is low.

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<sup>2</sup> The soil series is a subdivision of a family and consists of soils that are similar in all major profile characteristics.

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## Surface Water Quality

When precipitation falls on impervious or semi-pervious surfaces on the MSC, such as buildings, pavement, or compacted gravel parking lots or roads, it flows off immediately and typically enters either a drainage or low-lying wetland area. When rainwater runs across the ground surface or roofs, it can collect contaminants that eventually enter a receiving water body such as the Younger Lagoon or the ocean. The existing impervious surfaces of MSC parking lots and roads can contribute sediment, oil, petroleum, and heavy metals to the storm water runoff. These contaminants, in sufficient quantities, can alter water chemistry and possibly become toxic to certain marine animals. The majority of roadway and parking lot contaminants adhere to sediments, and it is through transportation of the sediments that these contaminants enter receiving water bodies. A few contaminants, including some petroleum products, are soluble and dissolve in the water. Contaminant loading is variable and dependent on timing of rainstorms and rainfall amounts and intensities. Typically, contaminants accumulate during the dry season, and contaminant loading in runoff is usually highest during the first storm or series of storms in each winter season.

## Seawater System Discharge

Seawater is used at the MSC for keeping and growing a variety of organisms, including marine mammals, invertebrates, fish, marine algae, and other organisms that are subjects of scientific or educational study. Some of the water used in marine mammal tanks is chlorinated to control bacterial levels; small amounts of chlorine bleach are also used to clean these tanks. After use, the water is dechlorinated and discharged into the ocean at the sea cliff at the south end of the MSC via the campus' piped filtered seawater discharge system.

In compliance with the terms of its discharge permit, the Campus collects and tests samples of both influent and effluent and reports the results in quarterly and annual monitoring reports to the RWQCB. The 2010 annual report documents that the MSC seawater discharge was in full compliance in all aspects of the permit for all quarters of that year (UC Santa Cruz 2010).

## Groundwater Conditions

Surficial materials on the MSC terrace lands are relatively young coastal terrace deposits that were deposited along an ancient coastal environment. The terrace deposits include both marine and non-marine deposits and consist primarily of well-sorted sand with occasional continuous layers of gravel. The terrace deposits are approximately 5 to 9 feet thick on the MSC site (Rutherford and Chekene 1999; Steven Raas and Associates 1994). These sediments are relatively more permeable than the underlying Santa Cruz Mudstone. Therefore, groundwater that flows onto the site and surface water that infiltrates through the surficial soils into the terrace deposits forms a perched aquifer above the mudstone and flows laterally through the terrace deposits.

After precipitation, water descends through the soil column at varying rates based on local soil conditions. Where the mudstone bedrock is closer to the surface or surface soils have higher clay content, ponding and surface soil saturation occur for extended time periods. Where bedrock is farther from the surface or

soils have lower clay content, water moves through the soil at a faster rate, precluding ponding and surface soil saturation. In some areas of the campus, a discontinuous clay layer locally impedes drainage of the surface soil horizon following heavy rainfall. Early in the wet season, the shallow clay layer may leak but, as the clay becomes saturated, cracks in the clay layer close and drainage is impeded. When the rainfall rate exceeds the rate of infiltration through the wet clay, water in the soils above the clay, and surface runoff, move horizontally until they encounter a lens of coarser, more permeable material. The water then works its way downward to bedrock, and begins to migrate laterally over the surface of the mudstone. Ponded water can remain in the saturated areas of the MSC terrace lands for extended periods of time, depending on the permeability of the soil and of the underlying sediments in localized areas.

During periods of little to no precipitation, groundwater levels on the terrace average about 7.5 feet below ground surface. During storm events, the water level rises sharply. During the winter, groundwater levels range from about 0.5 foot to 5 feet below the ground surface, depending on the elevation of the mudstone bedrock. Generally, shallow groundwater flows in a southeasterly direction across the MSC towards the ocean, following the general trend of the ground slope. However, there are local anomalies that appear to contribute to the formation of the wetlands.

Although the slightly-elevated bed of the Delaware Avenue Extension creates a surface water divide, groundwater appears to flow south beneath the roadbed. During periods of high groundwater conditions (and, to a lesser extent, in periods of low groundwater conditions), the drainage swale on the Middle Terrace adjacent to the De Anza Santa Cruz residential community (wetland W4) appears to capture a portion of the groundwater flowing southeast across the site. When groundwater levels are high, groundwater beneath Basins 5 and 6 flows towards wetland W5.

Groundwater in Basins 9, 10, and 11 tends to flow south, toward the ocean. The seasonal pond in Basin 6 (wetland W5), which lies south and down-gradient from Basins 9, 10, and 11, captures some of this flow in both high and low groundwater conditions. However, under high groundwater conditions, more groundwater is likely to flow towards W5 and out through the culvert under McAllister Way and the small drainage (wetland W11) west of McAllister Way that conveys water to the Younger Lagoon bluff.

Groundwater feeds several seeps that are located in the cliffs along the ocean and adjacent to Younger Lagoon. There are two primary recharge areas on the project site where porous soil conditions allow surface water to infiltrate. The first area (Basins 9, 10, and 11) is approximately 850 feet north of the coastal bluffs and includes the seasonal wetland W5 south of the NOAA facility. Based on topography, it appears that an appropriate flow direction and gradient exists within this area to provide groundwater flow to the ocean and lagoon bluffs, especially in periods of high groundwater conditions. In periods of low groundwater conditions, the volume of groundwater may not be sufficient to daylight at the ocean or lagoon bluffs. The western portion of Basin 9 is primarily covered with impervious surface with low surface water infiltration potential and therefore does not contribute groundwater to the ocean or the bluffs. The second area contributing surface water infiltration and groundwater supply to the seeps includes Basins 3, 7, and 8 in the western part of the Middle Terrace. Surface water infiltration in these basins likely provides water to the seeps that daylight along the cliffs adjacent to Younger Lagoon. Based

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on topography and apparent groundwater flow direction, it appears that the central portion of the MSC (Basins 4, 5, 6) does not contribute a significant amount of groundwater to the lagoon bluffs because the general groundwater trend is to the south-southeast, away from the bluffs. As discussed above, Basins 1 and 2 flow into the YLR directly, via the existing wetland features.

At the MSC, the Santa Cruz Mudstone is approximately 200 feet thick and is underlain by the Santa Margarita Formation, which is a friable, fine-to-medium-grained sandstone. The Santa Margarita Formation is the primary water-bearing formation along the coast north of Santa Cruz. South of Highway 1, the Santa Margarita Formation is cut off from surface recharge by the overlying impermeable mudstone. There are several agricultural wells at Wilder Ranch, about 0.5 to 1 mile from the MSC, that draw water from the Santa Margarita Formation. A well drilled in 1977 at the southern end of the MSC site, and completed in the Santa Margarita Formation, was the primary source of water for the campus before 1998. The well was destroyed during construction of the Seymour Marine Discovery Center (Weber Hayes & Associates 2007).

### 3.9.2 Relevant Project Characteristics

#### 3.9.2.1 CLRDP Storm Water Drainage Requirements

The Drainage Concept Plan, included in the CLRDP as Appendix B, is the governing hydrology and water quality plan for the MSC. The storm water management systems for the proposed MSC Projects have been designed to the standards defined by the Drainage Concept Plan. This plan identifies three overlapping general objectives to guide the development of drainage systems on the MSC: 1) maintaining peak flows and clean runoff to important water bodies such as Younger Lagoon and the terrace wetlands; 2) maintaining natural infiltration to the maximum extent possible, and 3) meeting specific water quality standards identified in the plan.

##### *Quantitative Standards for Runoff Flow Rates and Water Quality*

The CLRDP Drainage Concept Plan (CLRDP Appendix B, page 20) provides quantitative standards for peak rates of runoff flow from new development and for the treatment of storm water runoff to remove pollutants. The plan specifies that peak storm water flow rates shall be maintained at pre-CLRDP levels up to the 25-year storm event to the maximum extent feasible, provided that accommodating such flows does not result in conflicts with other CLRDP provisions, such as protection of open spaces and public views. In addition, CLRDP Implementation Measure 7.3.1 states that storm water discharge facilities that discharge into Younger Lagoon Reserve “shall be designed to accommodate the 100-year storm event if feasible and otherwise consistent with the provisions of this CLRDP, including the Drainage Concept Plan.”<sup>3</sup>

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<sup>3</sup> This requirement applies only to the original YLR (the lagoon and bluffs), and not to the terrace lands that have been added to the YLR since the CLRDP was approved.

For water quality, the CLRDP Drainage Concept Plan specifies that storm water drainage systems must filter and treat the amount of runoff from irrigation and from all storm events up to the 85<sup>th</sup> percentile, 24-hour storm (for volume-based drainage elements) and the 85<sup>th</sup> percentile, 1-hour storm (for drainage elements based on flow rate). In addition, the treated runoff must meet water quality standards set forth in the Drainage Concept Plan, which are the same as the water quality objectives and standards of the RWQCB's Basin Plan for all inland surface waters, enclosed bays and estuaries.

#### Source Control Measures

To achieve its stated objectives, the Drainage Concept Plan identifies a series of “best management practices” (BMPs), including “source control” measures, which eliminate or reduce pollutants where they originate, and “treatment” BMPs that remove pollutants from runoff by physical and/or biological process. Source control BMPs generally consist of operational practices that prevent pollutants from entering runoff. The Drainage Concept Plan prescribes six source control BMPs that are required as part of all development projects undertaken pursuant to the CLRDP:

- Providing for appropriate storage and use of commercial and household hazardous chemicals (such as lubricants, pesticides, solvents, acids, alkalis and paints), and providing information on less-toxic alternatives.
- Providing convenient locations for recycling/disposal of commercial and household hazardous wastes, and ensuring all such wastes are recycled/disposed of.
- Controlling litter, dust/dirt, and other potential pollutants through monthly sweeping of roads, parking lots, and other paved surfaces using regenerative-air sweepers.
- Landscaping using native plants with low nutrient, water, and pesticide/rodenticide requirements (see also CLRDP Appendix A, Resource Management Plan).
- Providing comprehensive recycling and yard waste programs, and ensuring full use of them.
- Providing water quality education (including materials and presentations) to all campus users and visitors regarding the nature of urban runoff pollutants and means of limiting generation of same.

#### Storm Water Treatment Systems

The Drainage Concept Plan prescribes six primary water quality treatment BMPs that are required as part of all development projects undertaken pursuant to the CLRDP. These measures are intended to be used in series as a treatment train, but can be used alone or in a combination that includes only a subset of the six, provided that water quality meets the standards identified in the Drainage Concept Plan. Three of the six treatment BMPs are engineered filtration systems for specific types of development. For example, areas used for the maintenance and servicing of heavy equipment or for food service washdown must drain to the sanitary sewer system and must be covered to prevent storm water from coming into contact with pollutants. Engineered storm water treatment systems are required for parking lots, maintenance areas, and laydown areas, and oil and grease traps are required for food service areas.

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The remaining three prescribed treatment BMPs are for the use of naturalized drainage facilities that use vegetation and permeable soil to remove pollutants from runoff and provide opportunities for groundwater recharge. The three natural treatment BMPs identified in the Drainage Concept Plan are:

- **Vegetated filter strips.** Vegetated filter strips are linear sections of engineered vegetated land, usually over 10 feet wide, with a porous soil foundation, that are placed parallel to a developed site. Runoff flows over the impervious surface onto the filter strip, where the vegetative cover and porous soils reduce flow velocities and remove particulate contaminants. The porous soil also allows some of the runoff to infiltrate into the shallow groundwater table.
- **Vegetated swales.** Vegetated swales are grass-lined channels designed to convey and filter/treat storm water and other runoff. They are similar in shape and conveyance function to typical concrete/asphalt swales, but are generally somewhat wider and much shallower. Runoff velocities are reduced because the water has to travel through dense vegetative cover. Pollutants are removed as the water flows through the swale by filtration of particulates through the grass and soil, by infiltration of soluble nutrients into the soil, and by biological treatment and fixing of pollutants by plants growing in the swale.
- **Vegetated storm water basins.** Vegetated storm water basins are designed to detain water for a short period of time between storms. In between storm events, those pollutants in water that remains in the detention areas are removed or reduced by infiltration, settling, and biological processes. In areas with relatively porous soils, most of the runoff captured by the detention basin infiltrates into the subsurface, recharging the shallow groundwater aquifer.

#### Low Impact Development (LID)

In addition to the treatment BMPs, the Drainage Concept Plan stipulates that Low Impact Development (LID) strategies and techniques be used in the design of all storm water management systems. LID is an approach to storm water management that manages storm water at the source rather than conveying it off site, by integrating site hydrologic and environmental functions into the design. By minimizing directly connected impervious areas and promoting infiltration, LID features such as vegetated roofs, bioswales, bioretention areas, and pervious pavement mimic natural hydrologic conditions to counteract the hydrologic effects of development.

#### Improvements to Existing Drainage Facilities

In addition to defining the standards for management of storm water runoff from new development, the Drainage Concept Plan identifies three specific improvements to existing drainage facilities. The three projects are to be completed concurrent with any new development in the Middle Terrace development zone or within three years of CLRDP certification, whichever comes first. The three projects are:

- Improve the storm water outfall of wetland W11 to Younger Lagoon in the southern portion of Subarea 7 (also referenced as “the NOAA outfall”) to eliminate erosion;
- Repair/replace the 24-inch drainage pipe from wetland W4 to the De Anza Santa Cruz residential community; and

- Improve the percolation trench and berm along the YLR edge of Subarea 7 that directs Middle Terrace Development Zone discharge toward Younger Lagoon.

As described below, the first improvement would be constructed as part of the MSCI Project Phase A. The Campus has determined that the drainage pipe from wetland W4 functions adequately and that this pipe does not need to be replaced. The CBB Project would make the third improvement as part of the storm water drainage system for the new Greenhouse Complex.

#### *Monitoring and Maintenance Plan*

Finally, the Drainage Concept Plan outlines a monitoring and maintenance plan for both source control and treatment BMPs. The monitoring and maintenance plan consists of an annual assessment of source control BMPs, short-term and long-term monitoring of treatment BMPs including a water quality sampling and analysis program, and a maintenance program for treatment BMPs.

### 3.9.2.2 Coastal Biology Building Project

The proposed Coastal Biology Building (CBB) Project would develop a new 40,000-gsf lab building, two new parking lots, a Greenhouse Complex with a total of about 7,500 ~~8,900~~ gsf of building space, and associated utilities and storm water system.

#### *CBB Lab Building and Parking Lot D*

The CBB lab building and approximately half of the adjacent Parking Lot D would be constructed in Drainage Basin 4. As shown on Figure 3.9-3 and described below, the remaining half of Parking Lot D would discharge to Younger Lagoon by way of Basin 8. The CBB Project would add a total of approximately 41,000 sf of new impervious surface to Basin 4. The Parking Lot D parking stalls would have permeable surfaces (pervious asphalt, gravel pavers, or similar materials), while the more heavily-trafficked parking lots aisles would have standard impervious paving. Pervious paving would be used for the parking stalls in Parking Lot D, and the fire lane would be paved with compacted aggregate. A small portion of the CBB lab building roof would be vegetated, which would reduce storm water runoff through evapotranspiration. Runoff from the roof of the CBB lab building would drain to a series of bioretention ponds surrounding the building and in the courtyard. To avoid concentrating water near the building's foundation, the bioretention ponds would be lined with an impervious material; a perforated pipe at the bottom of the pond would drain the filtered runoff to vegetated swales and the storm water basin south and east of the new building. A vegetated swale along the northern edge of the building would collect runoff from the bioretention ponds adjacent to the building; the swale would drain to the storm water detention basin. The detention basin would be approximately 34,000 sf, would be surrounded by 2-foot-wide berm, and would be a maximum of about 2 feet deep. A series of infiltration trenches within the basin would penetrate the clayey surface soils and allow runoff to filter into the more permeable terrace deposits underneath. A 10-inch discharge pipe would drain runoff from the basin to the Resource Protection Buffer surrounding wetland W4, from which it would infiltrate into the subsurface or flow overland to wetland W4.

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Runoff from Parking Lot D that does not infiltrate through the pervious pavement would flow to a vegetated swale in the middle of the lot. Overflow from the eastern end of this vegetated swale would flow east and discharge through a box culvert to the wetland W4 buffer. Overflow from the western portion of the Parking Lot D vegetated swale would flow west to Younger Lagoon through a culvert beneath McAllister Way, and then in a vegetated swale to the Subarea 7 berm drainage system described below.

### Greenhouse Complex and Parking Lot C

The area around the future CBB Greenhouse Complex, in Basin 8, currently is graveled or covered with existing greenhouses, and most of this area is essentially impervious. Runoff from this area drains to infiltration features in the berm at the top of the Younger Lagoon bluff. The site of Parking Lot C, which is in Basin 7, currently discharges to the ocean through the MSC's filtered piped seawater return system. The MSC Projects would reduce the area of impervious surface in Basins 7 and 8 by approximately 20,000 sf. The buildings, the drive aisles in Parking Lot C, a concrete sidewalk along the north side of the Subarea 6 service yard, and the service yard itself would be impervious. The parking lot stalls would be surfaced with pervious paving, and bioretention ponds would be provided in the parking lot islands. The areas between the greenhouses would be surfaced with pervious aggregate paving. The greenhouse area would also include three bioretention ponds.

The existing berm in Subarea 7, west of McAllister Way along the upper edge of the Younger Lagoon bluffs) would be reconstructed and would be extended south to the NOAA Younger Lagoon outfall (wetland W11). The MSC Project Phase A would extend the berm from the NOAA outfall south to the outfall at the southern end of Subarea 7 (Figure 2-3a). A vegetated swale would be constructed along the terrace side of the berm to collect and treat runoff from the greenhouse area and Parking Lot C, as well as runoff flowing beneath McAllister Way from Parking Lot D. Flows in the swale would be directed through the berm via pipes installed at the base of the berm. On the lagoon side of the berm, the flows would be dispersed along the top of the bluff through level perforated piping.

### 3.9.2.3 MSCI Project

Phase A of the MSCI Project consists of the construction of new underground potable water, electrical, natural gas, and propane distribution lines; new gravity-flow sewer lines; an approximately 11,400 ~~3,300~~-sf Utility Yard that would house a centralized standby generators and propane storage tank, and a pre-fabricated regulated waste storage unit of about 150 sf; and an approximately 58,000 ~~40,000~~-sf Storage Yard on the Upper Terrace, which also would be used for construction staging. Phase A of the MSCI Project would also convert Delaware Avenue Extension to a pedestrian path, replace it with a new campus entry road for motor vehicles, and construct a new bicycle/pedestrian trail. Phase B of the MSCI Project would construct a service road along the eastern edge of the Middle Terrace Development Zone, a detention basin (Detention Basin 4) east of the new service road, additional underground utilities in the Middle Terrace and beneath McAllister Way between the Middle and Lower Terraces. Portions of the new entry road and sidewalk, the bicycle/pedestrian trail, the service road, and Detention Basin 4 would

be constructed in Basin 4. The Subarea 2 Utility Yard and a portion of the new entry road and sidewalk would create new impervious surface in Basin 3 but with the conversion of Delaware Avenue Extension to a pedestrian path, which would remove some impervious surface in the same basin, the project would result in a net decrease in impervious surface in that basin. Parking Lot A, and most of the Upper Terrace Storage Yard, would be in Basin 2; the western end of the Upper Terrace Storage Yard would be in Basin 1.

The new bicycle/pedestrian trail would be surfaced with pervious materials. Although the existing pavement on Delaware Avenue Extension would be ground down, the slight elevation of the roadway would be retained to maintain the surface hydrology in the area. The Subarea 2 Utility Yard and the Upper Terrace storage and staging yard would be surfaced with all-weather pavement that would be impervious. Storm water runoff from the Utility Yard would flow to a new bioretention pond along the northwestern and eastern edges of the yard. Runoff from the Upper Terrace Storage Yard would flow through a new linear bioretention pond along the southern edge of the yard to two vegetated storm water basins in the wetland W2 and W3 buffers. To maintain the existing drainage divide, one of the storm water basins would discharge to the wetland W3 buffer, the other to the wetland W2 buffer.

The new campus entry roadway would be paved with impervious asphalt concrete. Consistent with the CLRDP design guidelines and the Drainage Concept Plan, the storm water management system for the new roadway would consist of a 10-foot-wide vegetated filter strip that would slope to a linear bioretention feature extending the length of the new roadway except in the vicinity of the campus entrance (Figure 2-4). The roadway in the MSC entrance area would discharge to a vegetated swale that would conduct storm water flows along the west side of the new bicycle/pedestrian trail to the vegetated storm water basin at the CBB lab building. The service road east of the future Middle Terrace Walk that would be constructed under MSC Phase B (see Figure 2-3a in Chapter 2) would be paved with impervious asphalt concrete. Runoff from the service road would flow to a linear bioretention area along the east side of the road, which would drain to Detention Basin 4. Detention Basin 4 has been sized to manage runoff from future CLRDP development in the Middle Terrace Development Zone north of the proposed CBB lab building.

The underground utilities included in the proposed MSC Project would generally be at a shallow depth, with 3 to 4 feet of cover; however, the trench for the new sewer line would be up to 26 feet deep, which would require excavation or horizontal drilling into the mudstone bedrock. The sewer line would be excavated either using conventional trenching methods or by a trenchless construction method (i.e., horizontal directional drilling or microtunneling).

In addition to the storm water system elements to serve the facilities constructed by the MSC, the project would repair the storm water outfall that directs discharge from the NOAA facility toward Younger Lagoon near the southern end of Basin 8. This is one of the three improvements to existing drainage facilities required by the CLRDP, as discussed above. Recent surveys of this outfall suggest that the channel has been eroded down to the bedrock surface, and that vegetation has grown in around the channel, indicating that there is no active erosion. Therefore, it is unlikely that the channel will continue

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to experience significant erosion. The existing problem is limited to erosion at the point where the channel passes beneath the fence at the YLR boundary. The MSCI Project would address this erosion by formalizing the culvert with a serviceable dispersion feature. Final design and implementation of this project element would be subject to a Clean Water Act Section 404 permit from the Army Corps of Engineers because this outfall has been designated as “Other Waters of the U.S.” and are thus subject to federal jurisdiction.

#### 3.9.2.4 Nature Education Facilities Project

The proposed NEF Project would make public access and interpretive improvements for the entire MSC, including an integrated 1.2 mile pedestrian and bicycle trail system that would link campus facilities, public coastal access overlooks, and a new 15-space public access parking lot (Parking Lot A) at the campus entrance. The project also would provide a shelter at an existing public overlook for use as an outdoor interpretive space; one new overlook along the trail system; and improved educational exhibits and wayfinding and interpretive signage throughout the campus along the trail system. The new trails would be surfaced with pervious paving. The parking stalls in Parking Lot A would be surfaced with pervious paving; the driveway would be asphalt concrete. Storm water runoff from the parking lot would drain to bioretention ponds to the east, north, and south. Because the new area of impervious surface that would be added by Parking Lot A is smaller than the impervious area that would be removed as part of the restoration of the adjacent segment of Delaware Avenue Extension, the volume and quantity of runoff would not increase, and a detention basin to reduce runoff flow rates would not be required.

#### 3.9.2.5 SRP Phase 1B Wetland and Habitat Restoration

SRP Phase 1B would implement elements of the first phase of campus habitat restoration under the CLRDP Resource Management Plan that entail or may entail work in wetlands or that could directly or indirectly affect wetlands or wetland habitat. Significant elements of this project include:

- Minor earth moving and/or minor manipulation of the outflow of wetland W1 to restore the historical connectivity of this agricultural drainage with the adjacent wetland W2.
- Hand work within wetlands W3, W5, and W6 to remove non-natives and restore the balance of native vegetation.
- Habitat improvements throughout the MSC Upper and Middle terraces to enhance wildlife movement corridors.

The project would not add any new impervious surface or sources of polluted runoff, but would alter the surface hydrology in the Upper Terrace.

### 3.9.2.6 CLRDP Amendment #1

CLRDPA Amendment #1 would make minor revisions to the CLRDP to accommodate one or more of the MSCI Projects, to clarify CLRDP language, to address minor changes to CLRDP language during the Coastal Commission approval process, and to respond to the evolution of the CLRDP Resource Management Plan under the guidance of the Scientific Advisory Committee that was established to guide YLR restoration efforts, as required by the CLRDP. The proposed revisions include adjustments to the boundaries of some of the site wetlands and associated wetland buffers, and revisions to the trail and utility alignments envisioned in the CLRDP. The project descriptions in Section 2.0 reflect the adjusted wetland and buffer boundaries and the revised trail and utility alignments. Therefore, the analysis of impacts to hydrology and water quality in this section takes the revised trail and utility alignments into account. None of the other proposed revisions to the CLRDP has implications for hydrology and water quality impacts.

### 3.9.3 Applicable CLRDP EIR Mitigation Measures

There are no CLRDP EIR mitigation measures related to hydrology and water quality that are applicable to the proposed Projects.

### 3.9.4 Impacts and Mitigation Measures

#### 3.9.4.1 Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, hydrology and water quality impacts would be considered significant if the proposed project would:

- Violate any water quality standards or waste discharge requirements.
- 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.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site.
- Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.

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No areas proposed for development under the CLRDP, including the proposed project site, are within a 100-year flood hazard area, or an area subject to inundation as a result of dam failure, seiche, tsunami, or mudflow. The CLRDP EIR determined that development under the CLRDP would not result in impacts under the following CEQA checklist items because the MSC terrace lands are not in a 100-year flood hazard area and are not within a tsunami hazard zone (CLRDP EIR, p. 4.8-36):

- Place housing within a 100- year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow.

### 3.9.4.2 Analytical Method

For purposes of analyzing the hydrologic effects of the proposed new development, the project area was divided into watersheds, as shown on Figure 3.9-2. In watersheds where little development is planned, the impervious surface area under existing conditions was compared with the impervious surface area with the new development. Additional analysis was not performed for watersheds where the Projects would not result in a net increase in impervious surface. For all other watersheds, the peak runoff flow rates were calculated for existing conditions and with the proposed new development. The 100-year storm was analyzed for watersheds draining to the original YLR; the 25-year storm was analyzed for all other watersheds.

The Rational Method was used to estimate runoff from the smaller watersheds and those where detention is not necessary to reduce flow rates to pre-development conditions. The Rational Method estimates the peak rate of runoff at any location in a watershed as a function of the drainage area, a runoff coefficient, and mean rainfall intensity for a duration equal to the time of concentration.<sup>4</sup> It is the simplest method of calculating runoff flow rates and is appropriate for calculating peak runoff from small watersheds for the sizing of storm water conveyance elements such as swales, pipes, and culverts. It can also be used to size LID elements such as vegetated strips and swales and bioretention areas.

For larger watersheds and/or for watersheds where detention is required, the TR-55 Method was run using HEC-HMS, the US Army Corps of Engineers Hydrology Modeling System software. The TR-55 Method utilizes the SCS runoff equation to predict the peak rate as well as the total volume of runoff. The SCS runoff equation is an empirical method for expressing how much runoff volume is generated by a certain volume of rainfall. It uses time of concentration, watershed area, a curve number, and precipitation depth

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<sup>4</sup> The runoff coefficient is an empirical number representing a relationship between rainfall and runoff. An undeveloped site with pervious soils would have a lower runoff coefficient than a developed site with pavement and buildings that prevent infiltration. Time of concentration is the time required for water to flow from the most remote point of the basin to the location being analyzed.

to create a hydrograph which shows the amount of runoff over the course of a storm event. The SCS curve number is a characteristic of the soil type, the land use and the initial degree of saturation (or the “antecedent moisture condition”). The SCS runoff equation is more sophisticated than the Rational Method in that it considers the time distribution of the rainfall; the initial losses of rainfall due to surface storage, evaporation, and infiltration; and an infiltration rate that decreases during the course of a storm, as soil becomes saturated. The SCS method can be used to determine the detention storage volume required to attenuate the peak discharge to the applicable standard.

The results of the hydrologic modeling for the proposed Projects are presented in Appendix E.

### 3.9.4.3 Project Impacts and Mitigation Measures

#### *Water Quality*

<b>MSC Projects Impact HYD-1</b>	The new roadway, driveways, parking lots, and buildings that would be developed under the proposed CBB, MSC, and NEF projects would create new sources of urban pollutants such as oil and grease, heavy metals, and sediment, which could potentially enter storm water runoff and degrade the water quality in the wetlands on the MSC, in Younger Lagoon, or in the Pacific Ocean.
<b>Applicable CLRD Mitigation/Implementation Measures</b>	Implementation Measure 7.1.1 - Management of Storm Water and Other Runoff  Implementation Measure 7.1.2 – Water Quality Standards  Implementation Measure 7.1.10 – Elements of the Stormwater Treatment Train  Implementation Measure 7.1.17 – Designation of Treatment Train
<b>Applicable Projects/Project Elements</b>	CBB (lab building, Greenhouse Complex, parking, paths)  NEF (Parking Lot A)  MSC (road, Utility Yard, Storage Yard)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	Not applicable
<b>Residual Significance</b>	Not applicable

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**Previous Analysis.** The CLRDP EIR analyzed the potential that petroleum and other chemicals in runoff from parking lots or roadways, or sediments entrained by runoff, could degrade the quality of water in the onsite drainage channels, seasonal wetlands, Younger Lagoon, or the Pacific Ocean. The CLRDP EIR concluded that the storm water management and treatment standards included in the CLRDP would be adequate to ensure that development under the CLRDP would not degrade water quality or violate water quality standards. The CLRDP EIR specifically cites the requirement that pre-development peak runoff rate and average volume must be maintained; the use of source-control BMPs to eliminate or reduce the generation of pollutants during operations of campus facilities; and the incorporation of storm water treatment features into new development to reduce storm water flow rates, allow sediments to settle out of the storm water, and remove other pollutants.

Source control BMPs incorporated into the Storm Water Concept Plan<sup>5</sup> for the MSC include appropriate storage and use of hazardous chemicals; providing convenient locations for recycling and disposal of commercial wastes; litter and dust control; landscaping using native plants with low nutrient and water requirements; and use of the UC Santa Cruz recycling and yard waste programs. The CLRDP EIR concluded that the policies and implementation measures in the CLRDP would ensure that impacts to water quality would remain less than significant.

**Project Impact.** The new roads, driveways, parking lots, and buildings that would be developed under the proposed CBB, NEF, and MSCI projects would create new sources of urban pollutants such as oil and grease, heavy metals, and sediment, which could potentially enter storm water runoff and degrade the water quality in the wetlands on the MSC or in the Pacific Ocean. The SRP Phase 1B Project would not create any new sources of storm water pollutants.

The proposed MSC Projects incorporate applicable source controls prescribed by the Drainage Concept Plan. As described in Section 3.8, *Hazards and Hazardous Materials*, hazardous chemicals would be used, stored, and disposed of in compliance with applicable local, state, and federal regulations. The new buildings would include locations for recycling and would be served by the UC Santa Cruz recycling and yard waste programs. All landscaping would use native plants with low nutrient and water requirements, such that irrigation would be minimized and runoff and potential contaminants from landscaping also would be minimized.

As described above, the storm water management systems for the proposed MSC Projects incorporate the full range of natural storm water treatment features prescribed by the Drainage Concept Plan, including bioretention areas, vegetated filter strips and swales, and a vegetated storm water basin with infiltration trenches. An engineered treatment system is proposed for runoff from Parking Lot C. Bioretention areas and infiltration trenches are known as volume-based treatment systems, because they detain a volume of storm water for a period of time, removing pollutants primarily through settling and infiltration. Vegetated filter strips and swales are known as flow-based treatment systems because they remove pollutants from a moving stream of water by filtration, infiltration, and/or biological processes. Consistent

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<sup>5</sup> This was the title of the Drainage Concept Plan (DCP) in the Draft CLRDP, which was analyzed in the CLRDP EIR.

with the Drainage Concept Plan, volume-based systems for the proposed MSC Projects are sized to treat runoff from the 85<sup>th</sup> percentile, 24-hour storm (a precipitation depth of 0.95 inches), and flow-based systems are sized to treat runoff from the 85<sup>th</sup>-percentile, 1-hour storm (rainfall intensity of 0.17 inches per hour). For both approaches, LID facilities target small, frequent storms, which generate the majority of pollutants from developed surfaces. After these first flush storms pass, cleaner runoff can bypass treatment.

The criteria used to size the treatment systems to be included in the proposed MSC Projects are based on the “California Stormwater Best Management Practices Handbook for New Development and Redevelopment,” updated in 2003 by the California Stormwater Quality Association (CASQA Handbook) and the “San Francisco Stormwater Design Guidelines” (SFSDG), adopted by the San Francisco Public Utilities Commission on January 12, 2010 (Winzler and Kelly 2011).

As required by the CLRDP, following project construction, the Campus would monitor the performance of the storm water treatment systems according to the monitoring program described in the Drainage Concept Plan. For the first three years after the treatment systems are constructed, the Campus would test the runoff both upstream and downstream of each treatment train at least three times a year. The purpose of this short-term monitoring program is to provide data on the effectiveness of the treatment BMPs under Central California’s climatic conditions. The results of the testing would be compared to specific water quality performance standards listed in the Drainage Concept Plan. Where any of the performance standards are not met, the Campus would identify a means to achieve the required standard and would implement all necessary changes prior to the next storm season. The three-year, research-oriented monitoring program may be extended for an additional two years if any BMP treatment train does not meet all of the short-term water quality performance standards. Following completion of the short-term, research-oriented monitoring program, the Campus would transition to a compliance-oriented, long-term monitoring program. The long-term monitoring would require less-frequent sampling and testing for a smaller set of parameters than the short-term program. The Campus would continue to compare the results of the monitoring with a specific set of performance standards, and, if any of these standards is not met, would still be required to identify and implement measures to achieve compliance.

The proposed Projects incorporate the applicable pollutant source control measures, and the storm water management systems include treatment systems that are sized to meet the standards specified in the Drainage Concept Plan, which are the same as the water quality objectives and standards of the RWQCB’s Basin Plan for all inland surface waters, enclosed bays and estuaries. Therefore, it is expected that runoff from new development would not significantly degrade the quality of the receiving waters. Further, the Campus would implement a comprehensive water quality monitoring system, as required by the CLRDP. Under the CLRDP, the Campus also is required to identify and implement measures to achieve compliance if any of the specified performance standards are not met. For these reasons, the proposed projects would not have a significant impact on water quality.

Groundwater Resources/Flow to Wetlands

<b>MSC Projects Impact HYD-2</b>	The proposed CBB, MSC, and NEF projects would increase the area of impervious surface on the MSC, which could reduce the infiltration of surface water into the local perched aquifer. This could in turn reduce water supply to wetlands or seeps along the bluffs.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	Implementation Measure 7.1.1—Management of Storm Water and Other Runoff  Implementation Measure 7.1.6—Groundwater Recharge  Implementation Measure 7.1.13—Permeable Hardscape
<b>Applicable Projects/ Project Elements</b>	CBB (lab building, Greenhouse Complex, parking) MSCI (road, sidewalk, Utility Yard, Storage Yard) NEF (parking)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation HYD-2:</b> The Campus shall monitor water levels in the root zones in wetlands W4 and W5 on a weekly basis for at least one full wet season (Oct. 1-May 15) before development of the CBB, <del>and</del> MSCI <u>and</u> NEF Projects begins, and use the data to relate water levels at the monitoring points to an Antecedent Precipitation Index (API). After construction of the proposed CBB <del>and</del> MSCI <u>and</u> NEF Projects has been completed, the Campus shall continue the monitoring weekly for two winters. If the measured water levels at the monitoring points fall below the lower 95-percent confidence limit of the water level-API curve for 2 consecutive weeks during any monitored wet season, the Campus shall take actions as necessary to return the wetland water levels to pre-project conditions. Examples of the types of actions the Campus could undertake are modifying the outlet of Detention Basin 1 or the outlet to the wetland W4 buffer from Parking Lot D to increase the flow to wetland W4.
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP does not propose the use of groundwater for water supply for CLRDP development; therefore, the CLRDP EIR determined that implementation of the CLRDP would not result in the depletion of groundwater supplies or cause the lowering of the local groundwater levels through withdrawal of groundwater. The CLRDP EIR analyzed the potential that the increase in impervious

surfaces as a result of development on the MSC would impede the infiltration of storm water runoff and thereby reduce water supply to wetland habitats or seeps along the bluffs that are supplied by groundwater. The CLRDP EIR concluded that the promotion of surface water infiltration, through storm water ponds and swales included in CLRDP development, would serve to offset the infiltration capacity lost due to impervious surfaces added under the CLRDP. In addition, the infiltration area that supplies ocean bluff seeps would not be developed. Development in Basins 7, 8, and 9, which may supply runoff to groundwater seems along the bluffs adjacent to Younger Lagoon, would not significantly reduce the quantity of surface water available for infiltration under existing conditions because all three areas are currently disturbed, compacted, and developed with structures. Finally, the CLRDP includes measures to maintain groundwater recharge at pre-development levels to the maximum extent feasible. For these reasons, the CLRDP EIR determined that implementation of the CLRDP would not adversely affect groundwater resources at the MSC.

**Project Impact.** The proposed CBB and MSC Projects would increase the area of impervious surface on the MSC, which could reduce the infiltration of surface water into the local perched aquifer. This could in turn reduce water supply to wetland habitats or seeps along the bluffs. According to the Drainage Concept Plan, the use of natural drainage systems such as vegetated basins, swales, and filter strips, rather than concrete pipes and detention vaults, provides opportunities for runoff to infiltrate into the ground and replenish groundwater supplies along the entire route of the system. As described above, the proposed Projects rely almost entirely on these natural drainage systems. Most of the runoff from the new impervious area would drain to bioretention areas that would allow runoff to infiltrate to groundwater. The bioretention areas adjacent to the CBB lab building would be lined with impervious material to prevent the concentration of runoff at the building foundation. However, these bioretention areas would drain to a vegetated detention basin that would include a series of infiltration trenches to facilitate the infiltration of runoff through the surficial clayey soils to the more permeable terrace deposits. The parking stalls in all of the new parking lots would have pervious pavement; runoff that does not infiltrate through the pervious pavement would be directed to vegetated swales or bioretention areas for filtration. Runoff from the new road and sidewalk would drain across vegetated filter strips to bioretention areas.

As illustrated on Figure 3.9-2, runoff from the Upper Terrace Storage Yard, which is partly in Basin 1 and partly in Basin 2, would flow to two detention basins, one in Basin 1 and one in Basin 2, to maintain the pre-development drainage patterns. Each detention basin would discharge to the adjacent grassland, which would maintain existing flows to wetlands W1 and W2 and allow opportunity for infiltration within the same basin in areas where the soils are relatively permeable.

As shown in Table 3.9-1, below, in Basin 3 the proposed development would result in a net decrease in impervious surface, as a result of the restoration of the existing Delaware Avenue Extension roadway. Under existing conditions, runoff in Basin 4 either infiltrates into the soils to the extent allowed by the soil permeability, or flows overland toward wetland W4. Wetland W5, to the south of the NOAA facility, occupies a depression and is fed primarily by surface flows in Basin 6. However, it is possible that shallow subsurface flow from drainage Basin 4 and areas farther to the north may contribute to soil saturation or surface water in wetland W5 when groundwater levels at the site are high (Hydroikos 2010).

**Table 3.9-1**

**Peak Runoff Flow Rates under Existing Conditions and with Proposed Projects**

Existing Conditions		With Project	
Watershed/Sub-basin	Peak flow rate (cfs) <sup>1</sup>	Watershed	Peak flow rate (cfs) <sup>2</sup>
<i>Basin 1—Discharge to Wetland W3 Buffer</i>			
1A	0.1	1A (through detention basins)	0.1
<i>Basin 2—Discharge to Wetland W2 Buffer</i>			
2A	Not calculated; project will result in net decrease in impervious surface in sub-basin 2A.	2A	NA
2B	0.4	2B	0.4
<i>Basin 3—Discharge to Younger Lagoon</i>			
3A	Not calculated; project will result in net decrease in impervious surface in sub-basin 3A.	3A	NA
3B	Not calculated; project will result in net decrease in impervious surface in sub-basin 3B.	3B	NA
<i>Basin 4<sup>3</sup>—Discharge to Wetland W4 Buffer</i>			
4-West + 4-East	1.2	4-West-A + 4-East-B + 4-West-B (through detention basin)	0.8
4-South-B	0.2	4-South-B	0.4
<b>TOTAL for Basin 4 (25-year storm)</b>	<b>1.4</b>	<b>TOTAL for Basin 4 (25-year storm)</b>	<b>1.2</b>
<i>Basin 8—Discharge to Younger Lagoon</i>			
8A	8.0	4-West-5A <sup>4</sup>	0.9
		4-South-A <sup>5</sup>	2.0
		7A <sup>6</sup>	1.0
		8A	3.9
<b>TOTAL for Basin 8 (100-year storm)</b>	<b>8.0</b>	<b>TOTAL for Basin 8 (100-year storm)</b>	<b>7.8</b>

**Notes:**

<sup>1,2</sup> Cubic feet per second.

<sup>3</sup> This does not include runoff from the new service road under MSCI Project Phase B. Runoff from that road would drain to a detention basin, which has been designed to accommodate runoff from future development on the Middle Terrace.

<sup>4</sup> Under existing conditions, sub-basin 5-West-A5 drains to Basin 4. Due to site limitations (i.e. roof layout, relatively flat natural gradient), it was necessary to route runoff from this watershed to Younger Lagoon.

<sup>5</sup> Under existing conditions, runoff from sub-basin 4-South-A drains to Younger Lagoon by way of the NOAA outfall at the southern end of Basin 8.

<sup>6</sup> Under existing conditions, sub-basin 7A drains to the ocean by way of the filtered seawater discharge system.

Development of the CBB lab building, Parking Lot D, portions of the new entry road and sidewalk (MSCI Phase A), and the new service road (MSCI Phase B) would substantially increase the impervious surface area in Basin 4. This would increase the volume of runoff in the basin but, as shown in Table 3.9-2, the peak rate of runoff would not exceed existing conditions. The increase in the volume of flow to wetland W4 would not expand the size of the wetland, which is controlled by topography and the culvert that serves as an outlet to the wetland, which would not be altered by the MSC Projects. Furthermore, as described above, the infiltration trenches in the proposed storm water detention basin adjacent to the CBB

lab building and pervious pavement in Parking Lot D would minimize runoff from new impervious surfaces and maximize opportunities for infiltration and groundwater recharge in Basin 4 to the extent feasible. Therefore, the proposed CBB and MSCI Projects are not expected to have adverse effects on the hydrology of wetland W4 or W5. The impact would be less than significant.

In order to track the effects of the proposed development on site hydrology, the Campus would implement MSC Projects Mitigation HYD-2. This would enable the Campus to refine the storm water management systems to better mimic the natural hydrologic system, which would further reduce the less-than-significant impact of the proposed MSC Projects.

Removal of the existing greenhouses and development of the new Greenhouse Complex and Parking Lot C would reduce the amount of impervious surface in Basins 7 and 8 by approximately 20,000 sf. In addition, the proposed new drainage system in Subarea 7, which would convey runoff from the new Greenhouse Complex, Parking Lot C, and a portion of Parking Lot D (east of McAllister Way) to Younger Lagoon, consists of vegetated swales, infiltration trenches, and perforated pipes that would spread out flow along the bluff, thereby maximizing the infiltration of runoff into the subsurface. Therefore, development in Subarea 7 under the proposed CBB Project would not adversely affect groundwater recharge in Basin 8 or on the Younger Lagoon.

In summary, the increase in impervious surface that would be added by the proposed MSC Projects would not reduce water supply to wetlands or seeps along the bluffs. The impact would be less than significant. Implementation of MSC Projects Mitigation HYD-2 would further reduce the less-than-significant impact on site hydrology.

*Impacts of New Sewer Line on Groundwater Flow*

<b>MSC Projects Impact HYD-3</b>	The new sewer trench could intercept groundwater flowing from Basin 2 toward Basin 4, which could alter the groundwater flow regime within Basin 4 and potentially reduce the subsurface flow toward wetland W4.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	MSCI Project, sewer line
<b>Significance</b>	Potentially significant
<b>Project Mitigation</b>	<b>MSC Projects Mitigation Measure HYD-3:</b> Where the new sewer line extends below the bedrock surface, concrete trench plugs that will act hydraulic barriers to groundwater flow shall be installed in the trench. Between the bedrock of bedrock and the pavement section, the

	trench backfill shall consist of permeable materials.
<b>Residual Significance</b>	Less than significant

The proposed MSCCI Project would construct a new sewer line in McAllister Way and the new campus entrance road that would be as much as 26 feet deep. Approximately 1,250 linear feet of this sewer line, beneath the new roadway, would extend into the impermeable mudstone bedrock underlying the shallow perched aquifer. If the trench is backfilled with permeable materials, it is possible that the trench could intercept groundwater and capture and carry the flows along the trench. This could alter the groundwater flow regime within Basin 4, which could affect the flow toward wetland W4. This would be a potentially significant impact. With implementation of MSCCI Mitigation HYD-4~~3~~, the project design would include features that would ensure that the sewer trench would not become a preferential flow path for groundwater. Design measures would ensure that the existing flow regime from Basin 2 toward Basin 4 is maintained, and thus would reduce the potential impact to a less-than-significant level.

*Erosion and Sedimentation Due to Altered Drainage Pattern*

<b>MSC Projects Impact HYD-4</b>	The proposed CBB, <del>and</del> MSCCI, and NEF Projects would increase the amount of impervious surface on the MSC, which could increase surface runoff to Younger Lagoon, the ocean, and terrace wetlands. If not properly managed, the increase in the volume and rate of runoff flows could increase erosion in drainage channels and siltation in receiving waters.
<b>Applicable CLRD Mitigation/Implementation Measures</b>	Implementation Measure 7.1.3 - Pre- and Post-Development Flows  Implementation Measure 7.1.4 - Pre-Development Drainage Patterns Defined  Implementation Measure 7.1.5 - Pre-Development Drainage Peak Flow Rates Defined  Implementation Measure 7.3.1 - Discharge to Younger Lagoon Reserve  Implementation Measure 7.3.2 – Discharge Siting and Design
<b>Applicable Projects/ Project Elements</b>	CBB (lab building, Greenhouse Complex, parking)  MSCCI (road, sidewalk, Utility Yard, Storage Yard)  NEF (parking)
<b>Significance</b>	Less than significant

<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR analyzed the potential that the addition of impervious surfaces under the CLRDP could increase erosion and siltation through increased storm water runoff, reduced infiltration, and alteration of natural drainage pathways. The CLRDP EIR concluded that the storm water management and water quality measures provided in the CLRDP would reduce the potential for erosion and siltation to a less-than-significant level. These measures include improvements to existing drainage features where erosion has occurred; design criteria for new storm water systems to control excessive storm water flows and treat polluted runoff; and a long-term monitoring and maintenance program.

**Project Impacts.** The proposed CBB and MSC Projects would increase the amount of impervious surface on the MSC, which could increase surface runoff to Younger Lagoon, the ocean, and terrace wetlands. If not properly managed, the increase in the volume and rate of runoff flows could increase erosion in drainage channels and siltation in receiving waters. As described above under Water Quality, the water treatment features incorporated into the new storm water management systems would remove pollutants, including sediments, from runoff that flows to sensitive habitats. The Campus would monitor the storm water management systems as specified in the MSC Drainage Concept Plan, and would adjust the systems as necessary to ensure that runoff complies with the applicable water quality standards. In addition, the proposed storm water management systems are designed to meet the CLRDP requirement that peak runoff flow rates not exceed peak flow rates under existing conditions. Table 3.9-1 summarizes the peak flow rates under existing conditions and with the proposed new development, for each watershed or group of watersheds that drains to the same location. Total runoff flows are shown for Basin 2 in the Upper Terrace; for the all watersheds in Basin 4, which discharge to the Resource Protection Buffer that surrounds wetland W4; and for the new development in Basins 7 and 8, which would discharge to Younger Lagoon through the Subarea 7 berm. The existing drainage basins and sub-basins within the project area are shown on Figure 3.9-2. The proposed storm water management systems are shown on Figure 3.9-3.

As shown in Table 3.9-1, above, with the proposed projects the peak rate of runoff flows to each discharge point would not exceed the runoff under existing conditions. Consistent with CLRDP IM 7.3.1, the storm water management system for Basin 8A, which discharges to Younger Lagoon, has been designed to accommodate the 100-year storm. For all other basins, the 25-year storm event was used.

The proposed projects are included in the development program analyzed in the CLRDP EIR, and the design of the proposed storm water management systems is consistent with the standards set forth in the CLRDP. After construction has been completed, the Campus would follow the monitoring and maintenance program described in the Drainage Concept Plan. Therefore, for the reasons discussed in the CLRDP EIR, the impact would be less than significant.

*Flooding Due to Altered Drainage Patterns*

<b>MSC Projects Impact HYD-5</b>	The proposed CBB, <del>and</del> MSCI, and NEF Projects would increase the amount of impervious surface on the MSC, which could contribute to local flooding.
<b>Applicable CLRDP Mitigation/Implementation Measures</b>	Implementation Measure 7.1.3 - Pre- and Post-Development Flows Implementation Measure 7.1.4 - Pre- and Post-Development Drainage Patterns Defined Implementation Measure 7.1.5 - Pre- and Post-Development Peak Flow Rates Defined Implementation Measure 7.3.1 – Discharge to Younger Lagoon Reserve Implementation Measure 7.3.2 – Discharge Siting and Design
<b>Applicable Projects/ Project Elements</b>	CBB (lab building, Greenhouse Complex, parking) MSCI (road, sidewalk, Utility Yard, Storage Yard) NEF (parking)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.8-32 to 4.8-33) analyzed the potential that impervious surface area (buildings, parking lots, and roadways) constructed through development projects on the MSC could increase peak storm water volumes and flow rates that, if not managed properly, could temporarily overwhelm conveyance facilities and result in local flooding. However, the CLRDP requires that storm water flows from new development be managed to maintain peak flow and discharge rates at pre-development levels, through construction and maintenance of properly engineering detention ponds and vegetated swales. Implementation of this requirement would ensure that storm discharges do not exceed the capacity of storm water conveyance structures, and would reduce the potential for flooding to a less-than-significant level.

**Project Impacts.** As described above and summarized in Table 3.9-1, the storm water drainage systems for the proposed Projects have been designed to maintain peak flow rates at pre-development levels. This

would ensure that storm discharges do not exceed the capacity of storm water conveyance structures, and the potential for flooding would be a less-than-significant impact.

*Create or Contribute Runoff/Additional Runoff*

<b>MSC Projects Impact HYD-6</b>	The proposed CBB, MSC, and NEF projects would increase impervious surface on the MSC, which could result in increased runoff to storm water conveyance systems.
<b>Applicable CLRD Mitigation/Implementation Measures</b>	Implementation Measure 7.1.1 - Management of Storm Water and Other Runoff  Implementation Measure 7.1.3 - Pre- and Post-Development Flows  Implementation Measure 7.1.5 - Pre-Development Drainage Peak Flow Rates Defined  Implementation Measure 7.3.1 - Discharge to Younger Lagoon Reserve
<b>Applicable Projects/ Project Elements</b>	CBB (lab building, Greenhouse Complex, parking)  MSC (road, sidewalk, Utility Yard, Storage Yard)  NEF (parking)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRD EIR (pp. 4.8-33 to 4.8-34) analyzed the potential that the increase in the area of impervious surface on the MSC would produce peak storm water flows above existing rates and volumes that could generate additional sources of polluted runoff. CLRD EIR Table 4.8-2 (p. 4.8-34) summarizes the increase in peak flow rates for the 25-year storm for each basin, and the volume of detention required in each basin to reduce those flows to pre-development rates. In all basins except 5 and 11, where no development is planned, CLRD development would result in an increase in peak flows during a 25-year rainfall event. However, as required by the CLRD Drainage Concept Plan, for each development project, the Campus would estimate the increase in the peak flow rate during the 25-year storm event, calculate the detention volume required to maintain discharge flows to existing rates and volumes, and design drainage systems that would attenuate flows accordingly. By following these

procedures, the Campus would reduce impacts associated with increased runoff to a less-than-significant level.

**Project Impact.** The proposed CBB, MSCI, and NEF projects would increase impervious surface on the MSC, which could result in increased runoff to storm water conveyance systems. As described above and summarized in Table 3.9-1, the storm water drainage systems for the proposed CBB, MSCI, and NEF Projects have been designed to maintain peak flow rates at pre-development levels. This would ensure that storm discharges to the culvert at the outlet of wetland W4 and the existing outfalls to Younger Lagoon do not exceed the capacity of these existing storm water conveyance structures. The new storm water system that would discharge runoff from Development Subarea 6 and a portion of Subarea 4 to Younger Lagoon through the new Subarea 7 berm, is designed to accommodate flows from the 100-year storm, including runoff from the proposed site of Parking Lot C, which currently drains to the ocean by way of the filtered seawater discharge system. The impact would be less than significant.

*Flooding Due to 100-Year Flood Zone*

<b>MSC Projects Impact HYD-7</b>	The 100-year storm event could result in localized minor flooding of campus roads and low areas.
<b>Applicable CLRD EIR Mitigation/Implementation Measures</b>	None
<b>Applicable Projects/ Project Elements</b>	CBB (lab building, Greenhouse Complex, parking) MSCI (road, sidewalk, Utility Yard, Storage Yard) NEF (parking)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The MSC is not located within a 100-year flood zone. Therefore, the CLRD EIR (p. 4.8-36) determined that, although there could be localized flooding of streets and low areas on and near the campus in a 100-year flood, it is unlikely that the anticipated level of flooding would place people and structures at risk or that structures on the campus would impede or redirect flows.

**Project Impact.** As discussed in the CLRD EIR, the proposed project sites are not within a 100-year flood zone. The storm water management system that would discharge to Younger Lagoon by way of Basin 8A has been designed to accommodate flows from the 100-year storm. The storm water

management systems for the other project elements, including the vegetated swales, bioretention areas, and vegetated basin along the new MSC road and adjacent to the CBB lab building, are designed to accommodate flows from the 25-year storm event. Therefore, as, explained in the CLRDP EIR, the 100-year storm could result in localized minor flooding of campus roads and low areas, but it is unlikely that any such minor flooding would place people and structures at risk or that structures on the campus would impede or redirect flows. The impact would be less than significant.

#### *Tsunami, Seiche, or Mudflow*

**Previous Analysis.** The CLRDP EIR (p. 4.8-37) determined that the environmental impacts of implementation of the CLRDP related to tsunami, seiche, and mudflow hazards would be less than significant. The MSC is not subject to seiches because it faces open ocean and is not subject to tsunami because the ocean bluff on which the campus is situated is 40 feet above sea level. The site is not subject to mudflows because it is flat. Therefore, the CLRDP EIR (p. 4.8-37) determined that the environmental impacts of implementation of the CLRDP related to tsunami, seiche, and mudflow hazards would be less than significant.

**Project Impact.** The proposed MSC Projects would be constructed on the terrace portion of the MSC and therefore would not be subject to seiche or mudflow hazards, for the reasons discussed in the CLRDP EIR. According to the California Emergency Management Agency's map of tsunami inundation hazards in Santa Cruz County, the project sites are not in a tsunami inundation hazard area (California Emergency Management Agency 2009). Therefore, no impact would occur.

### 3.9.4.4 Cumulative Impacts and Mitigation Measures

The CLRDP EIR analyzed the contribution of development under the CLRDP to cumulative environmental effects associated with water quality degradation and increased volume of storm water runoff to Younger Lagoon and to Monterey Bay. The geographical area considered in this analysis includes the MSC, the Younger Ranch to the west of the MSC, the light industrial area of western Santa Cruz to the north and northeast, and the residential development adjacent and to the east and northeast.

#### *Cumulative Discharges into Younger Lagoon.*

**Previous Analysis.** Runoff flows to Younger Lagoon from the agricultural fields of the Younger Ranch west of the MSC; portions of the Upper, Middle, and Lower terraces of the MSC; and from the light industrial areas north of the site (the Raytek and Reber Construction Co. sites) that drain onto the MSC via a culvert under the railroad tracks and through campus wetlands on the Upper Terrace. There are no vacant parcels within city limits that drain into Younger Lagoon that could be developed in the future to result in increased polluted urban runoff into Younger Lagoon. Uncontrolled flow will continue to drain from the Younger Ranch agricultural fields into Younger Lagoon and will continue to contribute agricultural pollutants including sediment and pesticide residual into Younger Lagoon. These agricultural lands are zoned Commercial Agricultural and are mapped as Prime Farmland. The potential for development of this land is limited by agricultural protection provisions of the Coastal Act and the

County of Santa Cruz General Plan. Therefore, any change in the volume and quality of runoff that is received in Younger Lagoon compared to existing conditions would be the result of the implementation of the CLRDP alone, and no other development would contribute to a cumulative impact. No cumulative impact would occur.

**Project Impact.** Runoff from the new Greenhouse Complex, Parking Lot C, a portion of Parking Lot D, and the Upper Terrace Storage Yard would discharge to Younger Lagoon under the proposed MSC Projects. As explained above, the storm water management systems for these project elements have been designed to meet the water quality and runoff flow standards specified in the CLRDP. Furthermore, the proposed MSC Project would improve two existing drainage facilities in Basin 8, which direct runoff from the NOAA facility and from Middle Terrace areas west of McAllister Way to Younger Lagoon. These improvements would reduce the discharge of sediment to Younger Lagoon. Therefore, the proposed Projects would not result in a significant adverse impact to water quality in Younger Lagoon. As discussed in the CLRDP EIR, no additional development is anticipated on off-campus lands that drain to Younger Lagoon for the reasons set forth in the CLRDP EIR, which still apply. Therefore, there would not be a cumulative impact to water quality in Younger Lagoon.

*Cumulative Discharges to Moore Creek Watershed and Pacific Ocean*

<p><b>MSC Projects Impact HYD-8</b></p>	<p>Development in Basin 4, including the CBB lab building, Parking Lot D, and portions of the new road that would be constructed under the MSC Project, would discharge runoff that could contain urban pollutants to the Pacific Ocean.</p>
<p><b>Applicable CLRDP Mitigation/Implementation Measures</b></p>	<p>Implementation Measure 7.1.1 - Management of Storm Water and Other Runoff</p> <p>Implementation Measure 7.1.2 – Water Quality Standards</p> <p>Implementation Measure 7.1.3 - Pre- and Post-Development Flows</p> <p>Implementation Measure 7.1.4 - Pre-Development Drainage Patterns Defined</p> <p>Implementation Measure 7.1.5 - Pre-Development Drainage Peak Flow Rates Defined</p> <p>Implementation Measure 7.1.10 – Elements of the Stormwater Treatment Train</p> <p>Implementation Measure 7.1.17 – Designation of Treatment Train</p> <p>Implementation Measure 7.3.1 - Discharge to Younger Lagoon Reserve</p>

	Implementation Measure 7.3.2 – Discharge Siting and Design
<b>Applicable Projects/ Project Elements</b>	CBB (lab, Parking Lot D) MSCI (road)
<b>Significance</b>	Less than significant
<b>Project Mitigation</b>	None
<b>Residual Significance</b>	Not applicable

**Previous Analysis.** The CLRDP EIR (pp. 4.8-38 to 4.8-39) analyzed cumulative impacts to water quality in the Moore Creek watershed, the Pacific Ocean, and Monterey Bay. The CLRDP EIR (p. 4.8-39) analyzed the cumulative impact on water quality in the Pacific Ocean and Monterey Bay of runoff from the MSC and from all other urban areas via municipal storm water drainage systems. The CLRDP EIR determined that the cumulative impacts would be less than significant because efforts at the state, county, and city level to control and reduce pollutants in storm water will offset and eventually reduce the overall cumulative contribution to water quality degradation of the ocean and bay resulting from the cumulative development in the region. These efforts include post-construction storm water management standards included in the Storm Water Management Plans developed by the City and County of Santa Cruz as well as by UC Santa Cruz, pursuant to NPDES regulations; the City of Santa Cruz Storm Water Ordinance, which establishes standards for reducing pollutants in storm water; and broader implementation of measures required under the Basin Plan as administered by the Regional Water Quality Control Board.

**Project Impact.** The proposed MSC Projects would not contribute runoff to Moore Creek. Runoff in Basin 4 from new development under the CBB and MSCI Projects, including a portion of the new road, the lab building, and Parking Lot D, drains to wetland W4, which discharges to a surface drainage feature on the De Anza Santa Cruz residential community property that flows to the ocean north of Natural Bridges State Beach. The proposed MSC Projects would comply with the storm water management and treatment standards of the CLRDP. The City and County of Santa Cruz have prepared and are implementing their Storm Water Management Plans, which include standards for post-construction storm water management. Therefore, the cumulative impact would not exceed that analyzed in the CLRDP EIR, and would be less than significant.

#### Other Cumulative Impacts

**Previous Analysis.** The CLRDP EIR (p. 4.8-39) analyzed the potential that residential development of the Pacific Shores Apartments (on Shaffer Road north of the UPRR railroad tracks) and on the Swenson property could generate increased flows that could result in downgradient flooding at the MSC. The CLRDP EIR concluded that such flooding was unlikely because the storm water drainage system for these projects would be routed to the municipal storm water collection system and not overland. Other

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facilities evaluated as cumulative projects in the CLRDP EIR are too distant from the MSC to cause a cumulative impact on hydrology. The CLRDP EIR also concluded that the effects of the other cumulative projects would not likely influence the local water table beneath the MSC because the primary recharge for the water table occurs from precipitation falling on the site and not via underflow from offsite, upgradient, or cross-gradient sources.

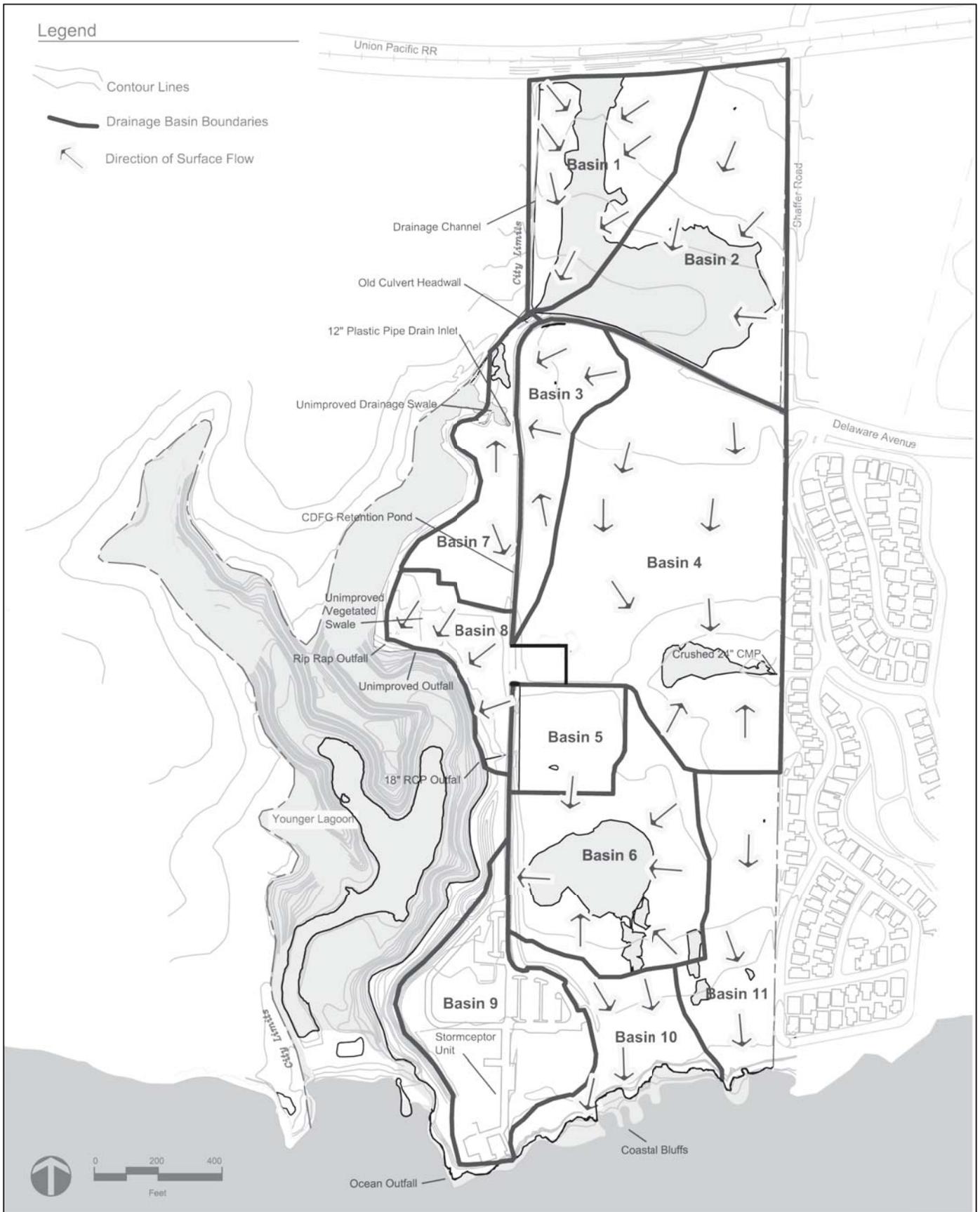
**Project Impact.** The building space and site development included in the proposed MSC Projects was taken into account in the CLRDP EIR. As explained above, if a desalination plant is constructed on the Swenson property instead of the residential development anticipated in the CLRDP EIR, the City would implement the IWP pEIR mitigation calling for LID storm water management features to maximize infiltration and minimize surface runoff, and would also comply with the post-construction storm water management program that is incorporated into the City’s Storm Water Management Program. No other development is anticipated in the vicinity of the MSC that potentially could contribute to groundwater or surface flows. Therefore, the proposed MSC Projects, in conjunction with other development in the immediate vicinity, would not result in flooding at the MSC and would not affect groundwater flow beneath the MSC. No cumulative impact would occur.

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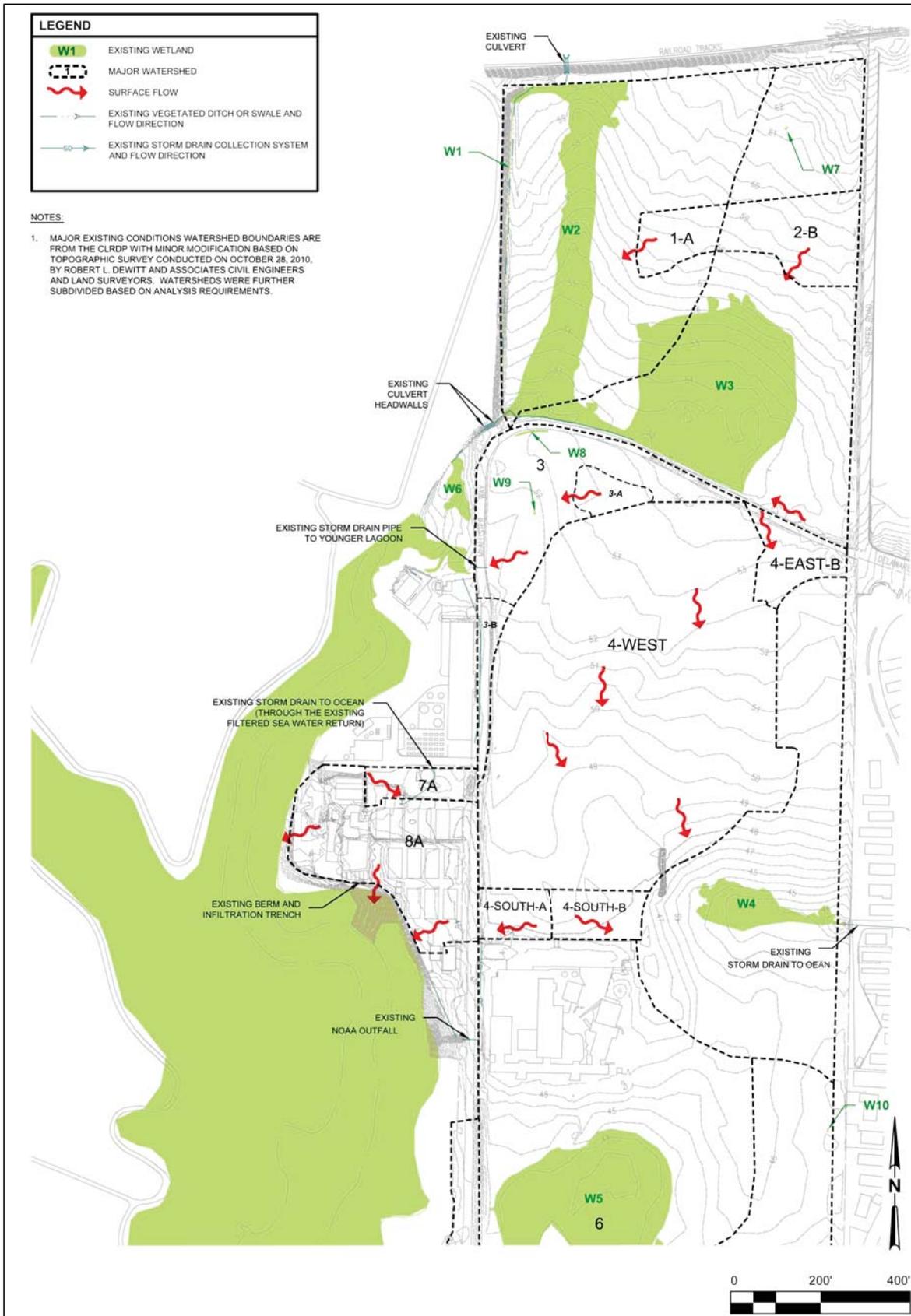
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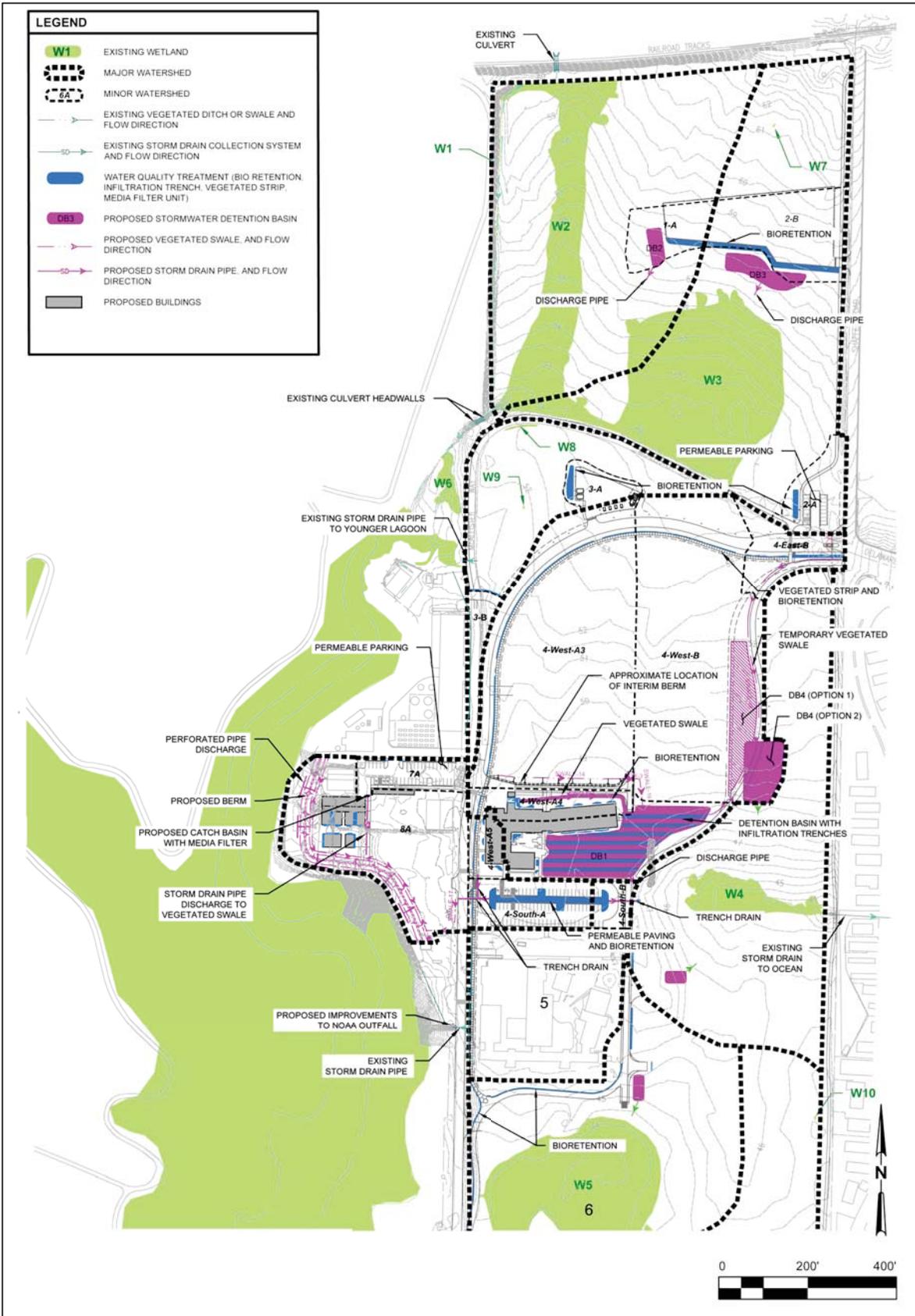


UC Santa Cruz Marine Science Campus  
 Coastal Biology Building  
 and Infrastructure Improvements  
 Final Environmental Impact Report Nov. 2011

Marine Science Campus Drainage Basins

Figure 3.9-1





UC Santa Cruz Marine Science Campus  
 Coastal Biology Building and  
 Infrastructure Improvements  
 Final Environmental Impact Report Nov. 2011

Proposed Stormwater  
 Drainage Features

Figure  
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F I G U R E S

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This section considers alternatives to each of the proposed MSC Projects.

CEQA requires an EIR to describe and evaluate a range of alternatives to the proposed project, or alternatives to the location of the proposed project. CEQA Guidelines, Section 15126.6 (a) state that:

*“An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which 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, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives.”*

This process is intended to foster informed decision-making and public participation in the environmental process.

The range of alternatives studied in the EIR must be broad enough to permit a reasoned choice by decision-makers when considering the merits of the project. The analysis should focus on alternatives that are feasible; i.e., that may be accomplished in a successful manner within a reasonable period of time; and that take economic, environmental, social, and technological factors into account. Under CEQA, alternatives that are remote or speculative should not be discussed in the alternatives analysis. Furthermore, alternatives should focus on reducing or avoiding significant environmental impacts associated with the project as proposed. The purpose of the alternatives analysis is to explore ways that the project objectives could be attained while reducing or avoiding significant environmental impacts of the project as proposed.

During the scoping process for this EIR, the following comments with respect to project alternatives were received:

- Infrastructure improvements should include use of alternative energy sources, such as ocean tides and currents, wind and solar power, to reduce reliance on fossil fuels and support future use of alternative energy sources at the campus. Alternative energy sources should be actively pursued and incorporated into the energy supply for the MSC.
- Only research facilities that are dependent on a fresh source of seawater should be situated at this site.

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## 4.1 PROJECT OBJECTIVES

Alternatives considered in the EIR should attain most of the basic project objectives. Compatibility with project objectives is one of the criteria for selecting a reasonable range of project alternatives. Project objectives provide a standard against which to measure possible alternatives. The objectives of each project therefore are listed below.

### 4.1.1 CBB Project Objectives

- Provide additional seawater-equipped teaching and research laboratory space, plant research space, and support space to accommodate enrollment demand for Ecology and Evolutionary Biology (EEB) laboratory classes from declared majors.
- Provide sufficient faculty office and research laboratory space to accommodate increased EEB faculty to support enrollment and research demands.
- Consolidate EEB Department faculty, post-doctoral students, and graduate students and the research facilities they need at a single location.
- Co-locate Coastal Science and Marine Science researchers for research efficiencies and to facilitate interdisciplinary research collaboration.
- Reduce overuse and overcrowding of existing facilities, research spaces, seminar rooms and labs on the Main Campus and the Marine Science Campus.

### 4.1.2 MSCI Project Objectives

- Construct utility improvements, facilities, public parking, and storage areas necessary to support the CBB project and future development as set forth in the CLRDP.
- Increase capacity, reliability, and flexibility of existing infrastructure.
- Improve campus circulation network for vehicles, bicycles, and pedestrians.
- Improve and enhance public coastal access.
- Provide improved coastal resource protection through development of storm water infiltration features, enhanced buffering and vegetation screening for the YLR, and enhancement of wildlife movement corridors.
- Incorporate storm water features that will minimize storm water runoff to protect and enhance water quality.
- Comply with circulation and storm water-related implementation measures required as part of the Coastal Commission certification of the CLRDP.

### 4.1.3 NEF Project Objectives

- Provide new, improved, and expanded interactive educational facilities for children and adults who visit the MSC.
- Provide the public with increased and enhanced opportunities to view wildlife and coastal, wetland, and marine habitats in a natural setting.
- Increase public awareness of the scientific and ecological value of coastal and marine resources.
- Comply with public coastal access improvements implementation measures required as part of the Coastal Commission certification of the CLRDP.

### 4.1.4 SRP Phase 1B Project Objectives

- Improve native habitat on the Marine Science Campus to create an ecological mosaic that will support native plants and wildlife.
- Enhance the natural function and ecological makeup of terrace wetlands.
- Enhance native wildlife habitat and movement corridors between the northern part of the campus and Younger Lagoon, and east-west across the campus to support movement between Younger Lagoon and Antonelli Pond in the Moore Creek drainage.
- Create connectivity between wetlands W1 and W2, diminish fragmentation of wetland habitats, and generally enhance wetland habitat in the upland area between wetlands W1 and W2.
- Improve water quality by reducing peak flow rates of storm water runoff and thus reduce erosion in channels between wetlands W1, W2, W6 and Younger Lagoon.
- Comply with implementation measures required as part of the Coastal Commission certification of the CLRDP.

### 4.1.5 CLRDP Addendum #1 Objectives

- Accommodate student and program needs for marine dependent facilities.
- Amend CLRDP text, figures, and implementation measures as needed to reflect input from the Scientific Advisory Committee, changed wetland conditions, and campus planning refinements since certification of the CLRDP, and changes in YLR nomenclature to reflect the intent of the final CLRDP.

## 4.2 OVERVIEW OF SIGNIFICANT IMPACTS OF THE PROPOSED MSC PROJECTS

Under CEQA guidelines 15126.6(a), the discussion of alternatives focuses on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project,

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even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly. The term "significant effect on the environment" is defined in Section 21068 of CEQA as meaning "a substantial or potentially substantial adverse change in the environment."

This EIR assesses the potential environmental impacts of the MSC Projects, which include the CBB Project, The MSCI Phase A and Phase B Project, the NEF Project, and SRP Phase 1B, and of implementation of proposed CLRDP Amendment #1. The extent and locations of ground disturbance (and associated potential for biological resources effects) varies substantially among the projects. The CBB Project would entail population growth at the campus and would generate operational vehicle trips. Some background growth in visitors and trips to the campus also could be attributed to the visitor parking lot and trail facilities developed under the NEF Project. The potential for other impacts also varies among the projects, as detailed below.

For each of the impacts identified below, the projects that would contribute to the impact are identified in parentheses at the end of the impact summary text. The notation "All", in this context, refers to the CBB, MSCI Phases A and B, NEF, and SRP Phase 1B Projects. The impact significance categories listed below are based on the significance of the impact prior to the mitigation proposed in the EIR. In all cases, the significance of significant or potentially significant impacts would be reduced to a less-than-significant level with the implementation of mitigation measures identified in this EIR.

#### 4.2.1 Potentially Significant Impacts

- **MSC Project Impact BIO-1:** Potential construction effects on special-status plants or plant population groups should they be present in a work area. (All)
- **MSC Projects Impact BIO-2:** Potential spread of invasive plants to the YLR from restored staging area. (CBB, MSCI, NEF)
- **MSC Projects Impact BIO-3:** Potential to affect California red-legged frogs, should they be present in a work area. (All)
- **MSC Projects Impact BIO-4:** Potential construction effects on Western burrowing owls, should they be present in a work area. (All)
- **MSC Projects Impact BIO-5:** Potential construction effects on badgers, should they be present in a work area. (All)
- **MSC Projects Impact BIO-6:** Potential construction effects on adult western pond turtles, should they be present in a work area. (All)
- **MSC Projects Impact BIO-7:** Potential effects of construction activity and noise, particularly in Subareas 6 and 7 in close proximity to Younger Lagoon, on nesting birds. (All)
- **MSC Projects Impact BIO-8:** Potential effects of demolition of the greenhouses and storage sheds in Subareas 6 and 7 on special-status bats that could be present. (CBB, MSCI)
- **MSC Projects Impact BIO-9:** Potential effects of construction activity on San Francisco dusky-footed woodrats, should they be present in a work area. (All)

- **MSC Projects Impact BIO-10:** Potential for construction and campus operations to increase barriers to wildlife movement and increase the risk of wildlife death by roadkill. (All)
- **MSC Projects Impact BIO-11:** Potential for night lighting at the proposed CBB greenhouses to impede nocturnal wildlife movement. (CBB)
- **MSC Projects Impact BIO-12:** Potential that construction could result in minor disturbance to and fill into wetlands. (All)
- **MSC Projects Impact BIO-15:** Potential that concurrent project construction could result in unanticipated biological impacts if timing and scheduling of mitigation implementation is not coordinated. (All)
- **MSC Projects Impact HYD-3:** Potential for deep excavation for the proposed MSCI sewer trench to alter wetland hydrology by inadvertently diverting groundwater along the trench. (MSCI Phase A)
- **MSC Projects Impact LU-2:** Potential inconsistency with CLRDP IM 5.3.7, which requires that all MSC parking demand be satisfied on campus. (CBB)
- **MSC Projects Impact NOIS-4:** Potential for cumulative construction noise from the projects and other local construction to result in daytime or evening construction noise levels exceeding the significance threshold of 80 dBA at the De Anza Santa Cruz residential community. (CBB, MSCI, NEF)
- **MSC Projects Impact TRA-1:** Potential to generate single-occupant motor vehicle trips to campus in excess of transportation demand management (TDM) goals. (CBB, NEF)
- **MSC Projects Impact TRA-3:** Potential to increase circulation on streets outside the campus entrance that could increase potential conflicts between motor vehicles, bicycles, and pedestrians. (CBB)
- **MSC Projects Impact TRA-5:** Potential for construction to impede traffic at the campus entrance and on campus roads and interfere with emergency operations. (All)

#### 4.2.2 Significant Impact

- **MSC Projects Impact TRA-2 (Project-level) and TRA-6 (Cumulative):** CBB operations would entail increased traffic between the Main Campus and the MSC that would contribute to a substandard level of service at the intersection of Western Drive and High Street. (CBB)

### 4.3 ALTERNATIVES CONSIDERED BUT REJECTED

This section discusses alternatives to the MSC Projects that were considered but were rejected because they (a) did not meet the Projects' objectives; or (b) were found to be infeasible for technical, environmental, or social reasons; or (c) would cause additional potentially significant adverse

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environmental impacts beyond the proposed MSC Projects' potential impacts. A discussion of rejected alternatives is provided below.

For the CBB Project, the following alternatives were considered and rejected:

**Different Configuration of the CBB Laboratory Building:** Several alternative configurations of the proposed laboratory/office building were considered and rejected. Building height and layout are constrained, under the CLRDP. A taller building would not be permitted under CLRDP design guidelines, even though this configuration would reduce the project footprint and commensurately reduce potential biological resources impacts. The facility also could be developed as a series of smaller buildings. A different footprint alternative has the potential to meet all of the project objectives, but limited potential to reduce significant or potentially significant impacts of the proposed project.

**Laboratory Building Only:** Under this alternative, the CBB laboratory building would include only research laboratories and seawater labs and tanks, and the facility would be about half the size of the proposed lab building. A smaller footprint could reduce some of the potentially significant biological resources impacts of the proposed project, in that the footprint of vegetation removal and ground disturbance would be smaller. Construction noise and air emissions from a smaller facility also would be reduced. This alternative would meet the project objective of providing additional seawater-equipped research space and other laboratory space for the EEB Department, but would not meet any of the other project objectives. Most members of the faculty would retain offices at the Main Campus, and all non-lab classes would be conducted there. The elimination of the large seminar room would reduce traffic and parking impacts associated with the students taking classes there, but the EEB Department would remain scattered, without a central meeting location and with faculty divided between the two campuses. Faculty would not be provided with the project's increased opportunities for research collaboration. Although the alternative would reduce some impacts of the proposed project, it was not carried forward for analysis because it does not meet key project objectives.

For the MSC Project, no stand-alone alternatives were considered, as it would be premature to construct infrastructure in advance of any of the new development it would serve. A commenter suggested that the campus consider use of alternative energy sources for campus utility services. A recent campus study investigated the feasibility of using wind power at the campus and concluded that winds at the site are not sufficiently strong and steady to generate significant electricity using wind power (Peterson et al. 2008). Further, wind turbines have substantial potential to result in aesthetic impacts and adverse effects to birds. The proposed CBB Project includes photovoltaic cells over a parking lot. This project element may serve as a pilot for potential more extensive use of photovoltaic cells for electrical generation at the campus.

The NEF Project would implement public coastal access improvements at the MSC, in compliance with an implementing measure of the CLRDP and for consistency with Coastal Commission goals for maintaining and enhancing public use and enjoyment of the coast. Alternatives that would reduce these beneficial environmental effects would not meet these key objectives of the Projects and were not carried forward for analysis. In addition, the environmental effects of the NEF project are limited. No alternatives for the entire project were considered and rejected. One commenter suggested that interpretive shelters should not be built at public access overlooks, as they would block views. Aesthetic analysis of the NEF Project concluded that the proposed shelter at Overlook A would not block any views of wetland W5 or

impinge upon any view corridors. An alternative that did not include the proposed interpretive shelter therefore was not included in the proposed NEF Project.

No alternatives to the SRP Phase 1B Project were considered and rejected. The SRP Phase 1B project would implement requirements of the CLRDP with respect to wetland restoration and habitat enhancement on the campus, consistent with Coastal Commission goals, and the project would provide environmental benefits that outweigh its limited and short-term environmental impacts. The project itself includes several optional strategies for achieving the project's objectives, and these are considered in the project analysis.

No alternatives were considered and rejected for CLRDP Amendment #1, but the CBB/MSCI alternatives also include alternatives that would not entail a CLRDP amendment.

#### 4.4 SUMMARY OF ALTERNATIVES SELECTED FOR ANALYSIS

CEQA requires that the range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the project's significant effects.

For the CBB and MSCI Projects, four alternatives are analyzed in detail below:

- **Alternative 1. Main Campus CBB/Minimal MSCI:** The CBB laboratory and office building would be sited at Science Hill on the Main Campus and no new greenhouses would be built. The MSCI Project at the MSC would implement only those project elements required by the CLRDP based on time elapsed since CLRDP approval; that is, improvements to storm water infiltration features in Development Subarea 7, and removal and restoration of informal parking along McAllister Way.
- **Alternative 2. 2300 Delaware CBB/MSCI Seawater Extension:** 40,000 sf would be remodeled in the interior of existing Building C at the UC Santa Cruz facility at 2300 Delaware Avenue in the west side of the City of Santa Cruz to provide lab, office, and meeting space for the EEB Department. New greenhouses would be built in an existing fenced utility yard at the site. The MSCI Project would be limited to the extension of the MSC seawater distribution and return lines along McAllister Way, Delaware Avenue Extension, and Delaware Avenue to the project site, and implementation of the same two CLRDP-required improvements included in Alternative 1.
- **Alternative 3. Reduced CBB/MSCI:** The proposed large and small seminar rooms (and associated student population) would be eliminated from the CBB, and the facility would be reduced to about 37,000 sf. Greenhouses and associated Parking Lot C would not be built and the EEB Department faculty would commute to the Main Campus for undergraduate classes and use of the greenhouses. The proposed MSCI utility and road improvements would be developed, but the Upper Terrace Storage Yard would not be developed or used for staging

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- **Alternative 4. No Project Alternative:** No CBB facilities and no new infrastructure would be developed at the MSC. The existing informal parking along McAllister Way would be retained and storm water infrastructure improvements would not be made in Subarea 7 at this time.

For the NEF Project, two alternatives are analyzed:

- **Alternative 1. No De Anza Trail:** The NEF Project would be developed as proposed, except that the De Anza trail improvements would not be carried out. This trail would continue to be available for public use, without paving or other ADA improvements.
- **Alternative 2. No Project Alternative:** No new trails, trail improvements, or public access improvements would be carried out at this time.

For the SRP Phase 1B Project, a No Project Alternative is analyzed.

No project alternatives were considered for CLRDP Amendment #1. Of the proposed amendment actions, only Action #11 (which could result in some MSC-related use of streets off campus for parking) has the potential to result in physical changes in the environment that were not taken into account in the CLRDP and CLRDP EIR. Some of the alternatives analyzed for the CBB/MSCI Projects would eliminate or reduce the new traffic and associated parking demand at the MSC, such that the MSC would not generate parking demand that might not be satisfied at the MSC.

The analysis below provides detailed description and analysis of each of the alternatives and a No Project Alternative for each project. The alternatives presented below represent a reasonable range of alternatives. Each alternative is examined for its ability to reduce environmental impacts relative to the proposed Projects, feasibility of implementation, and ability to meet project objectives. As discussed in preceding chapters, the one significant impact and all of the potentially significant impacts of the proposed MSC Projects would be reduced to less-than-significant levels through the adoption of mitigation measures. Some of the identified impacts would be eliminated or reduced under project alternatives.

The following subsections describe the alternatives evaluated in this EIR in greater detail. Following the description of each alternative is an evaluation of the impacts of the alternative as they differ from those of the proposed Projects and an evaluation of the ability of each alternative to fulfill the Projects' objectives. Table 4-1 presents a summary of the impacts of each CBB/MSCI Project alternative compared to those of the proposed Projects. Table 4-2 similarly compares the impacts of the proposed NEF Project and its alternatives and the impacts of the proposed SRP Phase 1B Project and its alternatives, respectively. Tables 4-3 for the CBB/MSCI Projects and Table 4.4 for the NEF and SRP Phase 1B Projects, respectively, summarize the ability of each alternative to achieve the stated project objectives. For the CBB/MSCI Projects, the 2300 Delaware Alternative is identified as the environmentally superior alternative; for the NEF Project, the No De Anza Trail Alternative is identified as the environmentally superior alternative. For the proposed SRP Phase 1B Project, the proposed project is identified as the environmentally superior alternative.

**Table 4-1**  
**Comparison of Potentially Significant and Significant Impacts of CBB/ MSCI Project Alternatives**

<b>Environmental Issue Area</b>	<b>Proposed Project</b> (Significance before/ after mitigation)	<b>Alternative 1</b> <b>Main Campus CBB/ Minimal MSCI</b>	<b>Alternative 2</b> <b>2300 Delaware CBB/ MSCI Seawater</b>	<b>Alternative 3</b> <b>Reduced CBB/ Reduced MSCI</b>	<b>Alternative 4</b> <b>No Project Alternative</b>
<b>Aesthetics</b>	No PS or S impacts	=/-	-	-	-
<b>Agricultural and Forestry Resources</b>	No PS or S impacts	=/+	-	=	-
<b>Air Quality</b>	No PS or S impacts	-	-	-	-
<b>Biological Resources</b>					
BIO-1: Special status plants	PS/ LTS	=	-	=/-	-
BIO-2: Introduction of invasive plants	PS/ LTS	-	-	=	-
BIO-3: CA red-legged frog	PS/ LTS	-	-	=/-	-
BIO-4: Western burrowing owl	PS/ LTS	-	-	=/-	-
BIO-5: Badger	PS/ LTS	-	-	=/-	-
BIO-6: Western pond turtle	PS/ LTS	-	-	=/-	-
BIO-7: Nesting birds	PS/ LTS	=	-	=/-	-
BIO-8: Special status bats	PS/ LTS	=	-	-	-
BIO-9: SF dusky-footed woodrats	PS/ LTS	=	-	=/-	-
BIO-10: Barriers to wildlife movement	PS/ LTS	-	-	=/-	-

**Table 4-1  
Comparison of Potentially Significant and Significant Impacts of CBB/ MSCI Project Alternatives**

<b>Environmental Issue Area</b>	<b>Proposed Project (Significance before/ after mitigation)</b>	<b>Alternative 1 Main Campus CBB/ Minimal MSCI</b>	<b>Alternative 2 2300 Delaware CBB/ MSCI Seawater</b>	<b>Alternative 3 Reduced CBB/ Reduced MSCI</b>	<b>Alternative 4 No Project Alternative</b>
BIO-11: Night light interference w/ nocturnal wildlife movement	PS/ LTS	-	-	-	-
BIO-12: Minor wetland disturbance	PS/ LTS	-	-	=/-	-
BIO-15: Timing and scheduling of BIO mitigation measures	PS/ LTS	-	-	-	-
<b>Climate Change</b>	No PS or S impacts	-	-	-	-
<b>Cultural Resources</b>	No PS or S impacts	=	=/-	=	-
<b>Geology and Soils</b>	No PS or S impacts	+	-	=	-
<b>Hazards and Hazardous Materials</b>	No PS or S impacts	=	=	=	-
<b>Hydrology</b>					
HYD-3: Groundwater diversion along deep sewer trench	PS/LTS	=/+	-	=	-
<b>Land Use</b>					
LU-2: Inconsistency with parking requirement of applicable land-use plan	PS/ LTS	-	=/-	-	=
<b>Mineral Resources</b>	No impact	No impact	No impact	No impact	No impact
<b>Noise</b>					
NOISE-4: Cumulative construction noise effect on nearby sensitive receptors	PS/LTS	=	-	=/-	-
<b>Population and Housing</b>	No PS or S impacts	=	=	=	-

**Table 4-1  
Comparison of Potentially Significant and Significant Impacts of CBB/ MSCI Project Alternatives**

<b>Environmental Issue Area</b>	<b>Proposed Project (Significance before/ after mitigation)</b>	<b>Alternative 1 Main Campus CBB/ Minimal MSCI</b>	<b>Alternative 2 2300 Delaware CBB/ MSCI Seawater</b>	<b>Alternative 3 Reduced CBB/ Reduced MSCI</b>	<b>Alternative 4 No Project Alternative</b>
<b>Public Services</b>	No PS or S impacts	=	=	=	-
<b>Recreation</b>	No PS or S impacts	=	=	=	-
<b>Transportation and Circulation</b>					
TRA-1: Generate vehicle trips and parking inconsistent with TDM goals	PS/LTS	-	=	-	-
TRA-2/6: Project and cumulative impact to Western /High LOS	S/ LTS	=/-	=	-	-
TRA-3: Motor vehicle/ bike/ pedestrian conflicts	PS/ LTS	-	-	-	-
TRA-5: Construction could impede emergency access	PS/ LTS	-	-	=/-	-
<b>Utilities and Service Systems</b>	No PS or S impacts	=	-	=	-

Key: PS- Potentially significant; S- Significant; “=” Alternative has similar or equally significant impacts to the proposed projects; “-” Alternative has lesser impacts than the proposed projects; “+” Alternative has greater impacts than the proposed project

**Table 4-2**  
**Comparison of Potentially Significant and Significant Impacts of NEF and SRP Projects and Alternatives**

<b>Environmental Issue Area</b>	<b>Proposed NEF Project (Significance before/ after mitigation)</b>	<b>Alternative 1 No De Anza Trail</b>	<b>Alternative 2 No NEF Project</b>	<b>Proposed SRP Phase 1B Project</b>	<b>Alternative 1. No SRP Phase 1B Project</b>
<b>Aesthetics</b>	No PS or S impacts	=	=/-	No PS or S impacts	=
<b>Agricultural and Forestry Resources</b>	No PS or S impacts	=	=	No PS or S impacts	=
<b>Air Quality</b>	No PS or S impacts	-	-	No PS or S impacts	-
<b>Biological Resources</b>					
BIO-1: Special status plants	PS/ LTS	=/-	-	PS/ LTS	-
BIO-2: Introduction of invasive plants	PS/ LTS	=/-	-	No impact	=
BIO-3: CA red-legged frog	PS/ LTS	=/-	-	PS/ LTS	-
BIO-4: Western burrowing owl	PS/ LTS	=/-	-	PS/ LTS	-
BIO-5: Badger	PS/ LTS	=/-	-	PS/ LTS	-
BIO-6: Western pond turtle	PS/ LTS	=/-	-	PS/ LTS	-
BIO-7: Nesting birds	PS/ LTS	=/-	-	PS/ LTS	-
BIO-8: Special status bats	PS/ LTS	=/-	-	No impact	=
BIO-9: SF dusky-footed woodrats	PS/ LTS	=/-	-	PS/ LTS	-
BIO-10: Barriers to wildlife movement	No impact	=	=	No impact	=
BIO-11: Night light interference w/ nocturnal wildlife movement	No impact	=	=	No impact	=
BIO-12: Minor wetland disturbance	PS/ LTS	-	-	PS/ LTS	-
BIO-15: Timing and scheduling of BIO mitigation measures	PS/ LTS	=	-	PS/ LTS	-

**Table 4-2**  
**Comparison of Potentially Significant and Significant Impacts of NEF and SRP Projects and Alternatives**

<b>Environmental Issue Area</b>	<b>Proposed NEF Project (Significance before/ after mitigation)</b>	<b>Alternative 1 No De Anza Trail</b>	<b>Alternative 2 No NEF Project</b>	<b>Proposed SRP Phase 1B Project</b>	<b>Alternative 1. No SRP Phase 1B Project</b>
<b>Climate Change</b>	No PS or S impacts	=/-	-	No PS or S impacts	=
<b>Cultural Resources</b>	No PS or S impacts	=	=	No PS or S impacts	=
<b>Geology and Soils</b>	No PS or S impacts	=	=	No PS or S impacts	=
<b>Hazards and Hazardous Materials</b>	No PS or S impacts	=	=	No PS or S impacts	=
<b>Hydrology</b>					
HYD-3. Groundwater diversion along deep sewer trench	No impact	=	=	No impact	=
<b>Land Use</b>					
LU-2: Inconsistency with parking requirement of applicable land use plan	No impact	=	=	No impact	=
<b>Mineral Resources</b>	No impact	=	=	No impact	=
<b>Noise</b>					
NOISE-4: Cumulative construction noise effect on nearby sensitive receptors	PS/LTS	-	-	No impact	=
<b>Population and Housing</b>	No impact	=	=	No impact	=
<b>Public Services</b>	No PS or S impacts	=	=	No impact	=
<b>Recreation</b>	No PS or S impacts	=	=	No impact	=

**Table 4-2  
Comparison of Potentially Significant and Significant Impacts of NEF and SRP Projects and Alternatives**

<b>Environmental Issue Area</b>	<b>Proposed NEF Project (Significance before/ after mitigation)</b>	<b>Alternative 1 No De Anza Trail</b>	<b>Alternative 2 No NEF Project</b>	<b>Proposed SRP Phase 1B Project</b>	<b>Alternative 1. No SRP Phase 1B Project</b>
<b>Transportation and Circulation</b>					
TRA-1: Generate vehicle trips and parking inconsistent with TDM goals	PS/LTS	=	=	No impact	=
TRA-3: Motor vehicle/ bike/ped. conflicts that impair alternative transportation effectiveness	No impact	=	-	No impact	=
TRA-5: Construction could impede emergency access	PS/ LTS	-	-	No impact	=
TRA-6: Project and cumulative impact to Western /High LOS	No impact	=	=	No impact	=
<b>Utilities and Service Systems</b>	No impact	=	=	No impact	=

Key: PS- Potentially significant; S- Significant; “=” Alternative has similar or equally significant impacts to the proposed projects; “-“ Alternative has lesser impacts than the proposed projects; “+” Alternative has greater impacts than the proposed project

**Table 4-3  
Comparison of Ability of CBB/ MSCI Alternatives to Meet CBB/ MSCI Project Objectives**

Project Objectives	Proposed Project	Alternative 1 Main Campus CBB/ Minimal MSCI	Alternative 2 2300 Delaware CBB/ MSCI Seawater	Alternative 3 Reduced CBB/ Reduced MSCI	Alternative 4 No Project Alternative
<b>CBB Project</b>		Does alternative meets project objectives? No- Does not meet objectives; Yes- Meets project objectives; Partially- Meets project objectives but to a lesser degree than does the project			
Provide additional seawater-equipped teaching and research laboratory space, plant research space and support space to accommodate enrollment demand for Ecology and Evolutionary Biology laboratory classes from declared majors.	X	Partially	Yes	Yes	No
Provide sufficient faculty office and research lab space to accommodate increased EEB faculty to support enrollment and research demands	X	Yes	Yes	Yes	No
Provide meeting space of sufficient size for entire department to participate in colloquia	X	Yes	Yes	No	No
Consolidate EEB Department faculty, post-doctoral students, and graduate students and the research facilities they need at a single location.	X	Partially	Yes	No	No
Co-locate Coastal Science and Marine Science researchers for research efficiencies and to facilitate interdisciplinary research collaboration.	X	No	No	No	No
Reduce overuse and overcrowding of existing facilities research spaces, seminar rooms and labs on the main campus and the Marine Science Campus	X	Partially	Yes	No	No

**Table 4-3**  
**Comparison of Ability of CBB/ MSCI Alternatives to Meet CBB/ MSCI Project Objectives**

Project Objectives	Proposed Project	Alternative 1 Main Campus CBB/ Minimal MSCI	Alternative 2 2300 Delaware CBB/ MSCI Seawater	Alternative 3 Reduced CBB/ Reduced MSCI	Alternative 4 No Project Alternative
<b>MSCI Project</b>		Does alternative meets project objectives? No- Does not meet objectives; Yes- Meets project objectives; Partially- Meets project objectives but to a lesser degree than does the project			
Construct utility improvements, facilities, public parking, and storage areas necessary to support the CBB project and future development as set forth in the CLRDP.	X	No	Partially	Partially	No
Increase capacity, reliability, flexibility of existing MSC infrastructure	X	No	No	Partially	No
Improve MSC circulation network for vehicles, bicycles, and pedestrians	X	No	No	Yes	No
Improve and enhance public coastal access	X	No	No	Yes	No
Provide increased coastal resource protection, including storm water protection	X	No	No	Yes	No
Provide improved coastal resource protection through development of storm water infiltration features, enhanced buffering and vegetation screening for the YLR, and enhancement of wildlife movement corridors	X	Partially	Partially	Yes	No
Incorporate storm water features that will minimize storm water runoff to protect and enhance water quality	X	No	No	Yes	No
Comply with public coastal access improvements implementation measures required as part of the Coastal Commission certification of the CLRDP	X	No	No	Yes	No

**Table 4-4  
Comparison of Ability of NEF and SRP Phase 1B Alternatives to Meet Project Objectives**

Project Objectives	Proposed NEF Project	Alternative 1 No De Anza Trail	Alternative 2 No NEF Project	Proposed SRP Phase 1B Project	Alternative 1. No SRP Phase 1B Project
<b>NEF Project</b>		Does alternative meets project objectives? No- Does not meet objectives; Yes- Meets project objectives; Partially- Meets project objectives but to a lesser degree than does the project			
Provide new, improved, and expanded interactive educational facilities for children and adults who visit the MSC.	X	Partially	No	Not applicable	
Provide the public with increased and enhanced opportunities to view wildlife and coastal, wetland, and marine habitats in a natural setting.	X	Partially	No		
Increase public awareness of the scientific and ecological value of coastal and marine resources.	X	Partially	No		
Comply with public coastal access improvements implementation measures required as part of the Coastal Commission certification of the CLRDP	X	Partially	No		
<b>SRP Phase 1B Project</b>					
Improve native habitat on the Marine Sciences Campus to create an ecological mosaic that will support native plants and wildlife.	Not applicable			X	No
Enhance the natural function and ecological makeup of terrace wetlands.				X	No
Enhance native wildlife habitat and movement corridors between the northern part of the campus and Younger Lagoon, and east-west across the campus to support movement between Younger Lagoon and Antonelli Pond in the Moore Creek drainage.				X	No

**Table 4-4  
Comparison of Ability of NEF and SRP Phase 1B Alternatives to Meet Project Objectives**

Project Objectives	Proposed NEF Project	Alternative 1 No De Anza Trail	Alternative 2 No NEF Project	Proposed SRP Phase 1B Project	Alternative 1. No SRP Phase 1B Project
Create connectivity between wetlands W1 and W2, diminish fragmentation of wetland habitats, and generally enhance wetland habitat in the upland area between W1 and W2.	Not applicable			X	No
Improve water quality by reducing peak flow rates of storm water runoff and thus reduce erosion in channels between wetlands W1, W2, W6 and Younger Lagoon.				X	No
Comply with implementation measures required as part of the Coastal Commission certification of the CLRDP.				X	No

## 4.5 ANALYSIS OF CBB ALTERNATIVES

### 4.5.1 CBB/ MSCI Alternative 1. Main Campus CBB/ Minimal MSCI

#### 4.5.1.1 Project Characteristics

Under the Main Campus CBB/Minimal MSCI Alternative (“Main Campus Alternative”) (Figure 4-1), the CBB would be constructed in the Science and Engineering Area of the UC Santa Cruz Main Campus, on a site south of the existing Earth and Marine Sciences Building. The proposed CBB lab building at the MSC would provide 40,000 gsf (26,800 asf) of building space. Under Alternative 1, which would not include the core seawater facility, the building area would be reduced to approximately 38,000 gsf (25,050 asf). The alternative site on the Main Campus has a buildable area of approximately 25,000 sf, so the CBB building program could be accommodated in a two-story building at this location. No new greenhouses would be built; the EEB Department would continue to use the existing greenhouses on the Main Campus. Under this alternative, no new utility connections would be needed at the MSC to serve the CBB, and most other elements of the MSCI project (roadway infrastructure, new sewer line, and other upgraded utility lines) would not be carried out at this time. The MSCI Project would be limited to those elements of infrastructure improvement required by the CLRDP based on time elapsed since approval of the CLRDP (that is, since January 2009). These consist of (1) removal of informal parking along McAllister Way, and (2) storm water drainage improvements in Development Subarea 7 along the YLR margins.

At the alternative Main Campus CBB site, a new driveway would provide service access to the new building from Steinhart Way. New parking at the building would be provided only for service vehicles and as required for handicapped access. The building would connect to existing water, wastewater, electricity, natural gas, and telecommunications lines in Steinhart Way. Use of this site would require minor improvements to existing electricity distribution facilities elsewhere on the campus, such as transformers or switches, to serve the CBB facility. The Campus cooling water system would be extended to the new CBB by piping from the adjacent Earth and Marine Sciences building; improvements to the existing chillers in that building may also be required to serve the new building. The building would connect to the Campus core heating water system, which runs south down the center of Science Hill (east of Thimann Lecture Hall). Approximately 300 to 400 feet of new piping would be required.

#### 4.5.1.2 Setting

The alternative site on the Main Campus is situated within the central campus, at the southern end of the area known as the Science and Engineering Area. The buildings in this area are constructed on a steeply sloping ridge between deep, forested canyons. The area is developed with a series of predominantly three- and four-story buildings, arranged around terraced courtyards that are interconnected by pathways and stairways and interspersed with and surrounded by redwood groves, with occasional oaks and madrones.

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The site is immediately south of the Earth and Marine Sciences building, where a portion of the EEB Department is currently housed.

Access to the building site for service vehicles, pedestrians, and bicycles is available from Steinhart Way, a Campus service road that connects Hagar Drive and McLaughlin Drive and runs northwest-southeast just south of the site. Pedestrian and bicycle access to the site is also available from the east, via an existing path and bridge. The site generally slopes toward the south. The average slope is less than 20 percent throughout most of the building site itself but the ground slopes more steeply at the eastern edge of the site. The site is undeveloped with the exception of a pedestrian path that leads from Earth and Marine Sciences to Steinhart. Trees on the site are primarily mixed evergreen, with a few redwoods in relatively poor condition.

The 2005 LRDP land-use designation for the site is Academic Core, which provides for land uses that directly support the teaching, research, and public service mission of the University of California, including instruction and research, organized research, academic support, libraries, student services, institutional support, public services, and parking. Jordan Gulch, to the east of the site, is designated Protected Landscape, a designation that assigned to lands on the campus that are valued for their scenic properties and to lands that support wildlife movement or special plant species.

#### 4.5.1.3 Impact Analysis

##### Aesthetics

The proposed CBB/ MSCI Projects would not result in any significant or potentially significant aesthetic impacts. Because of the topography and tall trees in the central campus, the project site on the Main Campus does not provide expansive or distant views of Monterey Bay or campus meadows, nor does it feature in any scenic vistas. The site is visible only from Steinhart Way, the Earth and Marine Sciences building, and nearby pedestrian paths. The project also would not affect any of the scenic resources on the Main Campus that are identified in the 2005 LRDP EIR (Section 4.1.2.4). Therefore, under this alternative, the less-than-significant impacts of the proposed project on scenic vistas and scenic resources would not occur.

The proposed Projects would result in a less-than-significant impact on the visual character and quality of the MSC. The Main Campus Alternative would eliminate the less-than-significant impact but would result in a similar impact on the Main Campus. The visual character of the alternative project site is characterized by urban elements within a forested setting. The visual character of the proposed project site and surrounding area is defined by the forest setting created by the screens of trees between and around buildings, and by the dissected and terraced topography, which minimize the impression of the urban elements. Construction of a new lab building on this site would require removal of a number of trees, which could potentially degrade the visual character and quality of the site. However, in compliance with 2005 LRDP EIR mitigation measures that would be applicable to the project, the number of trees removed for new development would be minimized through siting and design, the trees would be evaluated for their aesthetic quality, and aesthetically valuable trees be replaced on the campus at a 1:1 ratio. With these measures incorporated into the project, this alternative would not have a significant impact on visual character and quality.

The design of the lab building on the Main Campus would comply with 2005 LRDP EIR mitigation measures requiring that exterior lighting be directional and shielded, and that the minimum amount of lighting needed to achieve safe routes is provided. These requirements are similar to CLRDP implementation measures that are applicable to all development at the MSC. The potential for glare at the alternative project site is limited because of the trees that are interspersed with development. Similar to the proposed Projects, the impact of the Main Campus Alternative on lighting and glare would be less than significant.

#### *Agricultural and Forestry Resources*

There are no agricultural lands or prime agricultural soils on or adjacent to the Main Campus site. Therefore, under the Main Campus Alternative the less-than-significant indirect impact of the proposed Projects on agricultural resources would not occur. The proposed Projects at the MSC would not entail removal of any trees and therefore would not result in an impact to forestry resources. Construction of the new lab building on the alternative site on the Main Campus would require removal of a number of trees, primarily oaks, and a few redwoods. The alternative project site is wooded, but is not zoned or used for timber production, and the oaks on the site are not considered to be commercial species under California law. Furthermore, timber production would not be compatible with the academic use of the land throughout the Campus core. Therefore, the Main Campus Alternative would not result in a significant impact on forestry resources. Visual impacts of tree removal are discussed above under “Aesthetics,” above. The effects of tree removal on biological resources and the contribution of the tree removal on climate change are discussed under *Biological Resources* and *Climate Change*.

#### *Air Quality*

The proposed CBB/ MSC Projects would not result in any significant or potentially significant air quality impacts. The Main Campus Alternative would reduce construction-related air emissions compared to the proposed Projects because the area of land that would be disturbed and the new building space both would be smaller, and the infrastructure improvements required to serve the CBB lab building on the MSC would not be constructed. Under the alternative, a previously adopted LRDP EIR mitigation measure would be implemented to reduce emissions of particulates during construction; a CLRDP EIR mitigation measure would similarly reduce emissions at the MSC for the proposed Projects.

Under the Main Campus Alternative, the less-than-significant impact of operational stationary and mobile source emissions of criteria pollutants would be reduced because the CBB facility would be smaller and would not include new greenhouses. The amount of building space to be heated and served with electrical power would be smaller, and the number of vehicle trips associated with project operations would be reduced because fewer students would travel between the campuses. Construction of the project at the Main Campus, under the alternative, would make a small contribution to a significant and unavoidable impact resulting from emissions of nitrogen oxides (NO<sub>x</sub>) emissions from campus growth identified in the 2005 LRDP EIR; the contribution of the project, however, would not be cumulatively considerable. Emissions of toxic air contaminants, which would be generated by laboratory fume hoods, natural gas boilers, and emergency and standby generators, would be somewhat reduced under the alternative as compared with the proposed Projects, because of the reduced demands of the smaller facility.

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Both the CLRDP and the 2005 LRDP EIR have been determined to be consistent with the Air Quality Management Plan for the Monterey Bay Region; therefore, neither the proposed Projects at the MSC nor the Main Campus Alternative would make a cumulatively considerable contribution to cumulative emissions of ozone precursors to the regional air basin. The proposed MSC Projects incorporate project-specific CLRDP Mitigation Measure 4.3-1 (dust and particulate controls during construction) and therefore the impact of the proposed Projects with respect to construction particulate emissions at the MSC would be less than significant. The alternative would incorporate LRDP EIR Mitigation AIR-1, which imposes the same fugitive dust controls on Main Campus projects: thus, the impact would similarly be less than significant. The 2005 LRDP EIR identified a potentially significant impact associated with the health risk from cumulative emissions of toxic air contaminants under the 2005 LRDP. Construction of the CBB building on the Main Campus would make a small contribution to this health risk. However, the impact on the Main Campus would be reduced to a less-than-significant level with mitigation identified in the LRDP EIR, which would be included in the alternative project as a requirement of the LRDP EIR for all Main Campus projects.

#### Biological Resources

Construction of the CBB on the Main Campus would eliminate most of the potentially significant impacts of the proposed CBB and MSC Projects on biological resources at the MSC (special-status species [bats, badgers, California red-legged frogs (CRLF), western pond turtle, woodrats, burrowing owls], nesting birds, impacts on wildlife of light from greenhouse, wildlife movement); however, the infiltration improvements and restoration of informal McAllister parking at the MSC that is included in this alternative both have some potential to result in the potentially significant impacts to special-status species and wildlife movement identified for the proposed Projects. Because the Main Campus Alternative would entail removal of a number of trees, construction could potentially disturb nesting special-status birds or roosting special-status bats. San Francisco dusky-footed woodrat nests may also be present on the Main Campus site. Impacts to all of these species would be less than significant with implementation of previously adopted 2005 LRDP EIR mitigation measures, as was similarly concluded for the proposed Projects at the MSC with the implementation of CLRDP EIR or project-level mitigation measures. It is unlikely that California red-legged frogs would be affected by the Main Campus Alternative project, as there are barriers to frog movement between that site and the Arboretum Pond on the lower campus (which is the nearest known CRLF breeding habitat) such that CRLF are unlikely to be present on the Main Campus Alternative site.

#### Climate Change

As analyzed in Section 3.5 of this EIR, the climate-change impacts of the proposed Projects at the MSC would be less than significant. The amount of greenhouse gas emissions associated with the Main Campus Alternative would be smaller than those associated with the proposed Projects at the MSC. Construction emissions would be lower on the Main Campus because the land area disturbed and the building space would be smaller for the alternative project. Direct greenhouse gas emissions from space heating and mobile sources also would be reduced because the building space and the number of vehicle trips would be reduced under the alternative. The proposed Projects' indirect emissions, which are dominated by emissions from off-site electricity generation, would also be reduced under the Main Campus Alternative because the new greenhouses, which include intensive lighting, would not be

developed. Stationary source emissions, from the emergency and standby generators, would be similar to or somewhat reduced relative to the proposed CBB/ MSCI Projects. The Main Campus Alternative would result in greenhouse gas emissions from the removal of trees, but the amount of emissions would be small compared to the total project emissions. The impact would be less-than-significant under both the proposed Projects and the Main Campus Alternative.

#### Cultural Resources

Neither the proposed Projects nor the Main Campus Alternative would result in a significant impact on cultural resources. There are no known historical or paleontological resources on either site. At both sites, based on previous archaeological surveys, and the low paleontological sensitivity of the underlying geologic formations, the potential to encounter buried archaeological resources, human remains, or paleontological resources during construction is slight. In both settings, previously adopted measures (CLRDP implementation measures and CLRDP EIR mitigation measures at the MSC, and 2005 LRDP EIR mitigations on the Main Campus) would require that the construction contracts include stop-work provisions in the event of unexpected discoveries of archaeological or paleontological resources. There is a historic kiln in Jordan Gulch, to the east of the Earth and Marine Sciences building, but construction on the alternative site would not adversely affect the kiln. The alternative would eliminate the less-than-significant impact of the MSCI Project on the Ocean Shore Railroad site.

#### Geology, Soils and Seismicity

The proposed CBB and MSCI Projects would not result in any significant impacts related to geology, soils and seismicity. Potential risks associated with liquefaction at the proposed CBB building site at the MSC, and other hazards related to seismic shaking, would be addressed through standard engineering practices. Bedrock beneath the Main Campus Alternative project site is mapped as schist, based on soil borings at nearby sites to the south and north. However, there is no existing geotechnical data for the site itself and marble has been found during subsurface investigations at other nearby sites. Therefore, it is possible that karst hazards could be encountered during construction if subsurface zones of solution or collapse (“sinkholes” or “dolines”) are not identified and addressed in the foundation design. These hazards include settling and/or collapse of overlying sediments into voids beneath a structure; regions of soft, weak soils that may have inadequate bearing capacity for construction; and the sliding of apparently intact schist, granite, or marble into a doline cavity. However, potential karst hazards would be addressed with appropriate levels of subsurface investigation and engineering of building foundation and structure, to ensure that the potential hazard to people or property was reduced to a less-than-significant level. Following standard Campus practice for construction in areas with potential karst hazards, a geotechnical investigation would be conducted for the project and, if doline features are identified, the building foundation and structure would be designed appropriately. Thus, the potential impact of the Main Campus Alternative would be less than significant.

#### Hazards and Hazardous Materials

All impacts of the proposed CBB and MSCI Projects related to hazards and hazardous materials would be less than significant. Under the Main Campus Alternative, the increase in hazardous materials use, storage and disposal associated with laboratory research and maintenance activities would be similar to that associated with the proposed CBB and MSCI Projects. Under both the proposed Projects and the Main Campus Alternative, users would be required to comply with applicable federal, state, and local

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regulations and with Campus policies and procedures to ensure that the transport, use, and disposal of hazardous materials does not result in risks to people or the environment; therefore, the risks associated with this increase would not constitute a significant environmental impact. At the MSC, the risk of wildland fires is low due to the coastal location of the project site and the types of vegetation present. The risk of wildland fires on the Main Campus is somewhat greater than at the MSC, but current UC Santa Cruz fire management procedures have been successful at controlling wildfires on campus in the past decades. These procedures include annual inspections of residential and laboratory buildings and biennial inspections of other buildings on campus for internal (i.e., improper use of extension cords) and external (i.e., vegetation) fire hazards. In addition, the Fire Marshal reviews and approves all building plans. Meadow perimeters are mowed seasonally, and firebreaks are cut through larger meadows. Ranchers lease portions of the Great Meadow for cattle grazing, and this helps prevent buildup of the vegetative fuel load. Construction of the CBB lab building as infill development in the central campus would not increase the risk of wildfire and the impact would be less than significant.

#### Hydrology and Water Quality

Constructing the CBB on the Main Campus would eliminate the potential for degrading the quality of water flowing to the wetlands at the MSC, which would be a less-than-significant impact of the MSC and CBB Projects at the MSC because of the storm water management features included in the proposed Projects. However, the Main Campus Alternative would create runoff from new impervious surface and would construct new sources of potential urban pollutants that drain to the karst aquifer at the Main Campus, such that the potential water quality impact could be greater at the Main Campus. Under the Main Campus Alternative, the amount of new impervious surface would be smaller than under the proposed Projects, because new greenhouses, roads and parking lots, which are sources of urban pollutants, would be eliminated. The UC Santa Cruz Storm Water Management Plan includes requirements for new development that control potential pollutants at the source and treat runoff to ensure that polluted runoff does not leave the site. With these features in place, the water quality impacts of the Main Campus Alternative would be less than significant. The 2005 LRDP EIR identified the potential that increased runoff from new development could exacerbate existing erosion conditions in campus drainages. However, the storm water management system for the Main Campus Alternative project would comply with the provisions of the UC Santa Cruz SWMP that set performance standards for runoff flow rates and require that increases in the volume of runoff be minimized. Because of the relatively steep slopes in the vicinity of the alternative site, there is little opportunity for infiltrating storm water to reduce the volume of runoff, especially if karst features are present. Therefore, the solution would likely involve storm water detention features such as planter boxes or underground vaults, which would release runoff at a rate that is low enough that it does not cause erosion and sedimentation. Because the alternative project must meet the standards set forth in the SWMP, the impact would be less than significant.

If doline fill is encountered in the subsurface at the alternative site, pressure grouting may be recommended to densify soft soils. Previously adopted LRDP EIR mitigations would be implemented to ensure that pressure grouting does not affect groundwater quality in the karst aquifer such that the impact to groundwater quality would be less than significant.

The Main Campus Alternative would eliminate the potentially significant impact of groundwater flow of deep trenching for the proposed MSCI Project, since the MSCI Project would not include deep trenching under the alternative.

#### Land Use and Planning

The proposed CBB and MSCI Projects would result in a potentially significant impact with respect to inconsistency with the CLRDP, the applicable land-use plan. The CLRDP does not apply to the Main Campus; thus development of the CBB at the Main Campus would not result in this land-use plan inconsistency. Although this impact of the proposed CBB Project would be reduced to a less-than-significant level by mitigation included in the Project, the alternative would have a less-than-significant land-use impact without the mitigation. The Main Campus Alternative would include two components of the proposed MSCI Project that would be implemented at the MSC. These are storm water infiltration improvements in Subarea 7, and removal of informal parking along McAllister Way, both of which are calendar-based requirements of the CLRDP. The alternative therefore would be consistent with the CLRDP with respect to these CLRDP requirements.

Construction of a new lab building of approximately 40,000 gsf at the Main Campus site would be consistent with the 2005 LRDP, which is the land-use plan that is applicable to the Main Campus: the use of the site for the CBB would be consistent with the Academic Core land-use designation; the building space is within the 2005 LRDP building program; and the enrollment growth associated with the building would not cause student enrollment to exceed 19,500, which is the enrollment that would be accommodated by the 2005 LRDP.

#### Mineral Resources

Neither the proposed Projects at the MSC nor the Main Campus Alternative would result in an adverse impact on mineral resources. The UC Santa Cruz Main Campus is situated in an area designated by the California Geologic Survey (CGS) as a Mineral Resource Zone because of the presence of marble. The area is classified as Zone 3, defined as an area where mineral resources are known to exist but insufficient information is available to determine the value of those resources. According to CGS, development in Zone 3 is not considered to cause a significant impact to mineral resources under CEQA. The campus is not in an area designated as a mineral resource on City or County of Santa Cruz land-use maps. Therefore, development on campus in accordance with the LRDP would not impede extraction or result in the loss of availability of mineral resources. No impact would occur under with the proposed Projects or the alternative.

#### Noise

Under the Main Campus Alternative, the potentially significant cumulative construction noise impact on residents of the De Anza Santa Cruz residential community to the east of the MSC would not occur. Construction of the Main Campus Alternative could result in noise levels temporarily exceeding the significance threshold at the adjacent the Earth and Marine Sciences building. The 2005 LRDP EIR identified the construction noise associated with infill development on the Main Campus as a temporary but significant and unavoidable impact because, even with all feasible noise controls, it might not always be possible to reduce construction noise at sensitive receptors below significance thresholds; thus the

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noise impact would be more severe under the alternative than under the proposed Projects. Neither the proposed Projects nor the Main Campus Alternative would result in significant operational noise impacts.

#### Population and Housing

The population and housing impacts of the proposed CBB and MSCI Projects would be less than significant. Under the Main Campus Alternative, the project's small contribution to campus-related population and housing demand would be the same as under the proposed Projects. The impacts would also be the same.

#### Public Services

The proposed CBB Project would slightly increase demand for fire and police services and for schools, but this demand would not result in the need for construction or expansion of City of Santa Cruz facilities, and the impact would be less than significant. Under the Main Campus Alternative, the increased demand for public services would be similar to that associated with the proposed Projects. However, according to the 2005 LRDP EIR, the Campus anticipates that development under the 2005 LRDP would necessitate expansion of the existing fire station to include an additional engine bay; the Main Campus Alternative would contribute to this cumulative impact of 2005 LRDP development. The 2005 LRDP EIR concluded that, with the incorporation of LRDP EIR mitigation measures to reduce impacts to biological and cultural resources, the expansion of the fire station would not result in significant environmental impacts. Therefore, the impact of the Main Campus Alternative on public services would be less than significant, as would the impact of the proposed CBB and MSCI Projects.

#### Recreation

The proposed CBB Project would result in an increase in demand for recreational facilities but this demand for recreation facilities would be small and would not result in deterioration of existing recreation facilities or the need for construction of new facilities. Under the Main Campus Alternative, the project-related population would be the same as that associated with the CBB Project at the MSC, so the demand for recreational facilities would be similar. The proposed MSCI Project would construct new public coastal access facilities, which would contribute to potentially significant biological resources and construction noise impacts. These impacts would be reduced to less-than-significant levels with mitigation included in the proposed Projects. Under the Main Campus Alternative, no new recreation facilities would be constructed, so these impacts would not occur.

#### Transportation and Traffic

The proposed CBB Project would result in a significant impact on intersection operations at the intersection of High Street and Western Drive. The University made payments equivalent to the City's traffic impact fees to the City of Santa Cruz for LRDP-related trips, and this intersection is included in the City's traffic impact fee study; therefore, the campus' contribution to this impact, under the Main Campus Alternative, has been reduced to a less-than-significant level. The Main Campus Alternative would reduce the potentially significant impact of the proposed CBB Project with respect to potential generation of single-occupant motor vehicle trips that could exceed TDM goals; and would eliminate the potentially significant impact of the MSC Projects with respect to a potential increase in motor vehicle conflicts with bikes and pedestrians. The number of vehicle trips associated with the Main Campus Alternative would be smaller than the number of trips associated with the proposed CBB Project, because TDM measures have proven highly effective at the Main Campus, and the Main Campus is better served by public

transportation than the MSC; further, under the Main Campus Alternative, the new student trips to the MSC associated with the CBB Project would not occur. However, the Main Campus Alternative would generate some new trips between the two campuses by faculty members whose research requires the seawater facilities at the MSC but who teach and attend meetings at the Main Campus. Overall, the Main Campus Alternative would reduce the significant and potentially significant traffic impacts of the proposed CBB Project; however, all of these impacts also would be reduced to less-than-significant levels by the implementation of mitigation measures included in the proposed MSC Projects.

#### Utilities

The utility demands of a CBB at the alternative site on the Main Campus would be slightly smaller than those of the proposed CBB Project at the MSC, since new greenhouses would not be constructed. Although construction of utility lines under the proposed MSC Project would contribute to the potentially significant construction-phase impacts of the MSC Projects with respect to biological resources, hydrology and construction noise, these utility impacts were determined to be less than significant because utility construction would be required to incorporate the measures identified in the EIR that would reduce impacts in these resource areas to less-than-significant levels. In comparison to the major utility improvements proposed at the MSC under the MSC Project, the utility improvements required to serve a CBB facility on the Main Campus would consist primarily of short connections to existing utility lines, primarily in existing roadways or other developed area, such that utility construction would be unlikely to result in significant biological hydrological or noise impacts. Therefore, the potential for impacts in these areas under the Main Campus Alternative would likely be less than the less-than-significant impacts of the proposed Projects that could result from utility construction at the MSC.

#### 4.5.1.4 Ability to Accomplish Project Objectives

Table 4-3, above, summarizes the relationship of the alternative to the objectives of the proposed CBB/MSCI Projects. The Main Campus Alternative would accomplish the objectives of the CBB Project to provide space to accommodate all EEB faculty and graduate students, but it could not consolidate researchers at the Main Campus site because research requiring seawater would not be accommodated at the Main Campus. The alternative would provide teaching, research lab, and support space to accommodate EEB enrollment, but it would not include seawater-equipped facilities needed to support the marine components of the EEB program. Under this alternative, coastal and marine science research laboratories would still be divided between the Main Campus and the MSC; therefore, this alternative would not accomplish the objective of co-locating coastal and marine researchers for research efficiencies and interdisciplinary collaboration.

Since the Main Campus Alternative would include removal of McAllister Way informal parking to improve buffering between Younger Lagoon and McAllister Way and storm water infiltration improvements in Subarea 7, as required by the CLRDP, the alternative would accomplish the MSCI objectives related to compliance with the CLRDP. However, the alternative would not support any of the other MSCI Project objectives.

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## 4.5.2 CBB/ MSCI Alternative 2. 2300 Delaware CBB/ MSCI Seawater Extension

### 4.5.2.1 Project Characteristics

Under the 2300 Delaware Alternative, the CBB Project would be developed at the Campus' 2300 Delaware facility. The new research and seawater labs, seawater tanks and seminar rooms would be constructed within the existing shell of 2300 Delaware Building C. A portion of Building C was designed as office and meeting space and could accommodate approximately 20 offices and the seminar rooms. The remainder of Building C was designed as a clean-room manufacturing facility and is not suitable for use as academic or administrative offices. Therefore, existing office space in Buildings A and B, most of which is currently occupied by Campus administrative staff, would be remodeled to create office space for the EEB department. Staff that might be displaced from Buildings A and B would likely be relocated to leased space somewhere in the west side of Santa Cruz. The CBB greenhouses would be constructed in one of the existing paved, enclosed utility yards that formerly housed manufacturing equipment at 2300 Delaware. Under the 2300 Delaware Alternative, the elements of the proposed MSCI Project that are required by time elapsed since approval of the CLRDP (that is, the removal and restoration of the informal McAllister parking lots and infiltration improvements along the Subarea 7 berm) would be constructed. Most other elements of the proposed MSCI Project would not be constructed at this time. However, use of the 2300 Delaware site for the CBB would require that the MSC's existing filtered seawater supply and return lines be extended from the MSC to the 2300 Delaware site. This would require trenching from the end of the existing lines at the CDFG facility to the campus entrance, then for approximately 800 feet along Delaware Avenue and approximately 650 feet across the 2300 Delaware property to Building C. In addition, a new booster pump would be needed at the land end of the existing lines (on McAllister Way) to provide the necessary lift to pump the filtered seawater to 2300 Delaware. A new seawater tank, similar in size to that proposed for the CBB project, would be constructed adjacent to the 2300 Delaware Building C. With the exception of the seawater supply and return lines described above, no off-site utility improvements would be required under this alternative.

### 4.5.2.2 Setting

UC Santa Cruz' 2300 Delaware Avenue facility, formerly a silicon wafer manufacturing facility, is located approximately ¼ mile east of the entrance to the MSC (a total of about ½ mile from the proposed CBB site), at the northwestern corner of the intersection of Delaware Avenue and Natural Bridges Drive (Figure 4-2). Natural Bridges State Beach is located south of Delaware Avenue opposite the facility. To the west of the site are Antonelli Pond, a natural area held by the Santa Cruz Land Trust, and the Moore Creek corridor, a natural preserve managed by the City of Santa Cruz in cooperation with the Land Trust. The areas north and east of the facility are developed in mixed uses, including offices, commercial and light industrial facilities, and residences. The closest residences to the facility are the Santa Cruz De Anza residential community, southwest of the project site on the opposite side of Delaware Avenue, and a few residences along Natural Bridges Drive, east of the site. The Union Pacific Railroad tracks runs along the north side of the 2300 Delaware Avenue property.

The University purchased the property at 2300 Delaware Avenue in 2004, with the intent of redeveloping the existing buildings for campus administrative offices and research labs. The facility was vacant at the time of the acquisition. There are three buildings on the site. Two two-story buildings (Buildings A and B), which were designed as office space, together comprise about 57,000 gsf. Building C, which is 182,852 gsf, was the manufacturing area of the former industrial facility. The high-technology operation demanded specialized facilities and infrastructure, including clean rooms, air purifying equipment, and mechanical space and infrastructure, which were located both above and below the main floor to service activities in the main floor. Before the University purchased the facility, the former owner removed the semi-conductor fabrication and clean room equipment and removed some components of the air pollution control and wastewater treatment systems. However, significant research support equipment and infrastructure remain intact. This includes clean air handlers, ceiling high-efficiency particulate air (HEPA) filters, and clean room bay separations. Similarly, an air scrubber for venting is in place, and the building also retains variable speed drive fans that can provide scalable airflows and isolatable control of building temperature and humidity. Cooling water piping is also intact, although the main heat exchanger was removed at the time of the building's sale. Piping is also in place for distribution of inert gases, including nitrogen. Building C also includes some office and meeting space.

The facility also includes two paved parking lots, one north of Building C and one south of Buildings A and B, which provide a total of 277 parking spaces; loading docks and fenced outdoor service yards; and amenities including lawns, a public access trail, and tennis courts (Figure 4-2). The property is surrounded by a landscaped earthen berm 6 to 8 feet high that screens it from adjacent streets, with gaps at the entrances to the facility on Delaware Avenue and on Natural Bridges Drive.

The 2300 Delaware Project was analyzed at the project level in UC Santa Cruz's 2005 LRDP EIR and approved by the University in February 2007. That project proposed to add work stations within Buildings A and B to accommodate up to 300 persons, and to repair and remodel Building C to provide 92,000 asf of laboratory, office, and support space for up to 482 persons. The 2300 Delaware Project also proposed limited work to upgrade chiller capacity in an existing walled exterior service yard, and carry out other necessary utility retrofits. That EIR assumed that Building C would accommodate 24,600 asf of wet lab space, 18,400 asf of dry labs, 14,700 asf of research support space, and 25,000 asf of service and storage space. No specific programs or detailed designs were proposed for the occupancy of Building C at that time.

The University remodeled the interior of Buildings A and B in 2007. These buildings now have capacity for approximately 300 employees; currently, the occupancy is about 180 persons. Basic accessibility (ADA) and life safety improvements were carried out in Building C in 2009. These included improvement of parking lot access from disabled parking spots, upgrading restrooms to comply with ADA requirements and current life safety codes, upgrading an existing air handler, and replacing inefficient boilers to provide basic heating and ventilation. Since that time, Building C has been used primarily for passive storage. The Thin Films and Materials Research Laboratory Project, which is currently under construction, will create approximately 5,448 sf of laboratory and associated corridors and mechanical space within Building C, which is consistent with the program of development analyzed

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for 2300 Delaware Building C in the 2005 LRDP EIR, but will occupy only a small portion of that building.

Because 2300 Delaware Avenue is in the coastal zone, future site modifications or changes of use could be subject to Coastal Commission approval. The Coastal Commission could impose conditions on the CBB/MSCI 2300 Delaware Alternative, to ensure consistency with the Coastal Act.

#### 4.5.2.3 Impact Analysis

##### Aesthetics

Developing the CBB program at 2300 Delaware would eliminate the less-than-significant aesthetic impacts of the proposed CBB and MSCI Projects. This alternative would entail use of a developed site, and result in little or no change in the existing aesthetic setting. The existing facilities would accommodate the proposed laboratories and offices, and the proposed greenhouses would be constructed within an area that is screened from the adjacent roadways by the existing berm, walls, and buildings. The new seawater tank would be constructed in an existing enclosed yard but would be visible from adjacent sites. However, this would not result in a significant impact on scenic vistas, scenic resources, or visual character and quality because the tank would be viewed against the background of the existing industrial facility, with which it would be aesthetically consistent, and it would not be higher than the buildings on the site. The alternative would not add new exterior lighting except possibly at the new greenhouses. The greenhouse lighting could contribute to night sky lighting in the area generally, but would not be expected to cast direct light off site, as it would be screened by the surrounding walls of the utility yards. The less-than-significant aesthetic impacts of the proposed MSC Projects would be reduced by the alternative.

##### Agricultural and Forestry Resources

Under this alternative, the less-than-significant indirect impact of the proposed CBB and MSCI Projects at the MSC on agricultural resources would not occur. There are no agricultural lands or prime agricultural soils on or adjacent to the 2300 Delaware site, and no trees would be removed from the site for the project. Therefore, this alternative would not result in any direct or indirect impacts on agricultural or forestry resources.

##### Air Quality

All impacts of the proposed Projects on air quality would be less than significant with mitigation. Under the 2300 Delaware Alternative, the less-than-significant construction air quality impacts would be greatly reduced because ground disturbance would be limited primarily to the trenching needed to extend the seawater line to the alternative site. New building construction would be limited to the greenhouses and seawater tank, and most of the construction would consist of interior remodeling. The less-than-significant impact of operational emissions of criteria pollutants would be similar to that of the proposed CBB Project, as a similar amount of emergency and standby power would be required, and the number of vehicle trips would be approximately the same. Emissions of toxic air contaminants, which would be generated by laboratory fume hoods, natural gas boilers, and emergency and standby generators, would be the same under the alternative as under the proposed project. Potential impacts from toxic air emissions generated by the laboratories that would be developed under the 2300 Delaware Project were estimated using the screening option of the California Air Resources Board's Hotspots Analysis and Reporting

Program (HARP) computer program and associated OSHA guidance. The HARP model was used to assess potential cancer risk as well as chronic and acute, assuming a wet laboratory area of 24,600 square feet. The estimated cancer, chronic, and acute risks were well below the significance thresholds. Therefore, the 2005 LRDP EIR (Vol. 3, p. 4-28) determined that the impact from toxic emissions from the 2300 Delaware Project would be less than significant. The lab space included in the CBB program, in conjunction with the Thin Films and Materials Project, would not exceed the assumptions of the 2005 LRDP EIR analysis; therefore developing the CBB program at 2300 Delaware would not result in a significant health risk from emissions of toxic air contaminant.

Both the CLRDP and the 2005 LRDP EIR have been determined to be consistent with the Air Quality Management Plan for the Monterey Bay Region; therefore, neither the proposed Projects at the MSC nor the alternative project at 2300 Delaware would make a cumulatively considerable contribution to cumulative emissions of ozone precursors to the regional air basin. The potentially significant cumulative impact of construction particulate emissions at the MSC would not occur under this alternative, because this alternative would involve little to no ground disturbance.

#### Biological Resources

The 2300 Delaware alternative would reduce the potentially significant impacts of the proposed CBB and MSCI Projects on biological resources at the MSC on special-status bats, badgers, woodrats, burrowing owls, nesting birds, and wildlife movement. Construction monitoring would be required to ensure that California red-legged frogs and western pond turtles are not harmed during installation of the new seawater lines, and the mitigation measures identified in this EIR to reduce potentially significant biological resources impacts to less-than-significant levels would be imposed for the McAllister parking restoration and storm water infiltration components of the MSCI, which would still be carried out at the Main Campus. However, the potential impacts to these species would be reduced because the area of disturbance and the length of time during which construction would occur would much smaller and would be limited primarily to existing roadways and other developed areas. The alternative would have limited potential to introduce new biological resources impacts at the 2300 Delaware site. The possible exception would be the potential for harm to California red-legged frogs if the new seawater lines on the 2300 Delaware site cross the lawn or landscaped areas between Antonelli Pond and the buildings. These potential impacts would be similar to those identified for the proposed Projects.

#### Climate Change

As analyzed in Section 3.5 of this EIR, the climate change impacts of the proposed Project at the MSC would be less than significant. The amount of greenhouse gas emissions associated with the 2300 Delaware Alternative would be smaller than those associated with the proposed Projects at the MSC. Construction emissions would be lower because the project at the alternative site would require less new construction. Direct greenhouse gas emissions from operational space heating and mobile sources would be about the same as for the proposed Projects because the building space and the number of vehicle trips would be about the same under the alternative. The alternative's indirect emissions, which are dominated by emissions from off-site electricity generation, and stationary source emissions, from the emergency and standby generators, also would be similar to the proposed CBB/ MSCI Projects. The impact would be less-than-significant under both the proposed Projects and the Main Campus Alternative.

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### Cultural Resources

Neither the proposed Projects nor the 2300 Delaware alternative would result in a significant impact on cultural resources. There are no known archaeological or paleontological resources on either site. At both sites, based on previous archaeological surveys, and the low paleontological sensitivity of the underlying geologic formations, the potential to encounter buried archaeological resources, human remains, or paleontological resources during construction is slight. Mitigation requiring that contractors stop work if unanticipated archaeological resources are encountered may be implemented to further reduce the less-than-significant impact if trenching for the new seawater pipelines occurs in previously undisturbed native soil. The alternative would eliminate the less-than-significant impact of the MSCI Project on the Ocean Shore Railroad.

### Geology, Soils, and Seismicity

The proposed CBB and MSCI Projects would not result in any significant impacts related to geology, soils, and seismicity. Potential risks associated with liquefaction at the proposed CBB building site and other hazards related to seismic shaking would be addressed through standard engineering practices. The Campus recently retrofitted the existing buildings at the 2300 Delaware Avenue site to meet current standards for seismic safety. Therefore, the alternative also would not create a significant hazard related to seismic shaking. Remodeling of the existing buildings and construction of the small greenhouse buildings would not result in any other significant hazards associated with geology or soils.

### Hazards and Hazardous Materials

All impacts of the proposed CBB and MSCI Projects related to hazards and hazardous materials would be less than significant. Under the 2300 Delaware alternative, the increase in hazardous materials use, storage, and disposal associated with laboratory research and maintenance activities would be similar to that associated with the proposed CBB and MSCI Projects. Under both the proposed Projects and Alternative 1, users would be required to comply with applicable federal, state, and local regulations and with Campus policies and procedures; therefore, the risks associated with this increase would not constitute a significant environmental impact. The risk of wildland fire at the 2300 Delaware facility is lower than at the MSC because of the extent of the development on the site and in the vicinity. Therefore, development of the CBB program at 2300 Delaware would reduce the less-than-significant impact associated with the risks of wildland fire.

### Hydrology and Water Quality

Developing the CBB program at 2300 Delaware would eliminate the potential for degrading the quality of water flowing to the wetlands at the MSC, which would be a less-than-significant impact of the MSCI and CBB Projects at the MSC. This alternative would not introduce new impacts to hydrology and water quality, as no new impervious surface or new sources of urban pollutants would be added. The 2300 Delaware Alternative probably would eliminate the potentially significant impact of the proposed MSCI project sewer line construction with respect to potential to alter ground water flows, as the new sewer line would not be built, and the seawater lines would not require the deep excavation that would be required for wastewater flows.

### Land Use and Planning

The proposed CBB/MSCI Projects would result in a potentially significant impact with respect to consistency with the CLRDP, the applicable land-use plan. This relates to potential generation of parking

demand that might not be fully satisfied at the MSC. The CLRDP is not applicable to the 2300 Delaware site, so the parking implementation measure is not applicable, and the impact of inconsistency with the CLRDP is not relevant to the alternative. However, if the alternative generated parking demand on city streets adjacent to the site, this could be inconsistent with Coastal Act policies protecting public coastal access.

UC Santa Cruz's 2005 LRDP is the applicable land-use plan for the 2300 Delaware site. The use proposed under the 2300 Delaware CBB/ MSCI Alternative is consistent with the 2005 LRDP land-use designation for the 2300 Delaware property, which is Academic Core. The proposed lab, research support, and office space is within the building square footage assumed for these uses in the 2005 LRDP EIR. The alternative would bring 96 employees to the facility. With 20 offices in Building C, about 76 of the project employee population would be added to existing 182 occupants of Buildings A and B, which would not exceed the prior population estimate of 300 persons for the facility. In addition, the proposed CBB Project includes an average daily population of about 311 students who would attend classes in the new facility in Building C. With the existing population at 2300 Delaware Building C and approximately six to eight employees associated with the previously approved Thin Films and Materials Project, the total population would still be within the 2005 LRDP EIR population estimate of 482 persons for the occupancy of Building C. The CBB Project would bring the total population at 2300 Delaware to approximately 597. This would not exceed the population of 782 assumed for 2300 Delaware in the 2005 LRDP EIR. Therefore, the 2300 Delaware CBB/MSCI Alternative appears to be essentially consistent with the 2005 LRDP. However, the LRDP envisioned that Building C would be developed as high technology laboratories and support spaces, and did not propose the development of seawater laboratories, conference and seminar rooms, or the use of this site by undergraduate students. Use of the facility for the CBB Project, in particular for large seminar/classroom space, and the extension of the seawater system to support the facility, would require review and approval by the California Coastal Commission, since the campus' CLRDP is not applicable to this site and the facility is not subject to the City's Local Coastal Program, to ensure that the 2300 Delaware Alternative for CBB/MSCI is consistent with the Coastal Act. If the same parking limitations were applied to the 2300 Delaware site as to the MSC (that is, the requirement that all parking be accommodated on site), consistency with this requirement probably could be achieved through use and possibly minor expansion of the existing vacant parking lot on the site adjacent to Building C, such that there would be no impact with respect to consistency with land-use policy.

The 2300 Delaware Alternative would not divide an existing community or conflict with a Habitat Conservation Plan or Natural Community Conservation Plan and therefore would not introduce new land-use impacts.

#### Mineral Resources

Like the MSC, the 2300 Delaware Alternative site is located with the MRZ-4 zone, which is not a mineral-yielding zone. Therefore, the alternative would not result in the loss of a known or expected mineral resource.

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### Noise

Under the 2300 Delaware Alternative, the potentially significant construction noise impact on residents of the De Anza Santa Cruz residential community to the east of the MSC would be reduced because the only construction that would occur on the MSC and near its entrance would be installation of the new seawater pipelines. Although the work would extend beyond the campus entrance to 2300 Delaware Avenue beneath Delaware Avenue, the time required for construction would be much shorter than under the proposed Projects. Remodeling of the existing buildings is not expected to generate noise that would be audible off site. Furthermore, construction of the greenhouses would be of short duration and would involve only limited heavy equipment use and only during daytime hours. Nearby receptors would be buffered from noise generated by these activities by the distance of the facilities from the parcel margins and by the earthen berms around the 2300 Delaware site, and by the streets separating the site from adjacent uses. Therefore, the alternative would not introduce any significant or potentially significant construction noise impacts. Neither the proposed Projects nor the 2300 Delaware Alternative would result in significant operational noise impacts. As discussed below, the number and distribution of vehicle trips associated with the alternative would be similar to those under the proposed Projects, and the traffic noise impact would remain less than significant.

### Population and Housing

As analyzed in Section 3.12 of this EIR, the population and housing impacts of the proposed CBB and MSCI Projects would be less than significant. The same population and potential demand for housing would be associated with the 2300 Delaware Alternative, and the impact also would be less-than-significant.

### Public Services

The proposed CBB Project would slightly increase demand for fire and police services and for schools, but this demand would not result in the need for construction or expansion of facilities, and the impact would be less than significant. The 2300 Delaware Alternative would not increase demand for fire services, as the only new building construction would be the greenhouses. The increase in demand for police services and for schools would be similar to that associated with the proposed Project, and the impact would be less than significant.

### Recreation

The proposed CBB Project would result in an increase in demand for recreational facilities, but this demand for recreation facilities would be very small and would not result in deterioration of existing recreation facilities or the need for construction of new facilities. Under the 2300 Delaware Alternative, the project-related population would be the same as that associated with the CBB Project, so the demand for recreational facilities would be similar. Because of the proximity of the proposed project to Antonelli Pond, the 2005 LRDP EIR concluded that, with redevelopment of the buildings at 2300 Delaware, the trails and open space areas around Antonelli Pond would experience increased use by campus employees, which could potentially cause deterioration of these facilities. The 2005 LRDP EIR determined that this could be a potentially significant impact, but it would be reduced to a less-than-significant level with mitigation. The University has previously adopted the mitigation measures identified in the 2005 LRDP EIR and implements them on an ongoing basis. Therefore, developing the CBB program at 2300 Delaware would not result in a significant adverse impact on the recreational facilities at Antonelli Pond.

The proposed MSCI Project would construct new public coastal access facilities, which would contribute to potentially significant biological resources and construction noise impacts. These impacts would be reduced to less-than-significant levels with mitigation. Under the 2300 Delaware Alternative, no new recreation facilities would be constructed, so these impacts would not occur.

#### Transportation and Traffic

The routes of the vehicle trips associated with the 2300 Delaware Alternative would be similar to those associated with the proposed CBB Project because the 2300 Delaware site is only about ¼ mile distant from the entrance to the MSC (with one dead-end street intervening). The number of motor vehicle trips associated with the alternative could be somewhat smaller than the proposed Project because the 2300 Delaware site is closer to public transit stops than is the CBB site at the MSC. The significant impact of the proposed CBB Project with respect to substandard operations at the Western Drive/High Street intersection would be reduced, under the proposed MSC Projects, to a less-than-significant level with payments to the City of Santa Cruz equivalent to the City's traffic impact fee for trips generated by the Project, through agreement under the 2008 Comprehensive Settlement Agreement. These payments would apply in the same manner to the proposed project at the MSC and to the alternative. The alternative could have reduced potential to generate motor vehicle trips that would conflict with TDM goals, relative to the proposed CBB Project, because the 2300 Delaware site is closer to a transit stop than is the CBB site. The existing campus TDM programs would apply to the alternative in the same manner as to the proposed Projects. The alternative also would reduce the potentially significant impact of the proposed Projects with respect to increased circulation and street parking that could result in increased conflicts between motor vehicles, bicycles, and pedestrians, because it would be less likely to increase the number of pedestrians and increase street parking on the segment of Delaware that does not have a sidewalk. It also would eliminate the potentially significant impact of the proposed Projects with respect to emergency access, as the alternative would not have the potential to block roadways. Overall, the 2300 Delaware Alternative would slightly reduce the significant and potentially significant transportation-related impacts of the proposed Projects. These impacts also would be reduced to less-than-significant levels by mitigation measures included in the proposed Projects.

#### Utilities

The utility demands of a CBB at 2300 Delaware would be similar to those of the proposed CBB Project at the MSC, and would not necessitate construction of new water or wastewater treatment or distribution facilities. This alternative would reduce the contribution of utility line construction impacts with respect to biological resources, noise and hydrology, because the only new utility lines that would be constructed would be the new seawater pipelines. Impacts of utility construction in these resource areas would be less than significant in any case because of the incorporation of the mitigation measures applied by the proposed Projects. As identified in the 2005 LRDP EIR, project development at the 2300 Delaware facilities would contribute to a cumulative water supply shortage in drought years. The alternative project would incorporate water supply mitigation measures identified in the 2005 LRDP, including use of high-efficiency water fixtures and replacement of existing turf landscaping at the site with landscaping with lower water demands.

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#### 4.5.2.4 Ability to Accomplish Project Objectives

The 2300 Delaware Alternative would accomplish some of the objectives of the CBB Project, although not to the same degree as the proposed Projects (see Table 4-4). The 2300 Alternative would provide seawater-equipped teaching and research space, as well as greenhouses, which would accommodate the research needs of EEB faculty and students at a single site. However, because researchers would have to travel between 2300 Delaware and the MSC to meet with each other, the objective of co-locating coastal and marine science researchers to facilitate research efficiency and interdisciplinary collaboration would be met to a lesser degree than under the proposed CBB Project. In particular, potential research synergies with NOAA and CDFG researchers and other researchers at the MSC would be lessened. The opportunities for research interaction, meetings, casual collaboration, and sharing of research would not be precluded by the half-mile distance between the two sites but, under the alternative, it would be more difficult for researchers to share research equipment and specimens.

The 2300 Delaware Alternative would accomplish the MSCI Project objective of complying with calendar-triggered CLRDP requirements, but would not meet any of the other Project objectives.

#### 4.5.3 Alternative 3. Reduced CBB/ MSCI Project

##### 4.5.3.1 Project Characteristics

Under the Reduced Project Alternative (Figure 4-3), a smaller CBB building, sufficient to accommodate the proposed seawater labs and tanks and all EEB faculty labs and offices (about 38,000 sf), would be developed at the proposed laboratory building site at the MSC, but the CBB facility would not include the seminar or conference rooms, and the greenhouse facility would not be developed at the MSC. The EEB Department would continue to use existing conference and seminar rooms and greenhouses at the Main Campus. EEB would share conference rooms at the Seymour Center and the Ocean Health Building with existing users but, as these are already in high demand, no additional EEB undergraduate class lecture sessions would be conducted at the MSC. A limited number of undergraduates (about 24 additional daily students) would attend classes in the CBB seawater lab. The employee population assigned to the CBB facility would be the same as for the proposed project, except that there would be one fewer campus employee at the facility, as the one staff person assigned to the new greenhouses would not move to or be hired at the MSC. Faculty who conduct research at the greenhouses would travel between the campuses as necessary for research, and most or all faculty would travel between the campuses for their teaching duties. Students also would travel from the Main Campus to seawater labs for seawater-related lab classes, but large seminar classes would not be held at the facility. Plants for MSC restoration projects would not be grown at the MSC, but would be grown in Main Campus greenhouses to the extent that there is sufficient space; it could be necessary to reduce the volume of new plant starts, which could somewhat reduce the pace of MSC habitat restoration.

Much of the infrastructure proposed under the MSCI project would be constructed, as required by the CLRDP, in conjunction with the first development on the Middle Terrace, but there would be no new development in Subareas 6 and 7 (the site of the greenhouse complex under the proposed Project) except

for the CLRDP-required storm water infiltration improvements. The alternative also would not include any work on the Upper Terrace (site of the proposed Upper Terrace Storage Yard). No new infrastructure connections west of McAllister Way would be required. The proposed extension and improvement of the Subarea 7 earthen berm would not be implemented at this time. Informal parking along McAllister Way would be removed, as required by the CLRDP. Parking Lot D, adjacent to the lab building would be constructed as proposed, but proposed Parking Lot C, at the site immediately south of the existing CDFG facility, would not be built at this time.

#### 4.5.3.2 Setting

The setting for the Reduced Project Alternative is similar to that described for the proposed MSC Projects except that the alternative would entail only minimal work in Subareas 6 and 7 and no work on the Upper Terrace. The existing greenhouses in Subareas 6 and 7 would be retained.

#### 4.5.3.3 Impacts

##### Aesthetics

The Reduced Project Alternative would slightly reduce the less-than-significant aesthetic impacts of the proposed CBB and MSC Projects because there would be less new development on the campus. The potential contribution of greenhouse lighting to night sky light pollution would be eliminated. However, light from the greenhouses was not considered a significant impact because of the inclusion in the CLRDP lighting standards in the Projects, and because the Campus would implement a biological resources mitigation measure requiring that greenhouse design include shades to minimize light visibility outside the greenhouses.

##### Agricultural and Forestry Resources

Under this alternative, the less-than-significant indirect impact of the proposed CBB and MSC Projects on agricultural resources would be slightly reduced, because the alternative would reduce the average daily population at the MSC. Therefore, this alternative would slightly reduce the less-than-significant impacts of the project on agricultural resources. Neither the proposed Projects nor the alternative would result in any impacts to forestry resources because there are no such resources at the MSC.

##### Air Quality

All impacts of the proposed Projects on air quality would be less than significant with mitigation. Under the Reduced Project Alternative, the less-than-significant construction air quality impacts would be somewhat reduced because only very limited grading would occur in Subareas 6 and 7 and no grading or other work would be carried out on the Upper Terrace.

Under the alternative, the less-than-significant impact of operational emissions of criteria pollutants would be somewhat less than that of the proposed CBB Project. The amount of emergency and standby power required would be reduced because there would be no new greenhouse facility (with the attendant requirement for heat and light to ensure plant survival). The number of vehicle trips contributing criteria pollutants could be substantially reduced because the undergraduate population traveling between the two campuses would be much smaller; however, there would be a larger number of faculty trips between the

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two campuses than under the proposed Project, which would somewhat offset this reduction. Emissions of toxic air contaminants generated by laboratory fumehoods and natural gas boilers would be the same as or very similar to emissions under the proposed Project because the alternative would include the same number of fume hoods and space heating requirements would be only slightly reduced.

The CLRDP has been determined to be consistent with the Air Quality Management Plan for the Monterey Bay Region; therefore, neither the proposed Projects at the MSC nor the Reduced Project Alternative would make a cumulatively considerable contribution to cumulative emissions of ozone precursors to the regional air basin. The potentially significant cumulative impact of construction particulate emissions at the MSC would be reduced under this alternative, because the amount of ground disturbance would be reduced by elimination of the proposed greenhouse facility, but the impact would remain potentially significant. This impact would be reduced to a less-than-significant level by incorporation of construction particulate emissions controls identified in the CLRDP EIR, which would be included both in the Projects as proposed and in the Reduced Project Alternative.

#### Biological Resources

The Reduced Project Alternative would eliminate the potentially significant impacts of the proposed CBB and MSC Projects on special-status bats, as the alternative would eliminate demolition of the abandoned greenhouses, the only project element that potentially would affect bats; this also would reduce the potential impact to San Francisco dusky-footed woodrats, which may be present in the greenhouses and elsewhere on the project site. The alternative also could slightly reduce the potentially significant biological resources impacts of the proposed Projects with respect to badgers, woodrats, burrowing owls, nesting birds, and wildlife movement, to the extent that the area of construction and construction duration would be reduced by the alternative. The potentially significant impacts upon wildlife movement as the result of night light from the greenhouses and from construction of a new fences along the edge of Subarea 7 would be reduced under the alternative, since there would be less activity along this edge of the YLR, but site activity both during construction and operations still would have the potential to affect wildlife movement on the campus. However, the impact of the Projects upon wildlife movement would be reduced to levels that would be less-than-significant under CEQA by mitigation measures included in the proposed Projects and that also would be included in the alternative.

#### Climate Change

As analyzed in Section 3.5 of this EIR, the climate change impacts of the proposed Projects at the MSC would be less than significant. The amount of greenhouse gas emissions associated with the Reduced Project Alternative would be somewhat smaller than those associated with the proposed Projects at the MSC. Construction emissions would be lower because the amount of construction under the alternative. Direct greenhouse gas emissions from operational space heating and mobile sources also would be reduced under the alternative, because the building space and the number of vehicle trips would be reduced. The alternative's indirect emissions, which are dominated by emissions from off-site electricity generation, and stationary source emissions, from the emergency and standby generators, also would be reduced relative to the proposed CBB/MSCI Projects. The impact would be less-than-significant under both the proposed Projects and the Reduced Project Alternative.

### Cultural Resources

Neither the proposed Projects nor the Reduced Project Alternative would result in a significant impact on cultural resources. There are no known archaeological or paleontological resources on the MSC, and the potential to encounter buried archaeological resources, human remains, or paleontological resources during construction is slight. Mitigation requiring that contractors stop work if unanticipated archaeological resources are encountered would be implemented under both the Projects and under the Reduced Project Alternative to further reduce the less-than-significant impact if resources should be uncovered during project excavations. Project excavations would be somewhat reduced under the alternative, and the slight potential to encounter buried resources would be slightly reduced as compared with the proposed Projects. The alternative would result in the same less-than-significant impact as the MSCCI Project on the Ocean Shore Railroad site.

### Geology, Soils and Seismicity

The proposed CBB and MSCCI Projects would not result in any significant impacts related to geology, soils and seismicity. Potential risks associated with liquefaction at the proposed CBB building site and other hazards related to seismic shaking would be addressed through standard engineering practices. The alternative would reduce the amount of development at the site and, like the proposed Projects, would not create a significant hazard related to seismic shaking or in any other significant hazards associated with geology or soils.

### Hazards and Hazardous Materials

All impacts of the proposed CBB and MSCCI Projects related to hazards and hazardous materials would be less than significant. Under both the proposed Projects and the Reduced Project Alternative, users would be required to comply with applicable federal, state, and local regulations and with Campus policies and procedures; therefore, the risks associated with this increase would not constitute a significant environmental impact. Eliminating the greenhouse complex, under the Reduced Project Alternative, would somewhat reduce the types and quantities of hazardous materials that might be used at the site, which would further reduce the less-than-significant impact associated with hazardous materials. The risk of wildland fire would be the same for the alternative as for the proposed project, except that fewer facilities would be at risk; the risk would be less-than-significant for both the alternative and the proposed Projects.

### Hydrology and Water Quality

The Projects would result in a net decrease in impervious surface in the area of the existing greenhouses. Therefore, the Reduced Project Alternative would not decrease the net new impervious surface added by the Projects. The Reduced Project Alternative would not eliminate the potential for degrading the quality of water flowing to the wetlands at the MSC, which would be a less-than-significant impact of the proposed MSCCI and CBB Projects. The alternative would result in the same potentially significant impact to ground water flow from construction of the deep sewer trench as the proposed MSCCI Project; in either case the impact would be reduced to a less-than-significant level by mitigation identified in the EIR, which would be included in project design. Overall, the alternative would result in about the same level of hydrology and water quality impacts as the proposed Projects.

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### Land Use and Planning

The Reduced CBB/MSCI Alternative likely would eliminate the potentially significant impact of the proposed MSC Projects with respect to inconsistency with the applicable land-use plan, because the alternative would not include the larger average daily student use of the campus, and campus parking demand likely would be fully satisfied on campus, as required by CLRDP IM 5.3.7. Neither the proposed Projects nor the Reduced Project Alternative would divide an existing community or conflict with a Habitat Conservation Plan or Natural Community Conservation Plan and therefore neither would introduce new land-use impacts in this respect.

### Mineral Resources

The MSC is located with the MRZ-4 zone, which is not a mineral-yielding zone. Therefore, neither the proposed Projects nor the alternative would result in the loss of a known or expected mineral resource.

### Noise

Under the Reduced Project Alternative, the proposed Projects' contribution to the potentially significant construction noise impact on residents of the De Anza Santa Cruz residential community to the east of the MSC would be reduced to the extent that the total duration of construction would be reduced under the alternative. The alternative would not introduce new construction noise impacts. Neither the proposed Projects nor the alternative would result in significant operational noise impacts. As discussed below, the number of vehicle trips associated with the alternative would be smaller than under the proposed Projects, and the traffic noise impact would remain less than significant.

### Population and Housing

The UC Santa Cruz population associated with the Reduced Project Alternative would be slightly smaller than under the proposed CBB Project: six new employees would be accommodated in CBB offices under the proposed Projects, and only five new employees under the alternative (which would not require a new greenhouse employee). The number of students attending classes at the MSC would be substantially reduced under the alternative as compared with the proposed CBB Project. These students would continue to attend classes at the Main Campus and would make the same contribution to regional population and housing demand irrespective of whether the CBB facility is reduced in size. The population and housing effects of both the proposed Projects and the alternative would be small and would not result in substantial population growth or housing impacts.

### Public Services

The proposed CBB Project would slightly increase demand for fire and police services and for schools, but this demand would not result in the need for construction or expansion of facilities, and the impact would be less than significant. The Reduced Project Alternative would make a slightly smaller but similar contribution to the demand for public services and the impact would remain less than significant.

### Recreation

The proposed CBB Project would result in a small increase in demand for recreational facilities but this demand for recreation facilities would not result in deterioration of existing recreation facilities or the need for construction of new facilities. The Reduced Project Alternative would make a slightly smaller but similar contribution to the demand for recreational facilities, and the impact would remain less than significant.

The proposed MSCI Project would construct new public coastal access facilities, which would contribute to potentially significant biological resources and construction noise impacts. These impacts would be reduced to less-than-significant levels with mitigation. Under the Reduced Project Alternative, the same new recreation facilities would be constructed, so the alternative would make the same contribution to these impacts as the proposed MSCI Project.

#### Transportation and Traffic

The routes of vehicle trips associated with the Reduced Project Alternative would be the same as for the proposed CBB Project, but the number of vehicle trips would be reduced relative to the proposed CBB Project because most of the undergraduate population associated with the CBB Project would not attend classes at the MSC. This reduction could be offset to a small degree, under the alternative, by an increase in faculty traveling to and from the Main Campus to teach and to conduct research at the Main Campus greenhouses. The contribution of the proposed Project to the significant impact to the operation of the intersection of Western Drive/High Street likely would be reduced, under the alternative, probably to less-than-significant levels, as faculty class commitments are spaced out over the course of the day and the days of the week such that substantially fewer total trips likely would be made during peak hours. However, under the proposed Projects, the impact in any case would be reduced to a less-than-significant level with payment of a traffic impact fee to the City of Santa Cruz, already made under the 2005 LRDP 2008 Comprehensive Settlement Agreement, and which would be made for the CBB Project. The alternative also would reduce the potentially significant impacts identified for the CBB and MSCI Projects in relation to trip generation that could conflict with TDM goals, and potential to increase motor vehicle circulation conflicts with bicycles and pedestrians, because the alternative would generate fewer motor vehicle trips and would have less potential to result in campus-related parking on Delaware Avenue.

#### Utilities

The utility demands of the Reduced Project Alternative would be less than those of the proposed Projects because the CBB lab/office building would be smaller and have slightly lesser utility demands, and because the greenhouse facility, which requires heat, light and emergency generators, would not be built under the alternative. The contribution of utility construction to the potentially significant construction-phase impacts of utility construction would be slightly reduced under the alternative relative to the proposed MSCI project because the utility connections to the greenhouse facility would be eliminated by the alternative. However, these utility impacts in any case would be less than significant because utility construction would incorporate the measures identified in the EIR biological resources, noise, and hydrology sections to minimize utility construction impact. All utility impacts of the proposed Projects and the alternative would be reduced to less-than-significant levels with implementation of the identified mitigation measures.

### 4.5.3.4 Ability to Accomplish Project Objectives

The relationship of the alternative to the objectives of the proposed Projects is summarized in Table 4.3. The Reduced Project Alternative would meet the CBB Project objective of providing additional seawater labs for research and teaching. The alternative would consolidate EEB faculty and graduate student

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research assistants at one site and provide improved research collocation with other departments and agencies, it would not meet the objective of consolidating the EEB Department at one site, as most faculty would need to travel to the Main Campus to teach non-lab classes and for greenhouse-related teaching and research. As a result, faculty with interests in terrestrial coastal issues for which greenhouse facilities are needed would experience research inefficiencies and would to some degree be isolated from the rest of the department; all faculty would need to travel between the two campuses, which also would be inefficient use of time and resources.

Most of the objectives of the MSCI would be accomplished under the alternative.

#### 4.5.4 Alternative 4. CBB/MSCI No Project Alternative

##### 4.5.4.1 Project Characteristics

Under the No Project Alternative, no CBB facility and no MSCI Project would be constructed. The EEB Department would continue to operate from offices distributed among existing facilities at the MSC and the Main Campus, and faculty would travel between the campus as needed to teach and conduct seawater-dependent research.

Since the construction of the CBB facility (as the first new facility on the Middle Terrace) triggers a number of infrastructure improvement and environmental restoration implementation measures, CLRDP requirements for development of the new entry road, the proposed storm water drainage improvements, and public access improvements would not be triggered at this time if CBB were not built, and none of the circulation, utility, or public access improvements included in the MSCI Project would be constructed. CLRDP calendar-based requirements for storm water infiltration improvements in Subarea 7 and for removal and restoration of informal parking lots on McAllister Way would not be met. Existing conditions would continue at the MSC. Public access trails would continue in use but would not be improved. Bicycles and pedestrians would continue to share the entry road with cars, and the road would continue in use adjacent to the wetlands. No improvements would be made to the capacity or functions of existing utility systems. The existing abandoned greenhouses would remain on site. The ruderal scrublands and grasslands of the Middle Terrace and around the proposed Upper Terrace Storage Yard site would not be cleared or graded.

##### 4.5.4.2 Impacts

The No Project Alternative would avoid a number of potentially significant impacts of the proposed CBB and MSCI Projects, predominantly potential impacts to special-status species. These include the potential for destruction of special-status bat day roosts or maternity roosts in greenhouses slated for demolition; potential effects of night lighting on nocturnal animals and roosting birds in YLR; potential interference with wildlife movement resulting in increased vulnerability to predation and injury; potential to promote spread of non-native invasive plants; and minor disturbance and fill to wetlands. In addition, the new sewer line included in the MSCI Project could alter the groundwater flow regime and potentially reduce the subsurface flow toward wetland W4. These impacts would be avoided under the No Project

Alternative. However, all of these impacts of the proposed Projects would be reduced to less-than-significant levels through the mitigation measures identified in sections above.

CBB operations would entail increased traffic between the Main Campus and the MSC that would make a significant contribution to substandard levels of service at the intersection of High Street and Western Drive, a significant impact. Mitigation would require installation of a traffic signal. As detailed above, UC Santa Cruz has already made payments to the City of Santa Cruz for UCSC's fair share of the cost of this improvement in relation to projected traffic generation by development under the 2005 LRDP, and the City has identified this improvement on its Traffic Impact Study list. These contributions, and additional contributions for the CBB Project, would reduce the CBB Project impact to a less-than-significant level. However, the No Project Alternative would eliminate the contribution of the proposed CBB Project to this significant impact. The CBB and MSCI Projects also would result in potentially significant traffic and transportation impacts with respect to the generation of motor vehicle trips and parking demand off campus that could conflict with regional TDM planning and could increase the potential for pedestrian and bicycle conflict with motor vehicles. The proposed Projects also could result in a potentially significant impact with respect to potential to impede emergency access to the campus. In addition, the proposed Projects could generate parking demand in excess of that which would be satisfied on campus, which would be inconsistent with CLRDP IM 5.3.7, a potentially significant land-use impact. The No Project Alternative would eliminate these impacts.

The No Project Alternative would eliminate the proposed Projects' potentially significant land-use plan inconsistency with respect to campus parking demand, as no new parking demand would be generated. However, it also would result in a potentially significant impact with respect to consistency with the CLRDP that would not occur with the Projects as proposed, because it would eliminate elements of the proposed MSC Projects that would comply with calendar-based CLRDP implementation measures that require storm water infiltration improvements in Subarea 7 and removal and restoration of informal parking along McAllister. These measures are designed to provide improvements in storm water handling and quality above Younger Lagoon, and improved buffering of the lagoon area from adjacent activity. These project elements would have to be re-proposed as a separate project, if the No Project alternative were adopted.

#### 4.5.4.3 Ability to Accomplish Project Objectives

Under the No Project Alternative, none of the key objectives of the proposed CBB or MSCI Projects would be achieved (see Table 4-3). The EEB department would continue to face office and laboratory space constraints that inhibit the expansion of faculty to meet existing demand for upper division classes. In addition, with continued EEB occupancy at the Earth and Marine Sciences Building on the Main Campus, other departments in the Earth and Planetary Sciences and Ocean Sciences departments also would continue to deal with similar space constraints upon additional faculty hiring. In addition, researchers not stationed at the MSC would continue to be limited in the opportunities for research collaboration and agency engagement provided by research collocation at the MSC.

Further, none of the objectives of the MSCI Project would be met by the No Project Alternative. The development proposed under the MSCI would be needed in future to support future facilities that will be

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proposed under the CLRDP. Existing infrastructure system reliability and flexibility issues would not be resolved. The Projects' benefits with respect to increased storm water protection, increased buffering of the YLR, improved vehicle, bicycle and pedestrian circulation, and improved public coastal access would not be achieved until their development was triggered by other calendar or concurrent development requirements of the CLRDP.

#### 4.5.5 CBB/ MSCI Environmentally Superior Alternative

Table 4-1, at the beginning of this section, provides a summary comparison of the impacts of alternatives with the proposed Projects, with the purpose of highlighting whether the alternative would result in a similar, greater or lesser environmental impact than the proposed Projects. Note that all of the impacts of the proposed MSC Projects would be reduced to less-than-significant levels through mitigation measures identified in this EIR.

The No Project Alternative is the only one of the alternatives that, without mitigation, would avoid some or all of the identified significant or potentially significant impacts of the project, most of which are related to the footprint of development on the project site. The No Project Alternative therefore is the environmentally superior alternative. However, the No Project Alternative would not provide the storm water infiltration improvements in Subarea 7 and the improved YLR buffering provided by the proposed Projects and required by the CLRDP, and therefore would result in a significant impact with respect to consistency with the applicable land-use plan that would not occur under the proposed Projects. In addition, the No Project Alternative would not meet any of the key objectives of the proposed MSC Projects with respect to program development.

If the environmentally superior alternative is the No Project Alternative, CEQA Guidelines Section 15126(d)(2) requires that the EIR shall identify another alternative as environmentally superior. Of the remaining alternatives, Alternative 2, 2300 Delaware CBB/MSCI Seawater, is the environmentally superior alternative. This alternative would avoid most or of the potentially significant biological resources impacts and probably would avoid the potentially significant hydrology impact of the proposed MSC Projects, as ground disturbance and trenching at the MSC would be very substantially reduced and the deep trenching included in the proposed MSCI project would not be required. The 2300 Delaware Alternative would make a similar contribution to the intersection level-of-service impact at High Street/Western Drive as the proposed CBB Project, since the same faculty and student population would be involved. The alternative would have a reduced traffic and transportation impact with respect to increased potential for motor vehicle/pedestrian/bicycle conflicts related to increased circulation and street parking demand relative to the proposed Project, because more of the project-related parking could be accommodated on the 2300 Delaware site or on adjacent streets that are connected to the project site by sidewalks. Because the CLRDP does not apply to this site, the alternative would not result in an impact with respect to consistency with the CLRDP; however, if parking demand associated with the alternative impeded public parking for coastal access, the project could be inconsistent with the public coastal access provisions of the Coastal Act.

The 2300 Delaware Alternative would meet most of the CBB Project objectives but to a lesser degree than the proposed Projects (see Table 4-2). It would provide sufficient space to consolidate the entire EEB

Department at a single location and would provide meeting space sufficient to accommodate the entire department. It also would provide additional seawater-equipped laboratories for critical teaching and research. However, critically, it would not provide the close collocation with researchers from other departments and agencies that is a key project objective: Although this facility is only about one-half mile from the existing research facilities at the MSC, this distance would tend to inhibit sharing of resources and facilities, and would support the research synergies provided by casual research collaboration among research working at the same site. In addition, it cannot be determined at this time whether construction of a seawater line to the site could feasibly be carried out given the constraints that might be imposed by the need to construct the line within a city street.

None of the MSCCI objectives would be met: The 2300 Delaware Alternative would not provide the benefits of the MSCCI Project with respect to removal of the existing entrance roadway from proximity with wetlands; improved bicycle, pedestrian and motor vehicle circulation on the MSC; or improved utility infrastructure reliability and flexibility that would be provided by the proposed Projects.

To the extent that development of the CBB Project at this location might displace some of the UC Santa Cruz administrative departments currently housed at this site, it could reduce administrative efficiencies currently achieved by collocating these departments in Buildings A and B. In addition, the use of Building C for marine research laboratories, seminar rooms and office space, although consistent with the land-use designation in the 2005 LRDP, would not be the best use of this space, which was designed (originally as a silicon chip manufacturing facility) with sophisticated infrastructure to support clean rooms and high-technology laboratory space. In addition, development of the CBB project at this site, and extension of seawater service to this site from the MSC likely would require a new California Coastal Commission review with respect to consistency with the Coastal Act.

## 4.6 ANALYSIS OF NEF ALTERNATIVES

### 4.6.1 NEF Alternative 1. No De Anza Trail

Under the No De Anza Trail Alternative (refer to Section 2, Figure 2-3a, for the location of the De Anza Trail), the proposed improvements to the pedestrian trail along the De Anza property wall would not be carried out. This trail would continue to be as accessible to the public as under existing conditions, but would not be graded or receive an all-weather ADA-accessible surface. The remainder of the project would be carried out as proposed.

This alternative would reduce the contribution of the NEF Project to the potentially significant impacts of concurrent construction of the MSC Projects with respect to construction noise. With the elimination of the construction of the De Anza trail, which is about 20 feet from the De Anza Santa Cruz residential community, the construction activities nearest to this receptor would be approximately 150 feet away, in the vicinity of the campus entrance. However, this alternative would not eliminate the potentially significant cumulative construction noise impact; MSC Projects Mitigation NOIS-1 would still be required to reduce this impact to a less-than-significant level. The NEF Project's contributions to the potentially significant biological resources impacts of the MSC Projects would also be slightly reduced;

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however, the mitigation would still be required to reduce impacts to special-status plants, California red-legged frogs, Western burrowing owls, badgers, western pond turtles, nesting birds, San Francisco dusky-footed woodrats, and wetlands to a less-than-significant level.

#### 4.6.1.1 Ability to Accomplish Project Objectives

NEF Alternative 1 would accomplish all of the objectives of the NEF Project, although to a lesser extent than the proposed NEF Project because the De Anza trail would not be improved to ADA standards (see Table 4-4). However, pedestrians would still be able to use the informal trail that already exists along the same alignment in the same manner as at present.

#### 4.6.2 NEF Alternative 2. No Project Alternative

Under this alternative, none of the proposed public access improvements would be built. Existing trails would remain available to the public, but none would be graded or surfaced to provide ADA access. Interpretive signage and similar coastal amenities would not be added, and the proposed interpretive shelter at Overlook A would not be constructed. Parking Lot A, the proposed visitor parking lot at the campus entrance, also would not be constructed. Designated parking for visitors would still be available elsewhere on the campus, but there would be no dedicated lot at the MSC entrance, and some visitors might elect to park along Delaware Avenue, outside the campus entrance.

This alternative would eliminate the contribution of the NEF Project to the potentially significant noise impacts of concurrent construction of all of the MSC Projects. As under NEF Project Alternative 1, with the elimination of the construction of the De Anza Trail, the construction activities closest to any residence in the De Anza Santa Cruz residential community would be approximately 150 feet away, in the vicinity of the campus entrance, such that construction noise in the vicinity of sensitive receptors would be reduced. However, the potentially significant cumulative construction noise impact would still occur. The No Project Alternative would eliminate the potentially significant impacts of NEF Project construction on special-status plants, California red-legged frogs, Western burrowing owls, badgers, western pond turtles, nesting birds, San Francisco dusky-footed woodrats, and wetlands.

#### 4.6.2.1 Ability to Accomplish Project Objectives

The No Project Alternative would accomplish none of the objectives of the NEF Project (see Table 4-4). Pedestrians and bicyclists would still be able to use the informal trails that already exist along most of the trail alignments, but these trails would not be improved to ADA standards. Interpretive facilities would not be provided along the trails, and public access parking would not be expanded.

#### 4.6.3 NEF Environmentally Superior Alternative

The No Project Alternative would be the environmentally superior alternative to the NEF Project because it would eliminate all of the impacts of this project (see Table 4-2). Other than the No Project Alternative, the No De Anza Trail Alternative would be the environmentally superior alternative because it would

slightly reduce all of the less-than-significant and potentially significant impacts of the NEF Project. However, mitigation would still be required to reduce the potentially significant biological resources impacts of the NEF Project to a less-than-significant level.

## 4.7 ANALYSIS OF SRP PHASE 1B ALTERNATIVES

### 4.7.1 SRP Phase 1B Alternative 1. No Project Alternative

#### 4.7.1.1 Project Characteristics

Under the No Project Alternative, the wetland restoration improvements proposed under SRP Phase 1B would not be carried out. No grading would be conducted to reconnect campus wetlands W1 and W2, and no weir or ponding would be developed adjacent to the Delaware Avenue Extension. Wetland W1 would continue to function as a drainage channel. No willow bales or other erosion control features would be installed in the channel that carried water from the Upper Terrace wetlands towards Younger Lagoon. Habitat restoration efforts and control of invasive and non-native vegetation on the MSC during the first phase of the Specific Resource Plan would be confined to areas outside of jurisdictional wetlands and environmentally sensitive habitat areas.

#### 4.7.1.2 Impacts

The No Project Alternative would avoid the small contribution of the proposed SRP Phase 1B to the potentially significant cumulative construction noise impacts of the proposed Projects. It also would avoid the potentially significant impacts of the proposed SRP Phase 1B project with respect to biological resources, including wetlands, California red-legged frogs, western pond turtles, badgers, San Francisco dusky-footed woodrats, nesting birds, and special-status plants. However, the potential for the SRP Phase 1B project to result in any such impact is small because the work will be carried out by biologists or volunteers under the supervision of biologists, and the proposed work would include only minimal vegetation clearing and earth moving. The No Project Alternative would not provide the beneficial environmental effects of the proposed SRP Phase 1B Project, which would include hydrological reconnection of wetlands W1 and W2, the potential improved functioning of the Upper Terrace wetlands overall, potential erosion reduction in wetland drainages, and restoration of native wetland habitat vegetation. Failure to carry out the SRP Phase 1B Project also would result in inconsistency with the implementation requirements of the CLRDP, a significant impact with respect to consistency with the applicable land-use plan.

#### 4.7.1.3 Ability to Accomplish Project Objectives

The No Project Alternative would not accomplish any of the objectives of the SRP Phase 1B project (see Table 4-4). It would not diminish fragmentation of wetland habitats in the upland area between wetlands W1 and W2 or improve the wetland portions of native habitat on the MSC. Without the SRP Phase 1B

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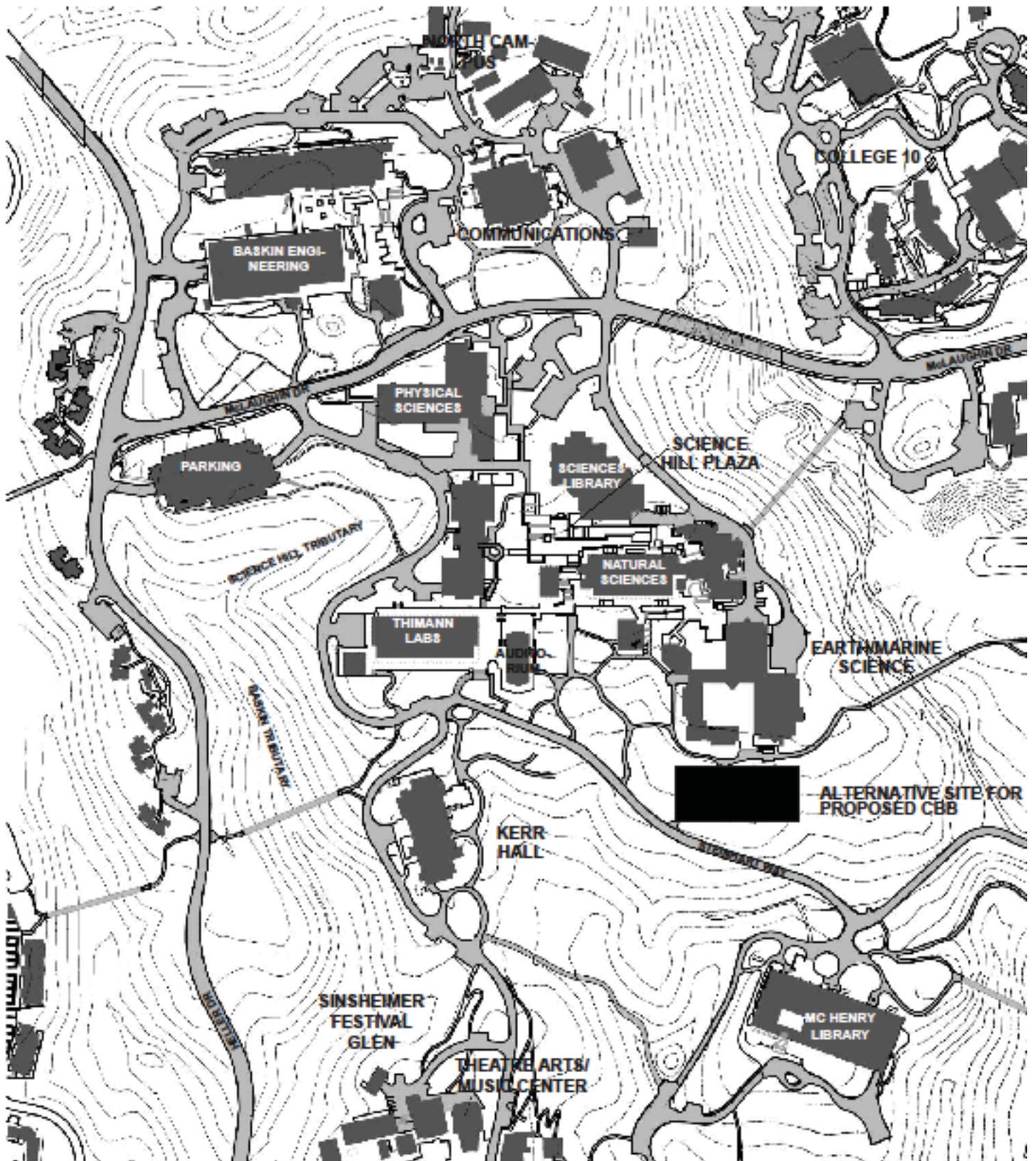
project, vegetation plantings and invasive controls to improve the ecological mosaic of the MSC and wildlife movement corridors toward Younger Lagoon would be confined to non-wetland areas of the campus. In addition, storm water runoff peak flow rates would not be reduced, and existing erosion in channels between wetlands W1, W2, W6, and Younger Lagoon would continue, such that the water quality benefits of the proposed Projects would not be achieved.

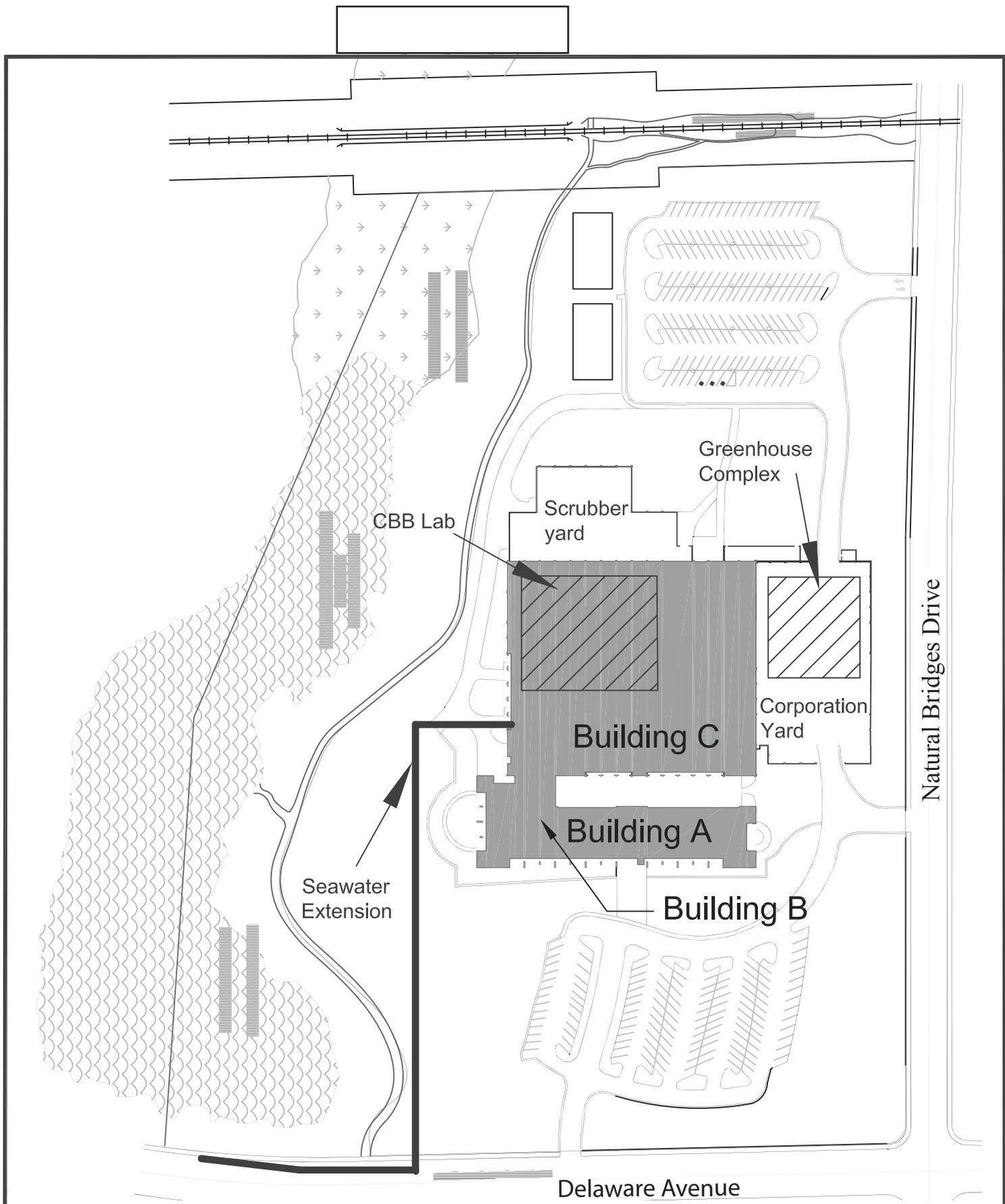
#### 4.7.2 SRP Phase 1B Environmentally Superior Alternative

The proposed SRP Phase 1B Project is the environmentally superior alternative (see Table 4-3). The proposed project would provide environmental benefits including ecological restoration, wildlife habitat and movement, and water quality benefits that substantially outweigh the small potential for the short-term construction activities of the project to result in impacts to wetlands, special-status species, and construction noise.

### 4.8 REFERENCES

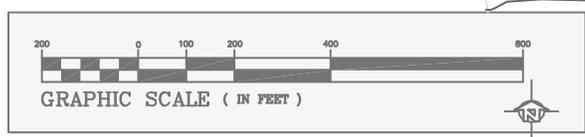
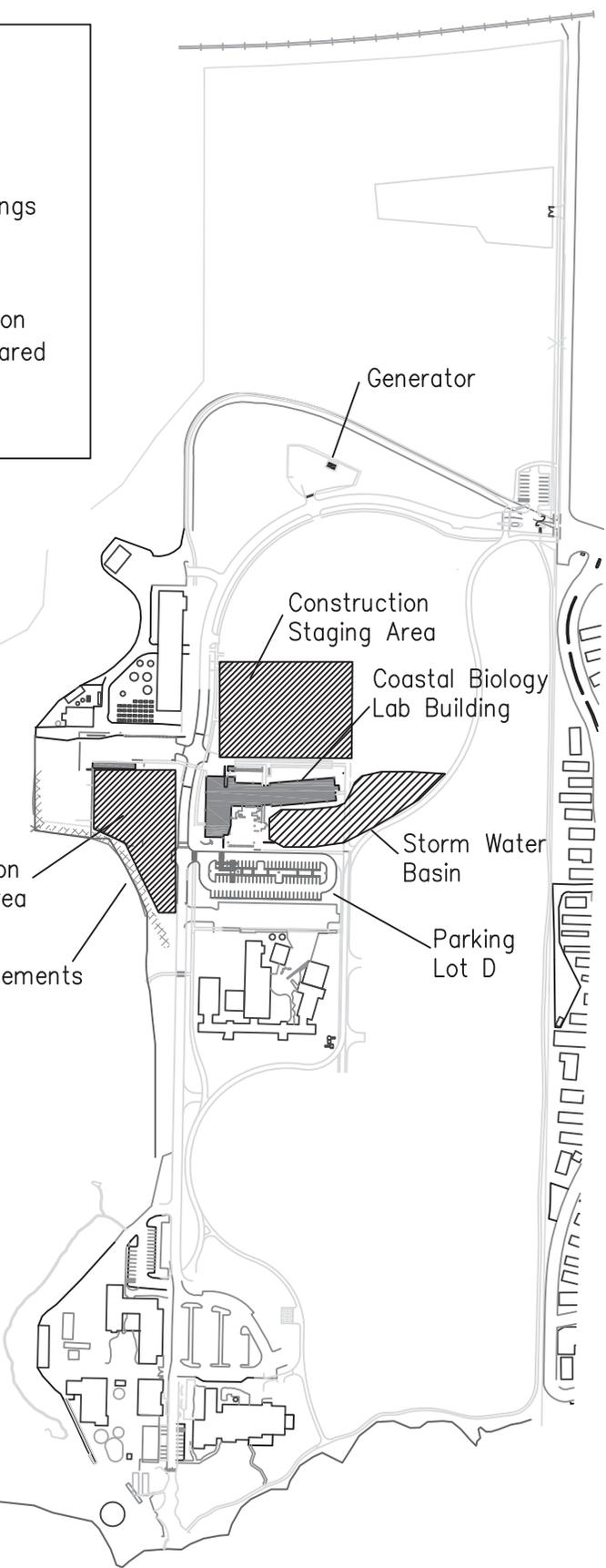
Peterson, James, Cooper Sinclair Levy, Taylor Cunnington, Edward Antonio Veiluva. 2008. Installation of Wind Turbines at Long Marine Lab. Prepared under the mentorship of Damon Adlao, UCSC, Physical Planning and Construction. On file, PP&C.





**LEGEND**

-  Existing buildings
-  Proposed new buildings
-  Proposed Construction Staging Area – (shared with MSCI and NEF projects)



<p>UC SantaCruz Marine Science Campus          Coastal Biology Building and Infrastructure Improvements          Final Environmental Impact Report November 2011</p>	<p>CBB-MSCI Alternative 3:          Reduced Project</p>	<p>Figure          4-3</p>
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## Other CEQA Considerations

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Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the EIR must identify the following three types of impacts:

- Significant environmental effects that cannot be avoided if the proposed project is implemented;
- Significant irreversible environmental effects that would be involved in the proposed project should it be implemented; and
- Growth-inducing impacts of the proposed project.

The following sections identify each of these types of impacts based on analyses contained in Chapter 3, *Environmental Setting, Impacts, and Mitigation*. The potential that the project would result in wasteful use of energy is discussed in Section 5.2, *Significant Irreversible Environmental Effects*.

### SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL EFFECTS

This section identifies significant impacts that could not be eliminated or reduced to a less-than-significant level by mitigation measures imposed on the MSC Projects by the University. The final determination of the significance of impacts and of the feasibility of mitigation measures will be made by the Board of Regents of the University of California as part of its certification action for the EIR.

A summary of the environmental impacts of the project and proposed mitigation measures is contained in Chapter 1, *Executive Summary*, of this EIR. Sections 3.1 through 3.16 provide a comprehensive identification of the proposed project's environmental effects, including the level of significance both before and after mitigation.

No significant unavoidable environmental impacts were identified for any of the MSC Projects. Through implementation of the mitigation measures identified in Chapter 3 of this DEIR, all impacts would be mitigated to less-than-significant levels.

### SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL EFFECTS, INCLUDING ENERGY USE

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by the proposed project. Specifically, Section 15126.2(c) states:

*Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such*

*as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

Generally, a project would result in significant irreversible environmental changes if:

- The primary and secondary impacts would generally commit future generations to similar uses.
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).
- The project would involve a large commitment of nonrenewable resources.
- The project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project.

The proposed MSC Projects would construct new buildings, a vehicle road, a major trail and several minor trails, three parking lots, and extensive new or upgraded infrastructure on UCSC's Marine Science Campus. The campus site has been committed, by the University and with the approval of the California Coastal Commission, to University development for coastal-dependent and coastal-related uses, under the Marine Science Campus CLRDP. Much of the western half of the campus' Lower and Middle Terraces has already been developed. Under the proposed MSC Projects, additional infrastructure would be developed that would serve the proposed CBB Project and also would facilitate and accommodate future development as envisioned under the CLRDP. Construction of the proposed MSC Projects would constitute a further commitment of the MSC to these uses, and these changes in use would be irreversible change, as it is unlikely that the facilities or infrastructure would be removed in the foreseeable future. The MSC Projects would result in permanent conversion of about three acres of grassland and scrubland to development. While this type of habitat is widely available on the Santa Cruz coast, the projects would reduce the quantity of this type of wildlife movement and foraging habitat on the MSC. By the same token, approval of the CLRDP, which in part would be implemented by the proposed MSC Projects, also constituted a commitment to preserve and buffer all campus wetlands and designated Environmentally Sensitive Habitat Areas and to preserve view corridors through land-use designations. The previously-certified CLRDP EIR also requires implementation, as part of MSC development and operations, of measures to minimize the potential for indirect adverse effects upon wildlife and sensitive habitats that might occur as a result of the introduction of intrusive noise, light, or human activity. The proposed MSC Projects are consistent with the implementation measures and land-use plan set forth in the CLRDP. Project elements include restoration of wetland hydrology on the Upper Terrace, and habitat restoration around several wetlands and designated wildlife corridors to enhance native vegetation, improve wildlife cover, and control invasive plants. The MSC Projects also includes stringent design measures to ensure that development does not result in erosive runoff or significant changes in the surface hydrology or groundwater regimes.

The proposed MSC Projects would irretrievably commit materials to the construction and maintenance of the new facilities. Resources that would be permanently and continually consumed by project

implementation include water, electricity, natural gas, and fossil fuels. However, the consumption of these resources would not represent unnecessary, inefficient, or wasteful use of resources. The MSC Projects would provide coastal-dependent and coastal-related research facilities and the infrastructure to support them, as well as new public access facilities to improve public education, interpretation, and enjoyment of the coast. The new facilities would accommodate some of the increasing student demand for education and research experience in the biological sciences, and will provide research space and facilities for coastal and marine biology research on critical biological and environmental issues.

The students and employees who would work at and use the new facilities are included within the population growth projections accommodated in UCSC's 2005 Long Range Development Plan and analyzed in the LRDP EIR, as well as in the CLRDP and CLRDP EIR. Natural and non-renewal resources, such as fossil fuels, are currently being consumed by this demographic group and would continue to be consumed by this group at some location, irrespective of whether these students enroll at UC Santa Cruz, or work and attend classes at the MSC. The proposed projects include energy efficiency and sustainable design measures, consistent with the University's sustainability policies, to ensure that the use of these resources is not wasteful. Consistent with the University's Policy on Sustainable Practices, the CBB facilities are being designed to outperform the required provisions of the California Energy Code (Title 24) energy-efficiency standards by at least 20 percent. If possible, within the constraints of program needs and budget feasibility, the goal will be to exceed these standards by 30 percent. The CBB Project includes the installation of photovoltaic panels over one parking lot to provide a clean and renewable source for some of the campus' electrical power. Other energy efficient and energy saving measures included in the proposed projects are detailed in Section 3.16, *Utilities and Service Systems*, above. Elements of the proposed projects such as high-efficiency plumbing fixtures, and landscaping that consists primarily of low-water-use plantings, would ensure that the projects do not result in inefficient use of water. The MSC Projects also may include an irrigation system that adjusts its schedule automatically in response to variations in evapotranspiration rates, which would further increase water efficiency.

The energy use for the proposed MSC Projects would emit greenhouse gases that could contribute to global climate change. Construction activities related to the proposed Projects would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil, natural gas, and gasoline) for automobiles and construction equipment, and the development would contribute to the state's greenhouse gas emissions. However, as discussed in Section 3.5, *Climate Change*, the MSC Projects would not conflict with the efforts of the state to meet its goals for the reduction of greenhouse gas emissions.

The CEQA Guidelines also require a discussion of the potential for irreversible environmental damage caused by an accident associated with the project. The MSC Projects are not expected to result in any activities, such as large-scale hazardous materials storage or transportation, that are likely to result in accidents that could lead to irreversible environmental damage. The proposed MSC Projects include installation of a small, regulated waste storage container on the campus, where regulated materials used and disposed on the campus would be collected for off-haul and permanent disposal. However, the quantities of materials that would be stored at this facility would be small; the facility would be self-contained and fully permitted; and operations would not involve repackaging or other activities with the

potential to result in spills or pollution that would be a threat to people or the environment, even in the event of accident or upset.

## GROWTH-INDUCING IMPACTS

Section 15126.2(d) of the *CEQA Guidelines* requires that an EIR discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. This includes consideration of whether increases in the population associated with a project may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. The EIR also must consider whether the project would indirectly induce growth by removing obstacles to population growth (such as insufficient water supply or transportation infrastructure). Also to be considered is whether the project may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

A project may have direct and/or indirect growth inducement potential. Direct growth of development and population would result if a project includes construction of new housing or establishes substantial new permanent employment opportunities (or, in the case of the University, would accommodate new enrollment), which would stimulate demand for additional housing and services in the surrounding area. A project also could directly induce growth if it would involve a construction effort with substantial short-term employment opportunities, particularly if construction employees are likely to relocate to the area.

A project would have an indirect growth inducement effect to the extent that spending for project development and by students and employees associated with the project stimulates economic development (jobs) in the surrounding area, such that the demand for housing, public services and other development increases.

### Potential for the MSC Project to Induce Growth through Removal of Obstacles to Growth

The CLRDP includes several elements designed to reinforce a stable urban boundary at the City of Santa Cruz city limit. The CLRDP land-use plan permanently preserves most of the area of the Upper Terrace, which partially abuts adjacent farmlands, from open development. Substantial areas of the rest of the MSC also are permanently preserved as open land through inclusion in the Younger Lagoon Natural Reserve. The proposed MSC Project would update and augment existing utilities and reroute the campus entry road to serve the needs of the CBB Project and other development under the previously approved CLRDP, but CLRDP policies limit the size of utility lines on site to serve only the projected needs of the MSC. The infrastructure that would be developed under the proposed MSC Project would be wholly within the limits of the existing MSC and would serve the CLRDP program of development, as set forth on the CLRDP and analyzed in the previously-certified CLRDP EIR. The CLRDP strictly regulates future development on the MSC, including development under the proposed MSC Projects, which are part of the program of development envisioned in the CLRDP. Therefore, although the proposed MSC Projects do include proposed infrastructure improvements to serve new development, the associated growth and

development have already been considered and approved at the programmatic level and no additional growth beyond that anticipated and analyzed in the CLRDP would be induced.

## Direct Growth Inducement Associated with the Proposed MSC Projects

The proposed MSC Projects would directly induce a small amount of population growth by providing new employment and academic space on the Marine Science Campus. This population growth has already been considered, within the context of population growth and development, in both the previously certified 2005 LRDP EIR and CLRDP EIR. As discussed in Section 3.12, above, the proposed CBB Project would accommodate about six new employees and 36 new students. Population growth associated with UC Santa Cruz has been taken into account in AMBAG's 2008 growth projections. Even assuming that the entire new population associated with the MSC Projects would be new to the county and would reside in the county (which are very conservative assumptions for the reasons discussed in Section 3.12), this population represents less than 0.5 percent of growth in the county between 2010 and 2016, and only about 0.01 percent of the projected total population of the county in that year. The MSC Projects therefore would not induce substantial population growth. Potential physical environmental effects associated with new residential population and the potential construction of housing in the region in response to direct housing demand from the proposed MSC Projects are discussed in Section 3.12 and other relevant sections, above, including Section 3.13, *Public Services*; Section 3.14, *Recreation*; Section 3.15, *Transportation and Traffic*; and Section 3.16, *Utilities*.

Construction of the proposed MSC Projects would entail work at the MSC by construction crews that would vary in size depending on the tasks underway, but likely would total 50 to 100 persons during most of the 21-month construction period. With unemployment in the City of Santa Cruz as of December 2010 at 11.6 percent, and in Santa Cruz County overall at 13.8 percent (U.S. Bureau of Labor Statistics, 2011), it is likely that at least part of this workforce would be drawn from among persons already resident in the area. Some construction workers likely would commute from elsewhere in the Monterey Bay region or the greater San Francisco Bay Area. With an employment term of less than two years, and given the high cost of housing in the city and county generally, it is unlikely that many workers would relocate. It is not expected that the construction worker population for the project would contribute to new demand for regional housing. Although the construction workforce would contribute locally to the demand for goods and services (such as food and incidental supplies), the increased demand would be of short duration, and would be unlikely to trigger development of new businesses or jobs to serve this workforce. The construction workforce would, however, make short-term contributions to regional traffic and air emissions. Workforce contributions to these potential environmental effects are addressed in sections above, including Section 3.5, *Climate Change*; Section 3.3, *Air Quality*; and Section 3.15, *Traffic and Transportation*.

## Indirect Growth Inducement Associated with the Proposed Projects

The proposed MSC Projects could indirectly induce some secondary employment in local retail and other service sectors to serve MSC facilities and population. Because the new population associated with the

CBB Project (the only one of the projects that would include new employees or accommodate students) would be small (about 6 employees, plus up to 36 new students in the Main Campus population), it is anticipated that indirect induced growth would be commensurately small. Based on a multiplier of 1.74 indirect/induced jobs for each of the 6 direct jobs associated with the proposed CBB Project, it is estimated that about 10 indirect and induced jobs would be created or supported in the county as a result of implementation of the proposed MSC Projects. As discussed above, growth in UC Santa Cruz population has been taken into account in AMBAG's current (2008) population, housing, and employment growth projections, which provide projections for growth throughout the Monterey Bay Area through 2030. The indirect growth associated with the proposed MSC Projects would be a negligible part of the projected growth. Indirect induced growth associated with the MSC Projects therefore would not be substantial.

### Potential to Encourage and Facilitate Other Activities that Could Significantly Affect the Environment, Cumulatively or Individually

The direct, indirect, and induced population, employment growth and housing demand associated with the MSC Projects would contribute to cumulative demand for housing and commercial development in the county, and particularly in the City of Santa Cruz. Cumulatively, new demand would result in more commercial and residential infill development on lands that are vacant or underutilized.

The City's Draft 2007-2014 Housing Element identifies parcels of vacant or underutilized commercial and residentially zoned land to accommodate growth. Environmental impacts from this designation within the City of Santa Cruz through 2005 are analyzed in the City's General Plan EIR, which includes mitigation measures and policies designed to lessen the significance of these impacts. As specific commercial and residential development projects are proposed, they will be subject to environmental review. Update of the City's General Plan and General Plan EIR are in progress, but not yet available. However, it is anticipated that there would not be any major shifts in land-use planning in the city, and that future growth will continue to emphasize infill and redevelopment, especially along corridors served by transit, consistent with regional transportation planning. The City's Draft 2007-2014 Housing Element reports that 1,045 housing units were approved or constructed in the city during the period between 2007 and 2009. As described in the Housing Element, the City of Santa Cruz is nearly built out. Virtually all of the available development would be infill, surrounded by other development and already served by public improvements. The Housing Element identifies vacant residential-zoned and potential housing sites in nonresidential zones, in particular under-utilized sites such as parking lots, that could accommodate 696 additional parcels, 524 in excess of the City's assigned share of housing under AMBAG's 2007-2014 Regional Housing Needs Assessment (RHNA). The infill locations of the parcels that potentially could be developed, and the fact that they are served by existing infrastructure, suggests that development of these parcels has low potential to result in significant footprint-related environmental impacts (such as impacts to cultural or biological resources). Use of infill locations for new development, particularly at sites identified along transit corridors, also reduces the potential for traffic impacts and emissions associated with motor vehicle travel. Development at the higher densities proposed for multi-family development also is likely to be more energy efficient than older and single family development.

The contribution of the MSC Projects to regional growth and associated development, either directly or indirectly, would be small. New development induced by regional growth would contribute to water supply impacts identified in City and University planning documents. The contribution of the proposed MSC Projects to water supply impacts, including the Projects' contribution to cumulative development impacts, is addressed in Section 3.16, *Utilities and Service Systems*, above.

## REFERENCES

- Association of Monterey Bay Area Governments (AMBAG). 2008. Monterey Bay Area 2008 Regional Forecast. Population, Housing Unit and Employment Projections for Monterey, San Benito and Santa Cruz Counties to the Year 2035. Adopted by the Board of Directors of AMBAG June 11. Marina, CA.
- City of Santa Cruz. 2007. 2007-14 Draft Housing Element. Accessed on line at <http://www.cityofsantacruz.com/index.aspx?page=373>
- UCSC. 2006. University of California, Santa Cruz Long-Range Development Plan Environmental Impact Report. Prepared for UCSC by URS Corporation.
- U.S. Bureau of Labor Statistics, Labor Force Data by County, not seasonally adjusted, February 2010-March 2011. <http://www.bls.gov/lau/laucntycur14.txt>

## CHAPTER 6 CONSULTATION AND COORDINATION

The following individuals and organizations were consulted during the preparation of this EIR.

Asire, M. — UC Santa Cruz Division of Physical and Biological Sciences

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Rabiah, T. — UC Santa Cruz Office of Physical Planning & Construction ~~Environmental Health & Safety~~

Sansevero, A. — URS Corporation

Strelow, S. — Strelow Consulting

Testoni, P. — UC Santa Cruz Physical Plant

Thomas, K. — City of Santa Cruz Office of Planning and Building

---

Tramble, R. — UC Santa Cruz Office of ~~Physical Planning & Construction~~ ~~Environmental Health & Safety~~

Trapp, J. — UC Santa Cruz Fire Department

Velzy, J. — UC Santa Cruz Greenhouses

Zinn, E. — Zinn Geology

# CHAPTER 7 LIST OF PREPARERS AND CONTRIBUTORS

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University of California

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Leif Rideout

Chapter 8 ...Comments, Responses to Comments and Changes to  
the Draft EIR

8.1	Comment Letters.....	8-1
8.2	Changes to the Draft EIR Text.....	8-32

TABLES

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Table 8-1	Index to Comments on the Draft EIR
Table 8-2	Changes to the Draft EIR Text

## Comments, Responses to Comments and Changes to the Draft EIR

This chapter provides copies of each of the comment letters received during the Draft EIR public review period, and responses to each comment. Numbering that corresponds with responses to each comment has been added to each comment letter. The numbered responses follow each of the comment letters.

Comment letters are tabulated in Table 8-1 (below), which numbers the comment letters and indicates the source of each letter and the general topics addressed.

Table 8-2, at the end of this chapter, tabulates changes made to the text and figures of the Draft EIR, for clarification, in response to comments, or in some cases to make minor corrections. Changes are indicated throughout the text of this Final EIR. Underlining indicates additions to the Draft EIR text; strikethroughs (~~strikethrough~~) indicate deletions.

### 8.1 COMMENT LETTERS

**Table 8-1. Index to Comments on the Draft EIR**

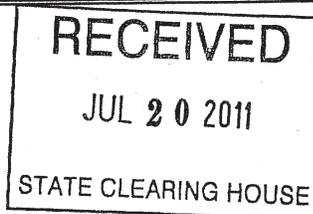
Letter #	Commenter	Topics
<b>State Agencies</b>		
SA-1	CA Public Utilities Commission	railroad crossing hazards
SA-2	CA Governor's Office of Planning and Research	review period acknowledgment
<b>Local Agency</b>		
LA-1	Monterey Bay Unified Air Pollution Control District	air quality regulatory setting, generator permitting, PM10
<b>Individuals</b>		
I-1	Grey Hayes	wetland delineation, raptor habitat, stormwater runoff/ water quality, long term mitigation monitoring
I-2	Ren Curry	biology mitigation monitoring, off-campus parking, construction PM10 at DeAnza Residential Community, traffic control at entry, potential construction traffic and noise impacts at DeAnza

STATE OF CALIFORNIA

## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298

June 27, 2011

Sally Morgan  
University of California  
PP&C, 1156 High Street  
Santa Cruz, CA 95064

Re: Notice of Completion, Draft Environmental Impact Report (DEIR)  
Marine Science Campus Projects  
SCH# 2010062090

Dear Ms. Morgan:

As the state agency responsible for rail safety within California, the California Public Utilities Commission (CPUC or Commission) recommends that development projects proposed near rail corridors be planned with the safety of these corridors in mind. New developments and improvements to existing facilities may increase vehicular traffic volumes, not only on streets and at intersections, but also at at-grade highway-rail crossings. In addition, projects may increase pedestrian traffic at crossings, and elsewhere along rail corridor rights-of-way. Working with CPUC staff early in project planning will help project proponents, agency staff, and other reviewers to identify potential project impacts and appropriate mitigation measures, and thereby improve the safety of motorists, pedestrians, railroad personnel, and railroad passengers.

The Transportation/Circulation section of the DEIR *failed* to evaluate trespassing and traffic safety issues to the identified emergency Shaffer Road crossing and the Natural Bridges Drive at-grade railroad crossing located in near proximity to the campus. Any increase in traffic or pedestrians to the at-grade crossings by this project need to be evaluated for potential impacts to safety and hazards.

In general, the major types of impacts to consider are collisions between trains and vehicles, and between trains and pedestrians. Measures to reduce adverse impacts to rail safety need to be considered in the DEIR. General categories of such measures include:

- Installation of grade separations at crossings, i.e., physically separating roads and railroad track by constructing overpasses or underpasses
- Improvements to warning devices at existing highway-rail crossings
- Installation of additional warning devices
- Improvements to traffic signaling at intersections adjacent to crossings, e.g., traffic preemption
- Installation of median separation to prevent vehicles from driving around railroad crossing gates

SA-1-1

Sally Morgan  
SCH # 2010062090  
June 27, 2011  
Page 2 of 2

- Prohibition of parking within 100 feet of crossings to improve the visibility of warning devices and approaching trains
- Installation of pedestrian-specific warning devices, channelization and sidewalks
- Construction of pull out lanes for buses and vehicles transporting hazardous materials
- Installation of vandal-resistant fencing or walls to limit the access of pedestrians onto the railroad right-of-way
- Elimination of driveways near crossings
- Increased enforcement of traffic laws at crossings
- Rail safety awareness programs to educate the public about the hazards of highway-rail grade crossings

SA-1-1  
(cont.)

Commission approval is required to modify an existing highway-rail crossing or to construct a new crossing.

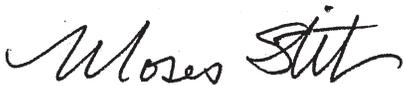
Please forward the *revised* Traffic Impact Study to ensure that the at-grade railroad crossings adjacent and in near proximity to the Campus are included in the analysis. The analysis needs to discuss what safety devices are proposed for the proposed emergency crossing at Shaffer Road. A crossing used for emergency vehicle access will need to be gated closed and locked to prevent public access. The traffic study needs to evaluate the Natural Bridges Drive crossing located to the east as well. This crossing is the closest public crossing to the project and will be the primary access point. This will allow us to complete our review of the DEIR; otherwise the *level of significance* can not be determined without such an analysis specific to at-grade railroad crossing

Please add the CPUC as a Responsible Agency for this project to the noted list of agencies in the DEIR.

SA-1-2

Thank you for your consideration of these comments. If you have any questions, please contact me at (415) 713-0092 or email at [ms2@cpuc.ca.gov](mailto:ms2@cpuc.ca.gov).

Sincerely,



Moses Stites  
Rail Corridor Safety Specialist  
Consumer Protection and Safety Division  
Rail Transit and Crossings Branch  
180 Promenade Circle, Suite 115  
Sacramento, CA 95834-2939

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## Response to Comment Letter SA-1 (California Public Utilities Commission)

**SA-1-1.** The commenter requested that additional analysis be conducted by the traffic consultant and presented in the Final EIR to assess the potential that the increased pedestrian, bicycle and vehicle traffic associated with the MSC Projects (as described in the MSC Projects DEIR, Section 3.15) would result in increased hazards with respect to crossings of the Union Pacific Railroad line that runs adjacent to the MSC. This issue was investigated by the project traffic consultant and reported in the Final Traffic Impact Analysis for the MSC Projects (Fehr and Peers July 2011). The analysis concluded that the MSC Projects would not increase railroad-related hazards or result in incompatible uses; the impact with respect to roadway hazards therefore would be less-than-significant, as reported in the MSC Projects Draft EIR. The text of MSC Projects Impact TRA-4 (Final EIR, p. 3.15-42) has been amended to clarify this conclusion, as follows (addition indicated by underline):

**“MSC Projects Impact TRA-4:** The MSC Projects would result in increased motor vehicle, pedestrian and bicycle traffic in the project vicinity and on the MSC, would alter the roadway at the MSC entrance, and would introduce new parking lot intersections with campus roadways and new pedestrian crossings of campus roadways, but the Project-related traffic would not be incompatible with existing campus or local roadway uses. New campus roadways ~~these~~ would be designed consistent with roadway safety standards and CLRDP guidelines to ensure that the project does not result in any increase in hazards related to design features.”

In addition, further discussion of this issue has been added to the Final EIR in the analysis that follows the TRA-4 impact block (Final EIR pp. 3.15-43, -44). Under the subheading, **Previous Analysis**, the following text was added at the end of the subsection:

“The CLRDP EIR reported in 2004 that there were about six low speed pass-by trips per week along the UPRR tracks in the campus vicinity (CLRDP EIR, p. 4.11-8) and, based on this low volume of traffic on the line, did not evaluate hazards associated with railroad crossings and potential railroad rights of way trespass.”

The following text was added to the Final EIR under the heading, **Project Impact**:

As described in this section, implementation of the proposed MSC Projects would result in increased motor vehicle traffic at intersections near the campus and likely also would result in increased pedestrian and bicycle traffic at some intersections. As described in Section 3.15.1.1 (Roadway Systems), above, a Union Pacific Railroad line between the coastal town of Davenport, to the north of Santa Cruz, and Watsonville, to the south (known as the Santa Cruz Branch Line), runs along the northern border of the Marine Science Campus. East of the campus, the railroad line crosses Natural Bridges Drive, a City of Santa Cruz roadway frequently used by traffic traveling from UCSC’s main campus to the Marine Science Campus. In addition, the alignment of Shaffer Road, a City of Santa Cruz street that extends from Highway 1 on the north to Delaware Avenue on the south, crosses the railroad track and runs along the eastern boundary of the Marine Science Campus. Shaffer Road is discontinuous at the railroad track, which is slightly elevated at this intersection such that motor vehicles cannot cross the tracks. However,

online aerial photos show that there is a casual pedestrian path across the railroad right of way from the segment of Shaffer Road north of the railroad track to the Homeless Garden area located east of Shaffer Road south of the railroad tracks, which are not fenced in this area.

The segment of the UPRR line between Santa Cruz and Davenport at that time was in use for freight hauling operations by the Sierra Northern Railway, primarily for the CEMEX plant in Davenport. CEMEX closed in 2009. Sierra Northern currently runs trains twice per week on the Santa Cruz Branch Line southward from Santa Cruz to serve existing freight customers between Santa Cruz and Watsonville. In the absence of freight clients north of Santa Cruz that would call for active use of the line, Sierra Northern currently is using the segment of the line between Davenport and Santa Cruz (the segment that passes the MSC) for storage of unused rail cars (SCCRTC 2011).

Early in 2011, the Santa Cruz County Regional Transportation Commission (SCCRTC) acquired the Santa Cruz Branch Line rights of way for recreational rail, preservation, and future transportation uses that could include passenger rail service, transit, bicycle and pedestrian facilities, and freight rail service. Sierra Northern proposes to invest up to \$2,000,000 to implement recreational rail service on the line segment from Santa Cruz to Davenport (SCCRTC 2011), which passes by the MSC. There currently is little or no rail traffic on the Santa Cruz Branch Line in the vicinity of Natural Bridges Drive and Shaffer Road. Future rail traffic on the alignment cannot be predicted at this time but recreational traffic is unlikely to exceed the historic patterns of light use.

As identified in the section, the proposed MSC Projects would result in some increase in motor vehicle, pedestrian and bicycle traffic on Natural Bridges Drive. The majority of pedestrian traffic to the campus is associated with city bus stops, and routes between these stops and the Marine Science Campus do not cross the railroad tracks. One city bus route uses Natural Bridges Drive, but it is not anticipated that the frequency of service would increase to serve the proposed MSC Projects. The existing at-grade crossing of SPRR on Natural Bridges Drive includes train-activated guard arms, warning signals and pedestrian sidewalks. In this light industrial urban area, trains move at low speeds, typically between 3 and 8 miles per hour based on incident records for intersections in Santa Cruz. The Federal Railway Administration website [railway accident database \(http://safetydata.fra.dot.gov/OfficeofSafety/PublicSite/Crossing/Crossing.aspx\)](http://safetydata.fra.dot.gov/OfficeofSafety/PublicSite/Crossing/Crossing.aspx) reports a single car/train incident for intersection #768162B, in 1997. This intersection is identified as Natural Bridges Drive on the Public Utility Commission's Highway/Rail Crossing Inventory data base (<http://www.cpuc.ca.gov/PUC/transportation/crossings/crossingininventory.htm>), but the accident from indicates that the incident (a low speed train-car collision due to a car stopped on the tracks, which resulted in minor damage to the car) actually occurred at Bay Street, and not the Natural Bridges Drive crossing. As assessed by the MSC Projects traffic consultant, the existing standard protections at the at-grade crossing appear to be adequate to avoid or minimize any potential hazard associated with pedestrian, bicycle and vehicle traffic at this intersection based on the historically low levels of rail traffic, anticipated low future levels, and historic absence of accidents. The crossing at this location is controlled by a train-activated signal arm, and includes pedestrian sidewalks and standard warning lights, bells and signs, and meets all current safety standards (Schneider 2011a). The risk to traffic crossing this line therefore is less than significant.

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With respect to the Shaffer Road intersection with the UPPR tracks, the only likely source of pedestrian and bicycle traffic to the MSC along the informal footpath at this crossing is an apartment complex on Shaffer Road north of the railroad tracks. UCSC affiliates may be among the resident these apartments, and that some subset of these may work or attend classes at the MSC. If so, it is possible that a small number of pedestrians or bicyclists traveling to the MSC might cross the railroad tracks at Shaffer Road to access the campus. However, it is not anticipated that the proposed Project would increase the number of persons residing in the apartments who would be affiliated with the campus, since there will be no increase in housing capacity in the complex. Therefore there is no evidence that the MSC Projects would result increased pedestrian and bicycle use of this crossing. The Projects therefore would not represent a use incompatible with the adjacent railroad, nor would the Projects increase the less-than-significant hazard associated with use of the informal crossing at Shaffer Road. Nonetheless, MSC Projects Mitigation Measures TRA-4C has been added to the Final EIR to further reduce the potential for a less-than-significant incompatibility impact with respect to pedestrian and bicycle traffic across the railroad at Shaffer Road. In addition, the Campus has committed, through CLRDP IM 5.1.7 and under the 2008 Settlement Agreement, to pay its fair share of the cost an emergency at-grade motor vehicle crossing of railroad, should the City carry out such a project in the future. This project has been discussed, but a specific project has not been proposed at this time (Schneiter 2011b).

**“MSC Projects Mitigation Measures TRA-4C: When new fencing is installed along the northern and eastern boundaries of the campus, signage will be posted on the fence at a location adjacent to each pedestrian route advising caution in crossing the adjacent railroad tracks.”**

With respect to the issue of railroad crossing modification or construction, the modifications to Shaffer Road to provide a railroad crossing are not proposed as part of the MSC Projects. Shaffer Road is a City of Santa Cruz roadway that is not within and does not enter the campus; thus, the University has no authority to propose a project to improve the Shaffer Road crossing of the Union Pacific ROW. The City of Santa Cruz 2011-13 Capital Improvement Plan identifies formation of an assessment district for a regular at-grade vehicle crossing of the railroad tracks at Shaffer Road, but no project has been proposed or designed at this time and funding is not anticipated during the current funding cycle (Schneiter, Santa Cruz Department of Public Works, August 2011). If and when the City proposes a project, that project would be subject to CEQA or CEQA/NEPA compliance by the project proponent, as noted by the commenter. The University has committed, under UC Santa Cruz’ previously-approved CLRDP, to contribute toward the cost of an emergency at-grade crossing for Shaffer Road at the time that the City proceeds with a Shaffer Road crossing project. The University has forwarded the PUC letter to the City of Santa Cruz for the City’s consideration in the planning for future street improvements relative to railroad crossings.

**SA-1-2.** Because the proposed Projects do not include any proposal to modify or work within any railroad rights of way, the CPUC would not have a Responsible Agency role in the MSC Projects. If the University should propose a project, in future, that could affect a railroad right of way, the Campus would consult with CPUC about regulatory responsibilities.

**References**

Federal Railroad Administration. 2011. <http://safetydata.fra.dot.gov/OfficeofSafety/> Web site accessed July, 2011

Fehr and Peers. 2011. Final Draft, UC Santa Cruz Marine Science Campus Coastal Biology Building Transportation Impact Analysis. Prepared for UC Santa Cruz. July

Santa Cruz County Regional Transportation Commission (SCCRTC). 2011. Santa Cruz Branch Rail Line Acquisition Fact Sheet. February 2011. Accessed July 1, 2011 at [www.sccrtc.org](http://www.sccrtc.org).



EDMUND G. BROWN JR.  
GOVERNOR

STATE OF CALIFORNIA  
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH  
STATE CLEARINGHOUSE AND PLANNING UNIT



KEN ALEX  
DIRECTOR

June 28, 2011

Sally Morgan  
University of California Santa Cruz  
PP and C  
1156 High Street  
Santa Cruz, CA 95064

Subject: Marine Science Campus Projects  
SCH#: 2010062090

Dear Sally Morgan:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. The review period closed on June 27, 2011, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

SA-2-1

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan  
Director, State Clearinghouse

REC'D JUL 1 2011

**Response to Comment Letter SA-2 (California Governor's Office of Planning and Research)**

**SA-2-1.** Letter notes that OPR submitted the MSC Projects Draft EIR to selected public agencies, that the public comment period closed June 27, 2011, and that no state agencies had submitted comments to OPR as of that date. Comment noted.



June 27, 2011

University of California  
PP&C, 1156 High Street  
Santa Cruz, CA 95064  
Attn: Sally Morgan

Sent Electronically to:  
[limeworks@ucsc.edu](mailto:limeworks@ucsc.edu)  
Original Sent by First Class Mail.

SUBJECT: DEIS FOR UCSC MARINE SCIENCE CAMPUS PROJECTS

Dear Ms. Morgan:

The Air District submits the following comments for your consideration:

Section 3.4.1.3: Regulatory Setting and Existing Air Quality. Page 3-3 to 3-4.

This section should mention that the District's current air plans include the August 2008 Air Quality Management Plan (AQMP) and the 2007 Federal Maintenance Plan, which was approved by the United States Environmental Protection Agency on November 6, 2009.

LA-1-1

Section 3.4.2: Relevant Project Characteristics. Page 3-12.

The last paragraph on this page indicates that the CBB Project will include natural gas fueled boilers, as well as emergency and standby generators fueled by natural gas and propane. Please contact Mr. Greg Chee, MBUAPCD Supervising Engineer (831)647-9411 x 219, regarding the District's permit requirements for this stationary equipment.

LA-1-2

Section 3.3.2.2: Regulatory Setting, State Regulations. Page 3-15.

Please note effective January 22, 2010 the National Ambient Air Quality Standard (NAAQS) for nitrogen dioxide was revised to include a one-hour standard of 100 ppb. The NAAQS for lead has also been revised to include a rolling three-month average of 0.15 µg/m<sup>3</sup>. For reference, a table of the current State (as well as federal) standards is attached. This table can also be accessed at <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>.

LA-1-3

Table 3.3.-5: Estimated Construction PM10 Emissions. Page 3-18.

The table indicates that maximum daily PM<sub>10</sub> emissions from construction activities would be about 69.17 lbs/day after mitigation and with all projects underway simultaneously. Please provide the URBEMIS 2007 runs which support this finding.

LA-1-4

Section 3.4.4.3: Consistency with Air Quality Management Plan. Page 3-23.

This section indicates that AMBAG previously determined that the project was consistent with the AQMP. Please include a copy of AMBAG's consistency finding letter in the Final EIR.

LA-1-5

Section 3.4.4.3: Project Impacts and Mitigation Measures. Page 3.4-17.

This section states that construction activities could generate substantial amounts of fugitive dust, which would result in potential health and nuisance impacts in the immediate vicinity of the MSC. This potentially significant impact would be reduced to a less than significant level with implementation of CLRDP EIR Mitigation 4.3-1.

The District's standard recommended best management practices for mitigating construction related fugitive dust are outlined below:

- Prohibit all grading activities during periods of high wind (over 15 mph)
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days)
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations, and hydro-seed area.
- Haul trucks shall maintain at least 2'0" of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Install wheel washers at the entrance to construction sites for all exiting trucks.

Mitigation Measure 4.3-1 (detailed on page 1 of Appendix D) appears to be generally consistent with the above measures. However, given the windy nature of the area and the fact that the De Anza Residential Community is immediately downwind, the District suggests watering three times a day or curtailing grading when winds are above 15 mph to mitigate offsite fugitive dust impacts.

LA-1-6

Thank you for the opportunity to comment on this document.

Best regards,

Jean Getchell  
Supervising Planner  
Planning and Air Monitoring Division

Attachment: State and Federal Ambient Air Quality Standards (9/8/10)

cc: Greg Chee, MBUAPCD Supervising Engineer

# Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards <sup>1</sup>		Federal Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
Ozone (O <sub>3</sub> )	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m <sup>3</sup> )		0.075 ppm (147 µg/m <sup>3</sup> )		
Respirable Particulate Matter (PM <sub>10</sub> )	24 Hour	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		—		
Fine Particulate Matter (PM <sub>2.5</sub> )	24 Hour	No Separate State Standard		35 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	15.0 µg/m <sup>3</sup>		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m <sup>3</sup> )	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m <sup>3</sup> )	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m <sup>3</sup> )		35 ppm (40 mg/m <sup>3</sup> )		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m <sup>3</sup> )		—		
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence	53 ppb (100 µg/m <sup>3</sup> ) (see footnote 8)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m <sup>3</sup> )		100 ppb (188 µg/m <sup>3</sup> ) (see footnote 8)	None	
Sulfur Dioxide (SO <sub>2</sub> )	24 Hour	0.04 ppm (105 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	—	0.5 ppm (1300 µg/m <sup>3</sup> ) (see footnote 9)	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method) <sup>9</sup>
	3 Hour	—		—		
	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )		75 ppb (196 µg/m <sup>3</sup> ) (see footnote 9)		
Lead <sup>10</sup>	30 Day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	—	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m <sup>3</sup>		
	Rolling 3-Month Average <sup>11</sup>	—		0.15 µg/m <sup>3</sup>		
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		<b>No  Federal  Standards</b>		
Sulfates	24 Hour	25 µg/m <sup>3</sup>	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence			
Vinyl Chloride <sup>10</sup>	24 Hour	0.01 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography			

See footnotes on next page ...

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.
8. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). Note that the EPA standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
9. On June 2, 2010, the U.S. EPA established a new 1-hour SO<sub>2</sub> standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. EPA also proposed a new automated Federal Reference Method (FRM) using ultraviolet technology, but will retain the older pararosaniline methods until the new FRM have adequately permeated State monitoring networks. The EPA also revoked both the existing 24-hour SO<sub>2</sub> standard of 0.14 ppm and the annual primary SO<sub>2</sub> standard of 0.030 ppm, effective August 23, 2010. The secondary SO<sub>2</sub> standard was not revised at that time; however, the secondary standard is undergoing a separate review by EPA. Note that the new standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the new primary national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
11. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

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## **Responses to Comment Letter LA-1 (Monterey Bay Area Unified Air Pollution Control District)**

**LA-1-1.** The Draft EIR mentions on p. 3.4-7 that the AQMP for the Basin was most recently updated in 2008. The Draft EIR (p. 3.4-7) has been revised to state that the District's 2007 Federal Maintenance Plan was approved by the US EPA in November 2009.

**LA-1-2.** Comment noted. Campus Standards require that a Permit to Construct be obtained from the MBUAPCD before construction or modification on any system regulated by the District begins.

**LA-1-3.** As requested by the commenter, Table 3.3-2 in the Draft EIR (pages 3.3-5-3.3-6) has been revised to include the revised NAAQS for nitrogen dioxide and lead. The revisions do not change the impact conclusions of the Draft EIR.

**LA-1-4.** As requested by the commenter, the URBEMIS 2007 runs for the project are included in the Final EIR as Appendix I.

**LA-1-5.** As requested by the commenter, the AMBAG consistency determination for the CLRDP is included in the Final EIR as Appendix J.

**LA-1-6.** Given the windy nature of the site and the fact that the De Anza Residential Community is immediately downwind, the commenter suggests that mitigation for construction-related fugitive dust should include watering three times a day or curtailing grading when winds are above 15 mph. As discussed on page 3.3-18 of the Draft MSC Projects EIR, previously adopted CLRDP General Mitigation 4.3-1, which requires a dust abatement program during construction of any project under the CLRDP, is applicable to and included in the proposed MSC Projects. Under this mitigation measure, the Campus must require construction contractors to implement a dust abatement program (the complete text of this mitigation is provided in Appendix D of the Draft MSC Projects EIR). As the commenter indicates, CLRDP General Mitigation 4.3-1 is generally consistent with the District's standard recommended best practices for mitigating construction dust. As discussed in the Draft MSC Projects EIR (pp. 3.3-17 to 3.3-18), the results of the URBEMIS2007 modeling performed for the Projects indicate that, with this mitigation, the PM<sub>10</sub> emissions from project construction would not exceed the MBUAPCD significance threshold of 82 lbs/day, and the impact would be less than significant. However, to further reduce the less-than-significant impact, the Draft EIR (p. 3.3-18) has been revised as follows:

Although the impact would not exceed the significance threshold, winds at the MSC are relatively high (the average monthly wind speed generally exceeds 15 mph from March through October)<sup>1</sup>, and the De Anza Residential Community is situated immediately downwind of the campus. To ensure that the dust control measures taken during project construction are appropriate to the wind conditions that are likely to be experienced at the site, the Campus would implement new MSC Projects Mitigation Measure AIR-1, which specifies dust control measures for windy conditions, to further reduce this less-than-significant impact. Under the new mitigation, these additional dust control measures would be added to the dust

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<sup>1</sup> Peterson, J., Levy, C.S., Cunnington, T. and Veiluva, E.A.. 2008. Installation of Wind Turbines at Long Marine Lab.

abatement programs that would be implemented for all grading projects under the CLRDP (including the MSC Projects) pursuant to CLRDP EIR General Mitigation Measure 4.3-1. The new mitigation would also require the Campus to post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints.

A new, project-level mitigation has been added to the MSC Projects Final EIR, as follows:

**MSC Projects Mitigation Measure AIR-1:** The University shall revise CLRDP General Mitigation 4.3-1 as shown below:

**CLRDP EIR Mitigation Measure 4.3-1:** The University shall require construction contractors to implement a dust abatement program to reduce the contribution of project construction to local respirable particulate matter concentrations. Elements of this program shall include the following as appropriate for each project:

- Water all active construction areas at least twice times daily, and at least three times daily during the months of February through November. Frequency shall be based on the type of operation, soil, and wind exposure.
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Pave, apply water two times daily, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and construction staging areas.
- Sweep daily with water sweepers any paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas or previously graded areas left inactive for ten days or more.
- Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- In the event that grading and excavation at two or more large project sites is proposed to occur concurrently (large sites defined as involving more than 2 acres), install wheel washers at the entrance of the construction sites.
- Phase construction projects in such a manner that minimizes the area of surface disturbance (e.g., grading, excavation) and the number of vehicle trips on unpaved surfaces.

- 
- Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402.

Comment received via email, 6/27/2011, 4:57 PM

To: [aircomment@ucsc.edu](mailto:aircomment@ucsc.edu)

From: Coastalprairie@aol.com

Hello,

This letter contains a number of questions regarding the DEIR for the proposed Marine Science Campus, NOA dated May 13, 2011.

On the wetland delineation:

Why was 50% of the wetland delineation effort expended after a time of greater than normal rainfall for the site, with the net effect of collecting irrelevant data for wetland delineation?

Was soils saturation data collected for the wetland delineation in the center of previously delineated wetlands to verify that conditions were adequate to create soil saturation at the site?

If data points were not collected at these sites, how could a member of the public be assured that conditions at the site were adequate to delineate the edge of wetlands at the site?

Was the wetland delineation conducted at the site sufficient for delineation of the boundaries of the wetlands, regardless of prior delineation procedures?

To what degree of confidence is the wetland delineation afforded for the DEIR?

On the raptor habitat:

What percentage of the potential raptor nesting habitat will be affected by the project?

What percent of available forage for raptors will be removed from the region because of the proposed project?

On drainage issues:

What are the threshold critical changes from baseline for peak discharge conditions, with regard to erosion and flow conditions in adjoining habitats?

How will the University monitor altered peak discharge conditions from the proposed project area?

How can the public be assured that adaptation triggered by threshold conditions of peak discharge impacts will be adequately funded and implemented given varying resource constraints over time?

I-1-1

I-1-2

I-1-3

On pollution issues:

How specifically confident are the analyses that BMPs for runoff will remove the pollutants generated by the project?

]  
**I-1-4**

Overall:

How many years are covered by the contingency planning for impacts from this project, with regards to funding and adaptation?

]  
**I-1-5**

I look forward to the responses,

Grey Hayes, PhD  
P.O. Box 216  
Davenport, CA 95017  
(831) 728-8050  
[coastalprairie@aol.com](mailto:coastalprairie@aol.com)

**Responses to Comment Letter I-1 (Grey Hayes)**

**RTC I-1-1.** The commenter inquired about the process and techniques used for the delineation of campus wetlands reported in the DEIR. Campus wetlands were fully delineated in conjunction with development and approval of UCSC's CLRDP and CLRDP EIR, in 2002 through 2008. Federal jurisdictional wetlands were verified by the U.S. Army Corps of Engineers (USACE) in October 2008 and the delineation of campus wetlands and Environmentally Sensitive Habitat Areas (ESHAs), determined by the Coastal Commission to be consistent with their policy and wetland delineation criteria, was included in the final CLRDP that was approved by the California Coastal Commission in December 2008. The USACE considers the federal jurisdictional wetland delineation to be valid for 5 years; that is, until October 2013.

In compliance with CLRDP IM 3.3.1 (Pre-development Evaluation of Wetland Conditions) and CLRDP IM 3.2.9 (Wetland Buffers), campus wetlands and wetland buffers were reevaluated by a wetland biologist in 2010-11 in conjunction with the preparation of the MSC Projects DEIR. The primary purpose of reevaluation was to assess whether there had been any change since 2008 in the areal extent of any of the previously-delineated wetlands that would necessitate expansion of wetland buffers and corresponding adjustment of the boundaries of the development areas that were established by the CLRDP: the reassessment was not directed toward complete redelineation of the previously-verified wetlands. As detailed in the MSC Projects EIR, the Marine Science Campus wetlands and their associated buffers have been incorporated in the Younger Lagoon Reserve (YLR). The extent of the YLR areas will not be reduced, irrespective of the results of future delineations conducted in compliance with IMs 3.3.1 and 3.2.9. As reported in the MSC Projects EIR, the mapped areas of wetland W2, W3 and W5 and their associated buffers were expanded slightly based on the results of the reassessment. The expanded buffer for wetlands W2 and W3 encroaches slightly upon Campus Development Subarea 1 (the warehouse site on the Upper Terrace that is identified in the CLRDP), such that the area available for development is reduced slightly by the wetland reassessment. These land use designation changes are reflected in CLRDP Amendment #1, which is proposed as part of the MSC Projects EIR.

The wetland reassessment was conducted in 2010-11 in response to the MSC Projects development proposal: wetland assessment work began during project definition, in summer 2010, and continued through the 2010-11 rainy season during the preparation of the MSC Projects EIR. While the greater-than-average precipitation level in 2010-11 may have resulted in higher-than-average levels of standing water in the wetlands in late winter 2010-11, this does not diminish the value of the collected data. These are both relevant to reassessment of the extent of the wetlands, and are a useful addition to the campus wetland database.

With respect to soils saturation data, the previously-verified wetland delineation was adequate to establish that the delineated soils are seasonally saturated for a sufficient duration to be characterized as wetlands. The purpose of the wetland reassessment was not to reestablish that wetlands are present, but to assess whether the current horizontal extent of the wetlands varies from the previous delineation. Sampling in the center of previously-delineated wetlands was not necessary for this purpose, nor to establish that conditions were sufficiently wet at the time of sampling that wetland conditions are identifiable (although, as the commenter noted previously, 2010-11 was an unusually wet winter, so previously identified wetlands indeed were characterized by saturated soils at the time of sampling). As detailed in the MSC Projects EIR (pp. 3.4-16), the original USACE wetland delineation was based on the three federal criteria

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for defining a wetland: the presence of wetland hydrology, hydric soils and hydrophytic plants and, consistent with California Coastal Commission input, was extended slightly more broadly to include the extent of marsh baccharis populations that are contiguous with wetlands but not necessarily associated with saturated or hydric soils. (The California Coastal Commission wetland delineation was based on the presence of a preponderance of hydrophytic vegetation **or** hydric soil conditions). The reassessment of wetland boundaries took into account both the USACE and the Coastal Commission criteria, and the previously-delineated boundaries were extended based primarily on expansion of marsh baccharis populations since the prior wetland verification in 2008. This delineation approach is conservatively protective of wetlands, in that relatively marginal wetland areas are included within the protected wetland boundaries and are used to determine the extent of wetland buffers. The use of both federal and Coastal Commission criteria for wetland definition is consistent with the CLRDP and with professional standards for wetland assessment. Wetland assessments conducted by a wetland biologist who is very familiar with the campus and who conducted the original delineations also were peer-reviewed by a wetland hydrologist.

**RTC I-1-2.** The MSC terrace grasslands provide raptor foraging habitat, but are marginal nesting habitat for raptors due to ongoing human activity that is likely to discourage nesting. As detailed in the MSC Projects EIR air quality analysis (p. 3.3-12), the proposed MSC Projects together would disturb up to 13.3 acres of lands on the campus marine terraces. This would include temporary disturbance of up to 5.5 acres in conjunction with SRP Phase 1B wetland restoration work that ultimately would improve the quality of native grassland/chaparral habitat on the Upper Terrace, and temporary use of about 1 acre for construction staging. A substantial part of the remaining 6.8 acres that would be subject to disturbance and development, is made up of an existing developed site (the CBB greenhouse parcel), the Delaware Extension roadway (about half the width of which will be removed from paving and restored with native vegetation), McAllister Road (which would be disturbed for utility installation and minor alterations), and existing cleared and heavily used pedestrian trails. These existing developed areas do not constitute raptor foraging or nesting habitat. Thus, the proposed MSC Projects would reduce grassland and chaparral on the campus, which is potential raptor foraging habitat and potential nesting habitat for some raptors, by only about 4 acres.

As analyzed in the CLRDP EIR, from which the MSC Projects EIR was tiered, the entire CLRDP development program is anticipated to result in the aggregate loss of about 15 acres of raptor foraging habitat (including ruderal, non-native grassland, and coyote brush scrub-grassland), or about 28 percent of the raptor foraging habitat on the MSC terrace lands in 2004. As assessed in the CLRDP EIR, this loss will be offset by the enhancement of native grass and shrub habitats on the campus under the CLRDP Resource Management Plan (RMP), the first phase of which is currently being implemented under Specific Resources Plan Phase 1A (approved in 2010) and would be further implemented as part of the MSC Projects, under Specific Resource Plan Phase 1B, as noted above. The Younger Lagoon terrace lands encompass all of the terrace portions of the campus that are not designated for development under the CLRDP—a total of about 47 acres. Under the CLRDP, these 47 acres were added to the previously-designated 25-acre YLR, extending the YLR to encompass a total of 72 acres. As required by the CLRDP Resource Management Plan (RMP), SRP Phases 1 and 2 together will enhance the native habitat on about

one-third of the area of the Younger Lagoon Reserve terrace lands, or about 16 acres. The remaining two-thirds of the YLR terrace lands will be subject to similar enhancements under subsequent phases of the SRP. The CLRDP EIR concluded that the loss of raptor foraging and nesting habitat through full development of the CLRDP program would be less than significant because the CLRDP includes this compensatory habitat improvement (CLRDP EIR p.4.4-64). The MSC Projects would remove about 7 to 8 percent of the potential raptor foraging habitat on the campus terrace lands. This amount of habitat loss is well within the total area of habitat loss identified in the CLRDP EIR, and therefore would not be a significant impact. In the absence of data on total acreage of raptor foraging habitat in the region, it is impossible to calculate the percentage of regional habitat loss attributable to the MSC Projects, but given the very substantial extent of grassland, ruderal areas and chaparral in the region, the project's contribution to this impact is very small.

The MSC Projects include MSC Projects Mitigation Measure BIO-7, to ensure that impacts to nesting raptors and other native and migratory bird are avoided and MSC Projects Mitigation Measure BIO-4, specifically to avoid disturbance of burrows occupied by burrowing owls.

**RTC I-1-3:** The comment is unclear, but the University is interpreting the comment as in reference to MSC Projects Mitigation HYD-2, which requires the Campus to monitor water levels in wetlands W4 and W5 and to take action if the measured water levels fall below certain thresholds (described below). This mitigation measure would ensure that any effects of changes in peak flow conditions on water levels in the wetlands would be addressed. As discussed on pp. 3.9-28 to 3.9-29 of the Draft MSC EIR, summarized in Table 3.9-1, and documented in Appendix F, development of the proposed MSC Projects would not result in an increase of the peak rate of runoff to any of the discharge points on the MSC. The University would not monitor peak discharge rates directly but would monitor the impacts of changes in runoff patterns on potentially affected habitat by monitoring water levels in wetlands W4 and W5 as specified in MSC Projects Mitigation HYD-2 (Draft EIR, p. 3.9-23). If the measured water levels fall below the lower 95-percent confidence limit of the water level-Antecedent Precipitation Index curve for two consecutive weeks during any monitored wet season, the Campus would take actions as necessary to return the wetland water levels to pre-project conditions. The monitoring, and the actions that would be triggered by changes in water levels in wetlands W4 or W5, pursuant to this mitigation measure, are legal commitments of the University, and would be monitored under the Mitigation Monitoring Programs (MMPs) for the proposed Projects (FEIR Chapter 9). The Campus has also committed to implement the storm water components of the CLRDP as part of the UC Santa Cruz Storm Water Management Plan, which was prepared to comply with the federal Environmental Protection Agency Phase II Storm Water regulations, and was approved by the California Regional Water Quality Control Board, Central Coast Region, in April 2009. The actions taken by the Campus to implement the mitigation would be documented in the Campus' CLRDP Annual Mitigation Monitoring Report, which is posted on the Campus website. Pursuant to Section 8.8 of the CLRDP, the Annual Mitigation Monitoring Report is included in the annual written CLRDP monitoring report that the Campus submits each year to the Executive Director of the Coastal Commission.

**RTC I-1-4:** The water quality treatment design criteria for the proposed Projects are based on the guidelines set forth in the *California Stormwater Best Management Practices Handbook for New*

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*Development and Redevelopment*, published by the California Stormwater Quality Association (2003), and the *San Francisco Stormwater Design Guidelines*, developed by the San Francisco Public Utilities Commission (2010). The criteria presented in these documents are based on a wide range of studies of the effectiveness of various types of BMPs in removing a variety of pollutants. The number of studies varies by BMP and by pollutant, and the results for any particular BMP may vary from study to study. Treatment efficiency at a specific site is also affected by the quality of the design, construction, and maintenance as well as site conditions such as climate and soil type. For some BMPs, such as bioretention, the treatment efficiency is well documented, while data for newer BMPs, such as green roofs, is relatively sparse.

As discussed in the CLRDP Drainage Concept Plan (p. 31), there is a limited amount of data regarding the performance of stormwater BMPs in California. Therefore, the Drainage Concept Plan includes an extensive monitoring program that will apply to each treatment train on the MSC as it is developed. The program includes three years of intensive monitoring to provide data on BMP performance under California's climatic conditions, followed by relatively less intensive, long-term monitoring to assess compliance with the water quality standards set forth in the plan. As described in the Draft EIR (pp. 3.9-22 to 3.9-23), under the monitoring program, the results of the testing be compared to specific water quality performance standards listed in the Drainage Concept Plan. Where any of the performance standards are not met, the Campus would identify a means to achieve the required standard and would implement all necessary changes prior to the next storm season.

**RTC I-1-5.** For potential impacts from the MSC Projects related to project construction (for example, the majority of the identified biological resources impacts), applicable mitigation would be carried out and monitored throughout construction and would be considered complete at the conclusion of construction. Monitoring related to stormwater flows and water quality will be conducted as part of the ongoing implementation and compliance monitoring under the CLRDP Mitigation Monitoring and Reporting Program, and under UCSC's Stormwater Management Plan (see <http://cleanwater.ucsc.edu/swmp/index.html>). For parking issues, the MSC EIR commits to ongoing monitoring as part of its campus traffic data collection program and sets action thresholds for required adaptive response. Monitoring and adaptation requirement related to wetland and habitat response to wetland restoration efforts are set forth in the CLRDP RMP and the Specific Resource Plan, Phase 1, which implements the RMP, and are monitored under the CLRDP Mitigation Monitoring Program. Construction-related mitigation measures are funded as an element of each of the MSC Projects. Ongoing monitoring, where required, is funded through administrative programs as part of the normal operations of Campus Transportation and Parking Services, Physical Planning and Construction, and the Campus Natural Reserve System. Details on mitigation implementation and reporting are provided in the CLRDP Mitigation Monitoring Reporting Program (included in the CLRDP Final EIR, Chapter 5) and in the MSC Projects Mitigation Monitoring and Reporting Program, MSC Projects Final EIR, Chapter 9.

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## Comments on MSC DEIR of May 2011

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It is impossible to review in detail all 1,017 pages of the DEIR, but here are a few comments which deserve consideration.

### Biological Resources

Much time and effort will be devoted to mitigating the impact on biological resources. There is an overall Biological Mitigation Coordinator identified in BIO-15, but there are many requirements to implement and monitor these mitigations.

#### Question

How will these mitigations be monitored to ensure compliance, (e.g., BIO-3E, inspect the area around and under construction vehicles each morning prior to movement).

**Editorial Comment.** As you no doubt know, the page numbers and many paragraph numbers are incorrectly labeled as 3.5 instead of 3.4

I-2-1

## Impact LU-2

*The CBB and MSC Projects would be inconsistent with CLRDP IM 5.3.7, which requires that all parking demand shall be satisfied on Campus, in support of the Coastal Act provisions that seek to protect public coastal access.*

**MSC Mitigation Measure LU-2A:** Amend CLRDP IM 5.3.7 as follows: "~~All parking demand for employees, students and visitors shall be satisfied on Campus and n~~New development shall include adequate and enforceable measures to ensure that all parking demand is satisfied on campus associated with CLRDP development **does not impact public parking or coastal access on streets adjacent to the MSC, including Delaware Avenue.**

Wow. If you don't like the rules of the game, don't change your play, change the rules.

The justification for this incredible choice is based on the fact that all parking on Delaware is for coastal access. However, many functions are held at the De Anza Club House which also uses Delaware Avenue for parking.

The CLRDP calls for a total of 795 parking spaces on campus (245 existing and 550 new spaces). Surely some of those new spaces could handle the requirements and obviate the need for Mitigation LU-2.

**Question:** Instead of changing Implementation Measure 5.3.7 of the 2008 CLRDP, why not follow Implementation Measure 5.4.2 from the same CLRDP:

*Implementation Measure 5.4.2 – Development of New Parking.* New parking will be developed as demand warrants. No new parking spaces will be developed until existing parking spaces in a given parking activity zone are 90 percent utilized (on average).

I-2-2

## Impact AIR-1

*Construction activities under the proposed MSC Projects would result in emissions of PM10 on a short-term basis.*

**General Mitigation Measure 4.3-1** (Various measures to control dust, etc.)

An analysis was done assuming all the mitigation measures were followed. However, the models used for the prediction of dust impact on De Anza are very sensitive to assumptions about the wind, and it is well known that the prevailing winds on the site are very strong.

**Question**

What wind values were assumed to predict the impact of PM10 emissions?

I-2-3

**Question**

What monitoring will be done during construction to ensure the limit of 82/lb/day of PM10 (dust) is not exceeded?

**Question**

What is the telephone number and/or who is the point of contact for the public to report excessive dust?

I-2-3  
(cont.)**Impact TRA-1B**

*The CBB Project would increase campus student and employee population. The NEF Project visitor parking lot also will accommodate additional visitor population. If persons accessing the campus elect to use single-occupant vehicles, the project could impede achievement of the CLRDP Policy 5.2 goal for minimization of motor vehicle trips and parking, which would be inconsistent with regional and CLRDP planning, and could increase traffic congestions and conflict with regional TDM programs and achievement of TDM goals.*

**MSC Projects Mitigation Measure TRA-1B:** UC Santa Cruz will conduct a baseline survey of parking utilization on both sides of the segment of Delaware Avenue between Natural Bridges Dr. and the campus entrance in fall 2011 and then will monitor Delaware Ave. parking utilization in this area twice annually (fall and spring) during times and days when MSC classes are scheduled. If parking utilization exceeds 80 percent and there is evidence of increasing utilization from year to year, or if there is qualitative evidence of unmet public coastal access parking demand, such as public complaints, increased circulation by drivers seeking parking, or parking shortages in the 2300 Delaware Ave. lots independent of increased population at that facility, implement TRA-1C.

Sampling the parking on Delaware Avenue only two times a year is inadequate to capture the true picture of parking demand there. Summer time has more demand for coastal access, and will likely have more researchers and visiting scientists driving to MSC.

**Question**

How can you capture the seasonal demand patterns by sampling parking only in the spring and fall?

**Question**

How does the public register their complaints about unmet coastal access parking demand?

I-2-4

## Impact TRA-4

*The MSC Projects would alter the roadway at the MSC entrance, and would introduce new parking lot intersections with campus roadways and new pedestrian crossings of campus roadways, but these would be designed consistent with roadway safety standards and CLRDP guidelines to ensure that the project does not result in any increase in hazards related to design features.*

**MSC Projects Mitigation TRA-4A:** Parking lot entrances to campus roads will be stop sign-controlled to minimize potential motor vehicle, pedestrian and bicycle traffic conflicts.

Stop-sign control at parking entrances may be adequate, but stop-sign control at the MSC entrance is totally inadequate today. At least 50% of the traffic leaving the campus does not come to a complete stop, or they disregard the stop sign altogether.

### Question

Why not install a speed bump or other traffic calming device at the exit of the MSC campus to enforce the stop sign-controlled intersection?

I-2-5

## Impact TRA-5F

*Simultaneous construction activity for MSC Projects or project elements could conflict with traffic flow into and out of the MSC; impede daily access to the site by employee, student and visitor vehicle, bike and pedestrian traffic; conflict with traffic associated with school programs and other special events; and impede emergency access and egress.*

**MSC Projects Mitigation Measure TRA-5F:** The University will post flyers and/or signs at the MSC entrance and major campus facilities and provide the same for the Homeless Garden Project and the De Anza facility, with a University phone number or other means for the public to submit questions or complaints regarding construction traffic or traffic incidents, and will respond promptly to inquiries.

This is a great idea, and a prompt response to inquiries is very welcome.

### Question

Will the University respond to complaints as well as inquiries?

### Question

Will the University solve the problem that generates a complaint?

I-2-6

## Impact NOIS-1

*Construction of the proposed MSC Projects could expose nearby sensitive receptors to excessive airborne noise but not to excessive groundborne vibration or groundborne noise.*

**General Mitigation Measure 4.11-4** (various noise mitigation measures)

*Traffic Noise.* The Previous Analysis (page 3.11-12) states that vehicle noise would could create a potentially significant impact on residences along Swift Street. This is eliminated if construction traffic uses Natural Bridges Drive instead of Swift Street.

I-2-7

### Question

Does this vehicle noise create a significant impact for the De Anza residences along Delaware Avenue since all traffic passes by these residences?

### Question

What is the telephone number and/or who is the point of contact for the public to report excessive traffic noise due to construction vehicles?

*Construction Noise.* The Previous Analysis states that routine noise levels from conventional construction at a distance of 150 feet are 79 dBA. This is a convenient result since the noise level criterion which would create a significance impact is 80 dBA. For the current analysis, models predict the maximum noise level for De Anza residents to be 75.6 dBA. (This number is a classic case of high precision and low accuracy since the model results are probably accurate to 10%, but the result is displayed to a precision of 1 %.)

I-2-8

### Question

What is the telephone number and/or who is the point of contact for the public to report excessive construction noise?

\* \* \* \*

Respectfully Submitted,



Renwick E. Curry, PhD

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## Response to Comment Letter I-2 (Ren Curry)

**RTC I-2-1.** For CLRDP EIR-identified mitigation measures that are incorporated in the MSC projects, the CLRDP Mitigation Monitoring and Reporting Program (CLRDP Final EIR, Chapter 5) details how each measure will be implemented, reporting requirements, and the parties responsible for implementing and reporting on each mitigation measure. The Final MSC Projects EIR includes a Mitigation Monitoring Program (Chapter 9), which provides implementing and reporting procedures for each MSC Projects mitigation measure. For instance, for the example cited by the commenter, the PP&C Project Manager would be responsible for ensuring that a biological monitor is scoped and budgeted to be present prior to the start of construction each day; the construction contracts would include specifications requiring that the construction contractor coordinate with the biological monitor to ensure that inspections are carried out before equipment is moved; and the biological monitor would complete daily monitoring logs. Results of mitigation monitoring for the CLRDP, LRDP, and each project implemented under these programs, are reported annually by the campus and published on the UC Santa Cruz Physical Planning and Construction (PP&C) web site (<http://www1.ucsc.edu/lrdp/mitigation-monitoring.shtml>).

**RTC I-2-2.** The requirement of CLRDP IM 5.3.7 that campus-related parking be accommodated on campus was designed to ensure that MSC-generated parking utilization does not impede public parking along City streets near the coast (such as Delaware Avenue in the vicinity of Natural Bridge State Beach) by members of the public wishing to access the coast. Under the proposed CLRDP amendment set forth in MSC Mitigation Measure LU-2A, excess parking demand that might be generated at times of heavy scheduling at the MSC could be accommodated on City of Santa Cruz streets. Mitigation Measure LU-2A is consistent with the objective of CLRDP IM 5.3.7, in that campus parking demand could be accommodated on city streets only if adequate parking space on the street can be maintained for members of the public wishing to access the coast. MSC Projects Mitigation Measure TRA-1B would ensure that street parking utilization on Delaware Avenue and Shaffer Road near the MSC is monitored. If street parking exceeds 70 percent utilization, MSC Projects Mitigation Measure TRA-1C would be implemented to reduce the Campus' contribution to street parking demand, to ensure that campus-related parking does not displace coastal access parking on Delaware Avenue.

Parking demand at the campus varies seasonally, and with the scheduling of classes and laboratory sessions conducted at the campus. When classes are less heavily scheduled or fewer students are present (such as in the evenings, summer sessions and school breaks) on-campus parking may be unutilized or substantially underutilized. While, as the commenter notes, the CLRDP allows for the development of up to 550 new parking spaces on the campus, it would not be desirable to develop parking lots on the campus that would not be well-utilized. The intention of the proposed mitigation measures is to accommodate parking demand variability without excess parking development on campus. Campus monitoring currently indicates that about 75 percent of existing on-campus parking is utilized on an average day. As the commenter notes, CLRDP IM 5.4.2 requires that new parking will be developed as demand warrants, and that no new parking will be developed until parking utilization in a campus zone reaches 90 percent. On this basis, existing parking is more than adequate to accommodate existing demand. In anticipation of parking demand from the MSC Projects, the proposed MSC Projects would include development of three new parking lots that would provide a total of 130 new parking spaces on the MSC, including 20 spaces to be designated solely for public coastal access visitor use. As analyzed in the MSC Projects EIR (pp.

3.15-12 and -13 and 3.15-6 through -29), the CBB project (the only one of the MSC Projects that would generate parking demand by campus affiliates) would be expected to generate demand for about 106 parking spaces. On this basis, the existing parking, together with the parking that would be provided by the MSC Projects, would be adequate to accommodate campus affiliate parking demand. However, the CLRDP also requires that about 48 informal parking spaces on the campus be removed, and that parking controls be implemented at the Seymour Center to increase the number of spaces designated solely for public coastal access and visitor use. The implementation of these requirements will ensure that adequate parking is available on campus to accommodate public coastal access visitors, but also will diminish the number of parking spaces available to campus affiliates. The effects of these actions on travel mode choices and on the distribution of existing and future parking demand by campus-affiliates are uncertain. The CLRDP land use plan includes space for and provides for the development of several hundred new parking spaces within designated development areas, over the course of CLRDP development. Because the land use plan also strictly limits the amount of building space within each development sub area, sufficient space will be preserved to develop parking as needed. However, the Campus seeks to avoid development of new campus parking until it has been demonstrated that such parking is necessary.

The commenter notes that persons attending functions at the De Anza Club House may wish to use Delaware Avenue for parking for special functions. It is assumed that any such parking would be subject to the same Coastal Commission public access considerations as are expressed through CLRDP implementation measures: that is, that the primary consideration is to ensure that there is adequate parking in this area for public coastal access, irrespective of potential use for other purposes. Also, see **RTC I-2-4**.

**RTC I-2-3.** The URBEMIS2007 which was used to estimate PM<sub>10</sub> emissions for the proposed Projects does not take site-specific wind or soil conditions into account, but uses emission factors for fugitive dust that were developed through a study that was commissioned by the South Coast Air Quality Management District. These emission factors are based on observations of construction operations at several sites in California and Las Vegas and therefore reflect a range of climatic conditions, as well as other variations in site conditions such as soil particle size and soil moisture. As discussed in Response to Comment LA-1-6, a new project mitigation measure has been added in the Final EIR to ensure that the dust control measures taken during project construction are appropriate to the wind conditions that are likely to be experienced at the site. This project mitigation would further reduce the less-than-significant impact of construction PM<sub>10</sub> emissions. Please refer to RTC LA1-6 for the text of this mitigation measure.

The limit of 82 lbs/day of PM<sub>10</sub> is a threshold that has been developed by the MBUAPCD to determine the significance of an impact for CEQA purposes. It is not a regulatory limit that must be met at any particular point in time, and it is not a concentration that can be measured directly. The Campus would monitor the implementation of the dust abatement program as part of the Mitigation Monitoring Program (FEIR Chapter 9). The telephone number and point of contact for the public to report excessive dust would be posted at the site during construction.

**RTC I-2-4.** The commenter questions whether the parking utilization monitoring program described in MSC Mitigation Measure TRA-1B would be adequate to characterize fluctuating seasonal parking utilization on Delaware Avenue. TRA-1B proposes that parking utilization on Delaware be monitored in

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spring and fall, during MSC class hours. These seasons and times for monitoring were selected by the Campus because campus-related parking demand is highest at these times. Public coastal access visitor parking demand may be higher in summer and also likely is higher on weekends, after work hours on weekdays, and possibly during the Monarch butterfly migration in the late fall. These are times when parking demand from MSC affiliates, particularly students, tends to be lower than average, since most employees are present and most classes are held during weekday working hours, and not on the weekends. With only very limited academic or research-related use of MSC parking on the weekends, there is ample parking available on the campus for visitors to the Seymour Discovery Center, such that use of the campus typically would not generate any demand for street parking on the weekends.

As intended by the mitigation measure, to ensure that the public has a means of registering complaints should there be evidence that MSC-related parking is impeding local parking for public coastal access, a mechanism for registering parking complaints is described in the CBB Project Mitigation Monitoring Program (Table 9-1, Chapter 9 of the MSC Projects Final EIR), under Mitigation Measure TRA-1B. The Campus will include a public contact phone number on campus entrance signage and on the TAPS and the Seymour Discovery Center websites and will monitor and respond to any complaints regarding excessive campus parking as specified in Mitigation Measure TRA-1B. Also, see **RTC I2-2**.

**RTC I-2-5.** The MSC Project design includes improvements to the configuration of the campus entrance to provide a more visually-prominent entrance. Because the entrance design will comply with all relevant road safety standards, including CLRDP roadway design standards, the EIR concludes that the proposed roadway improvements will not result in new safety hazards. The wider entry roadway and more visible signage would be expected to improve compliance with traffic controls as well. In response to the commenter's suggestion, Mitigation Measure TRA-4B has been modified as follows:

**“MSC Projects Mitigation Measure TRA-4B:** A stop sign will be installed on the new Delaware Avenue Extension at the campus exit (eastbound), and other traffic-calming measures will be included in the entrance design if warranted based on design assessment. ~~and~~ The University also will coordinate with the City of Santa Cruz regarding recommended installation of stop signs at the campus entrance intersection on Shaffer Road (southbound), Delaware Avenue (westbound) and the exit from the De Anza residential community.”

**RTC I-2-6.** The intent of MSC Projects Mitigation Measure TRA-5F is to ensure that both inquiries and complaints related to construction traffic are addressed promptly. The University will work with the Project Manager, construction contractors and complainants, as appropriate, to identify and implement solutions for any ongoing problems that might arise in relation to construction traffic from the MSC Projects. Mitigation Measure TRA-5F has been revised for clarification as follows:

**“MSC Projects Mitigation Measure TRA-5F:** The University will post flyers and/or signs at the MSC entrance and major campus facilities and provide the same for the Homeless Garden Project and the De Anza facility, with a University phone number of other means for the public to submit question or complaints regarding construction traffic or traffic incidents, and will respond promptly to inquiries and complaints and, if warranted after investigation, take specific actions to resolve the complaint.”

**RTC I-2-7:** Roadway noise impacts are typically evaluated in terms of a Community Noise Equivalent Level (CNEL), which is measured over a 24-hour day. In general, it takes a doubling of roadway traffic to result in an increase of 3.0 dB(A), which is the minimum perceptible increase in noise. This is because an increase of 3.0 dB(A) is equivalent to a doubling of the sound energy. The CLRDP EIR (Figure 4.15-3a, Box 1) shows existing peak hour (AM plus PM) traffic volumes of 1,250 vehicles for Delaware Avenue near Shaffer Road. Peak hour volumes typically represent 10 to 12 percent of daily volumes. Assuming the peak-hour volumes represent 10 percent of the daily trips, there are about 1,250 daily trips passing by the entrance to the De Anza Residential Community. Construction trips would be much less than this amount. Construction trips may include haul trucks. As discussed in the Draft EIR (p. 2-42), the largest number of daily construction vehicle trips would occur when construction of the CBB lab building has begun and construction of the MSCI and NEF Projects is still in progress. During this period, there would be about 50 to 100 worker commute trips and about 20 vendor trips daily. At other times during construction, the number of trips would range from about 25 to about 50. Therefore, even though the number of trips by large trucks would increase during construction, the total number of daily trips would increase by only about 10 percent. Therefore, the increase in noise would be less than 3.0 dB(A) CNEL and the noise impacts due to construction traffic would not be significant.

**RTC I-2-8:** The telephone number and point of contact for the public to report excessive construction noise would be posted at the site during construction.

## CHANGES TO THE DRAFT EIR TEXT

Table 8-2, below, tabulates changes made to the text and figures of the Draft EIR, for clarification, in response to comments, or in some cases to make minor corrections. Underlining indicates additions to the Draft EIR text; strikethroughs (~~strikethrough~~) indicate deletions.

**Table 8-2. Changes to the Draft EIR Text**

Chapter	DEIR	DEIR Pg.#	Correct Page #	FEIR Correction or Update
Throughout document	--	through out	--	Changed Draft EIR to Final EIR in footer--did not mark change
Introduction	Refers to DEIR pre-publication	through out Intro	pp. 1, 5, 6, 9	Replaces sections of DEIR text with description of review period, approval process for Final EIR. Adds reference to new chapters 8 (Comments, Responses and Changes to the DEIR) and 9 (Mitigation Monitoring Program). Explains how corrections and deletions to the Draft EIR are indicated in the Final EIR.
Introduction	MSCI Project was described as separate project. This project subsequently subsumed in CBB Project. Corrected text explains this.	1	1	See Exec Summary, p 1-1 below
Introduction	Changed to reflect reorganization of project approval	2	2	The University anticipates that all <del>four projects of the</del> <u>MSC Projects</u> would be approved concurrently.
Introduction	Facility sf	3	4	Corrected gsf footage for proposed greenhouse complex from 8,900 gsf to 7,500 gsf
Introduction	Appendix list	9	same	Added appendices I and J to appendix list; these were added to document in response to comment from MBUAPCD.
1.0 Executive Summary	MSCI Project was described as separate project. This project subsequently subsumed in CBB Project. Corrected text explains this.	1-1	1-1, 1-2	<u>Subsequent to publication of the DEIR, the University determined that it would be appropriate to consider the CBB Project and the MSCI Project as a single project for design and budget approvals. To this end, “the MSCI Project” as described in this EIR has been subsumed into the CBB Project, which thus now includes the elements described in this EIR as the MSCI Project. Similarly, the Campus-funded parking elements described in this EIR as part of the CBB Project have been identified as a separate project for design and budget approval purposes, “the MSC Parking Phase 1 Project”; while the Campus-funded Environmental Health and Safety (EH&amp;S) storage facility that is described in this EIR as part of the MSCI Project has been identified as a separate project for design and approval purposes, “the EH&amp;S Facility Project”. These organizational changes do not alter the scope of the</u>

**Table 8-2. Changes to the Draft EIR Text**

Chapter	DEIR	DEIR Pg.#	Correct Page #	FEIR Correction or Update
				<p><u>MSC Projects, nor of any aspect of the environmental analysis of the MSC Projects as presented in the Draft EIR, nor do they result in any changes in conclusions regarding environmental effects. The Mitigation Monitoring and Reporting Program presented in Chapter 9 of this FEIR applies to all of the projects, and each of the mitigation measures identified throughout Chapter 3 of this document would be implemented for each elements of the MSC Projects that contributes to the identified impact. Thus, as described in the CEQA Findings, “the MSC Projects” now consist of the following:</u></p> <ul style="list-style-type: none"> <li>• <u>The CBB Project, including the CBB research and laboratory building, the greenhouse complex, and the infrastructure elements previously described as the MSC Project, but not including parking lots C and D (previously included in the CBB Project) and not including the EH&amp;S Facility (previously included in the MSC Project).</u></li> <li>• <u>The MSC Parking Phase 1 Project: Parking Lots C and D, previously included in the CBB project as described in Chapter 2 of this EIR.</u></li> <li>• <u>The MSC EH&amp;S Facility, previously included in the former MSC Project as described in this EIR</u></li> <li>• <u>The NEF Project, as described in Chapter 2 (unchanged)</u></li> <li>• <u>SRP Phase 1B, as described in Chapter 2 (unchanged).</u></li> </ul> <p><u>The remaining chapters of the text of the FEIR have not been altered to reflect these organizational changes in the project description. However, the reader should be cognizant of this reorganization; in particular, that subsequent references to the MSC Project should be understood to refer to the CBB Project, within which the former MSC Project has now been subsumed.</u></p>
1.0 Executive Summary	Introductory text summarizing project elements	1-1	1-2	<p><u>Add to summary of proposed actions: "Finally, this Final EIR proposes a revision of previously-adopted CLRDP EIR Mitigation Measure 4.3-1, which is included in the proposed MSC Projects and would be applicable to future construction projects under the CLRDP. The proposed revision would add a measure, to further control dust under windy conditions, to the list of construction dust control measures previously adopted in the CLRDP mitigation measure, to further reduce the less-than-significant impact of the MSC Projects with respect to fugitive construction dust. The revision also would add a mechanism under which any dust complaints can be registered. This revision would not alter the analysis or conclusions presented in the Draft EIR."</u></p>

**Table 8-2. Changes to the Draft EIR Text**

<b>Chapter</b>	<b>DEIR</b>	<b>DEIR Pg.#</b>	<b>Correct Page #</b>	<b>FEIR Correction or Update</b>
1.0 Executive Summary	MSCI Project objectives separate from CBB project	1-2	1-3	The objectives of the proposed CBB Project ( <u>including former MSCI Project, MSC Parking Phase 1 and MSC EH&amp;S Facility</u> ) are to:
1.0 Executive Summary	Table 1 does not identify projects that contribute to each impact	1-8	same	Reformatted Table 1 with new column identifying projects contributing to each impact
1.0 Executive Summary	Addition in the FEIR	1-1	same	Added a new mitigation measure to projects, as described in the following text: <u>Finally, this Final EIR proposes a revision of previously-adopted CLRDP EIR Mitigation Measure 4.3-1, which is included in the proposed MSC Projects and would be applicable to future construction projects under the CLRDP. The proposed revision would add a measure to further control dust under windy conditions to the list of construction dust control measures previously adopted in the CLRDP mitigation measure, to further reduce the less-than-significant impact of the MSC Projects with respect to fugitive construction dust. The revision also would add a mechanism under which any dust complaints can be registered with the campus so that any issues will be addressed promptly. This revision would not alter the analysis or conclusions presented in the Draft EIR.</u>
1.0 Executive Summary	Clarification on “Contributing Projects” in identifying applicable mitigation measures	1-7	1-8	Added footnote 1 to table to reflect project approval reorganization: <u><sup>1</sup>“CBB Project” as identified in this table subsumes former MSCI Project, MSC Parking Phase 1 Project and MSC EH&amp;S Project, with respect to applicability of mitigation measures.</u>
1.0 Executive Summary	Table 1, MM BIO-1 missing text at beginning	1-10	same	<b>Inserted the following text:</b> A qualified botanist will conduct up to three focused surveys for target...
1.0 Executive Summary	Table 1, MM BIO-6 reference MM BIO-3A but does not indicate that WPT also should be addressed.	1-16	same	<b>Replace first sentence of text of MM BIO-6 with:</b> The construction crew training described in MSC Projects Mitigation BIO-3A, above, also shall include information on avoidance and protection of western pond turtles and their nests. In addition, <del>subject to the specifications set forth in MSC Project Mitigation BIO-3A, above,</del> prior
1.0 Executive Summary	Table 1, MM BIO-9B was omitted.	1-19	same	<b>Insert: MSC Projects Mitigation BIO-9B:</b> In addition, in the vicinity of each relocated house, preferably within the relocated animal’s home range, SFDW habitat will be enhanced, in consultation with a biologist with SFDW experience, by placement of an anchor log and, if sufficient suitable material is not readily available, additional woody debris suitable for creation of

**Table 8-2. Changes to the Draft EIR Text**

Chapter	DEIR	DEIR Pg.#	Correct Page #	FEIR Correction or Update
				additional nests, to ensure that there are sufficient suitable nest sites for SFDW already present as well as any that are relocated.
1.0 Executive Summary	Table 1: Impact BIO-16 was omitted	1-22	same	Insert: <b>MSC Projects Impact BIO-16:</b> Insert: Cumulative development in the west side of Santa Cruz and at the MSC could affect biological resources, but these effects would be minimized through compliance the City's General Plan and Local Coastal Program and with the CLRDP.
1.0 Exec Summary	Table 1: CULT-2 impact text lacks formal archaeo. site number	1-23	same	Site reference number P-44-000700 added to impact text
1.0 Exec Summary	Table 1: In accurate numbering of mitigation measures for Impact CULT-2	1-23	same	Changed MM CULT-2 to CULT-2A. Changed MM CULT-1B to CULT-2B
1.0 Exec Summary	Table 1: MM HYD-2 does not reference NEF Project	1-27	same	Amend MM HYD 2 as follows: <b>MSC Projects Mitigation HYD-2:</b> The Campus shall monitor water levels in the root zones in wetlands W4 and W5 on a weekly basis for at least one full wet season (Oct. 1-May 15) before development of the CBB, <del>and</del> MSCI <u>and</u> NEF Projects begins, and use the data to relate water levels at the monitoring points to an Antecedent Precipitation Index (API). After construction of the proposed CBB <del>and</del> MSCI <u>and</u> NEF Projects has been completed, the Campus shall continue the monitoring weekly for two winters. If the measured water levels at the monitoring points fall below the lower 95-percent confidence limit of the water level-API curve for 2 consecutive weeks during any monitored wet season, the Campus shall take actions as necessary to return the wetland water levels to pre-project conditions. Examples of the types of actions the Campus could undertake are modifying the outlet of Detention Basin 1 or the outlet to the wetland W4 buffer from Parking Lot D to increase the flow to wetland W4.
1.0 Executive Summary	Table 1: Heading for Section 3.15 is incorrect		same	Change heading to read: "Transportation and Traffic"
1.0 Executive Summary	Public comments on document	1-6	same	Revised final paragraph of chapter as follows: "More comprehensive and detailed listings of issues raised during scoping are provided in relevant sections, below. Comment letters received and a transcript of comments provided orally during scoping are available for review at the offices of UC Santa Cruz Physical Planning and Construction. <u>Comment letters on the Draft EIR that</u>

**Table 8-2. Changes to the Draft EIR Text**

Chapter	DEIR	DEIR Pg.#	Correct Page #	FEIR Correction or Update
				were received during the public comment period are included in Chapter 8 of this Final EIR. No oral or written comments were received at the public hearing for the Draft EIR."
2.0 Project Description	Table 2-1, facility space numbers inaccurate: CBB Lab listed as 40,650 gsf, 26,800 asf; CBB greenhouse facility listed as 8,900 gsf. Total CBB project listed as 48,900 gsf, 33,200 asf	2-3	same	Facility square footage corrected as follows: CBB lab facility: 40,000 gsf, 26,900 asf; CBB greenhouse facility: 7,500 gsf, 6,400 asf; total CBB lab and greenhouses: 47,500 gsf, 33,300 asf. Note added to table that numbers are approximate based on final schematic design, but the CBB lab facility will not exceed 40,000. In addition, a small detached ancillary shower and storage facility (about 600 gsf) is proposed adjacent to CBB lab. Square footage numbers for CBB corrected consistently throughout EIR.
2.0 Project Description	Utility Yard area sf reported incorrectly	2-25	2-25	The proposed Utility Yard would be a graded, graveled area of about <del>3,300</del> 11,400 sf. These numbers corrected throughout other chapters as well.
2.0 Project Description	Table 2-3 lacks title, needs increased clarification	2-45	2-45, -46	Added title to table:" Table 2-4. Applicability of Proposed Amendment #1 Actions to Proposed MSC Projects"; added two columns to table: "Required as Condition of CLRDP" and "Needed for Ongoing Land Management" and revised check boxes accordingly. Revision does not change intent of amendment items.
3.0 Env. Setting, Impacts and Mitigation	Text describes Draft EIR	3-1	same	Text added to indicate that Draft EIR has been edited and is now Final EIR
3.1 Aesthetics	Two impacts numbered AES-4	3.2-17	same	Corrected impact number from AES-4 to AES-5
3.1 Aesthetics	--	entire section	--	Changed Draft EIR to Final EIR in footer--did not mark change
3.3 Air Quality	new air quality standards missing from Table 3.3-2 (MBUAPCD letter)	3.3-6	3.3-5	Table 3.3-2, added new federal lead and NOx standards per MBUAPCD comment letter, and changed URL for source to current one
3.3 Air Quality	formatting errors	3.3-4 to -6	3.3-5 to -7	Formatting changes moved tables 3.3-2 and 3.3-3 down one page in chapter
3.3 Air Quality	MBUAPCD letter requested mention of 2007 Federal Maintenance Plan	3.3-7	same	Added the following text in response to MBUAPCD comment: "The MBUAPCD prepared a 2007 Federal Maintenance Plan, which was approved by the U.S. EPA in November 2009".
3.3 Air Quality	MBUAPCD recommended addtl. dust control measures	3.3-16	3.3-16 to 18	Added new mitigation measure for LTS fugitive dust impact: <b>MSC Projects Mitigation Measure AIR-1: MSC Projects Mitigation Measure AIR-1:</b> The University shall revise CLRDP General Mitigation 4.3-1 as shown below:

**Table 8-2. Changes to the Draft EIR Text**

Chapter	DEIR	DEIR Pg.#	Correct Page #	FEIR Correction or Update
				<p><b>CLDRP EIR Mitigation Measure 4.3-1:</b> The University shall require construction contractors to implement a dust abatement program to reduce the contribution of project construction to local respirable particulate matter concentrations. Elements of this program shall include the following as appropriate for each project:</p> <ul style="list-style-type: none"> <li>• <u>Water all active construction areas at least twice times daily and at least three times daily during the months of February through November. Frequency shall be based on the type of operation, soil, and wind exposure.</u></li> <li>• <u>Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).</u></li> <li>• <u>Pave, apply water two times daily, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and construction staging areas.</u></li> <li>• <u>Sweep daily with water sweepers any paved access roads, parking areas, and staging areas at construction sites.</u></li> <li>• <u>Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.</u></li> <li>• <u>Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas or previously graded areas left inactive for ten days or more.</u></li> <li>• <u>Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).</u></li> <li>• <u>Limit traffic speeds on unpaved roads to 15 miles per hour.</u></li> <li>• <u>Install sandbags or other erosion control measures to prevent silt runoff to public roadways.</u></li> <li>• <u>Replant vegetation in disturbed areas as quickly as possible.</u></li> <li>• <u>In the event that grading and excavation at two or more large project sites is proposed to occur concurrently (large sites defined as involving more than 2 acres), install wheel washers at the entrance of the construction sites.</u></li> <li>• <u>Phase construction projects in such a manner that minimizes the area of surface disturbance (e.g., grading, excavation) and the number of vehicle trips on unpaved surfaces.</u></li> <li>• <u>Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402.</u></li> </ul>
3.3 Air Quality	Explanatory text for addition of MSC project-level MM AIR-1	3.3-18	same	<p>However, as recommended by MBUAPCD, MSC Projects Mitigation Measure AIR-1 has been added to this EIR. AIR-1 would add to the previously-incorporated CLDRP Mitigation Measure 4.3-1 to further increase the effectiveness of the CLDRP fugitive dust control program under the windy conditions often</p>

**Table 8-2. Changes to the Draft EIR Text**

<b>Chapter</b>	<b>DEIR</b>	<b>DEIR Pg.#</b>	<b>Correct Page #</b>	<b>FEIR Correction or Update</b>
				<u>experienced at the MSC. The identified dust control measures for windy conditions are added to the previously-adopted list of dust control measures that would be applied to all CLRD development. Also added to the measure is a requirement to provide a mechanism for any dust complaints to be registered. The implementation of these measures on the MSC Projects and all future earth-moving projects on the MSC will further reduce the less-than-significant impact of the MSC Projects and of CLRD development overall with respect to fugitive dust.</u>
3.3 Air Quality	In AIR-3 impact block, NEF missing from Applicable Projects	3.3-20	same	added NEF to applicable projects box in AIR-3 impact block.
3.3 Air Quality	In AIR-3 impact block, no projects were listed under "Applicable Projects"	3.3-25	same	added "All Projects (construction activities)" to applicable projects box in AIR-3 impact block.
3.3 Air Quality	Incorrect CLRD MM number cited in AIR-6 impact block	3.3-25	same	Change 3.2-1 to 4.3-1
3.3 Air Quality	AIR-6 impact block does not cite applicable project	3.3-25	3.3-26	Add: "All projects (construction activities)"
3.3 Air Quality	Mitigation needs to be added to AIR-6 impact block	3.3-25	3.3-26	Added: "Implement MSC Projects Mitigation Measure AIR-1".
3.3 Air Quality	Additional discussion of impact needed	3.3-26	same	<u>Nonetheless, as identified for fugitive dust emissions at the project level, under MSC Projects Impact AIR-1, above, MSC Projects Mitigation Measure AIR-1 is included in the MSC Projects for all project construction to further reduce the less-than-significant dust emissions impact. The measure would amend CLRD EIR Mitigation Measure 4.3-1 to include additional dust control best management practices to address the windy conditions prevalent at the site, and also would provide a mechanism for the campus to receive and address any fugitive dust complaints.</u>
3.4 Biological Resources	Page and subsection numbers throughout incorrectly prefaced w/3.5	through out Section 3.4	through out Section 3.4	All page numbers and subsection numbers corrected to begin with preface 3.4, rather than 3.4. Corrections not marked in text.
3.4 Biological	Format inconsistency in naming of	through out Section	through out Section	"Measure" inserted in text in impact blocks throughout section for consistency.

**Table 8-2. Changes to the Draft EIR Text**

<b>Chapter</b>	<b>DEIR</b>	<b>DEIR Pg.#</b>	<b>Correct Page #</b>	<b>FEIR Correction or Update</b>
Resources	mitigation measures	3.4.4.3	3.4.4.3	
3.4 Biological Resources	Errors in Mitigation BIO-6 impact block.	3.5-37	3.4-37	Same corrections to Mitigation BIO-6 as noted for Exec Sum, Table 1
3.5 Climate Change	Table 3.5-1 separated from text that refers to it	3.5-4	3.5-3	Reformatted to move table closer to text reference.
3.5 Climate Change	Table 3.5-2 separated from text that refers to it	3.5-5	3.5-4 and -5	Reformatted to move table closer to text reference.
3.6 Cultural Resources	No formal ID # for Ocean Shore Railroad site	3.6-8	through out	Formal CA Historical Resources Information System record number P-44-000700 added to references to this site
3.6 Cultural Resources	ID number for Ocean Shore Railroad site lacking	3.6-11	same	Record number, P-44-000-700, added to impact text
3.9 Hydro/Water Quality	NEF not mentioned in HYD-4 impact statement	3.9-28	same	added NEF to HYD-4 impact statement
3.9 Hydro/Water Quality	NEF not mentioned in HYD-5 impact statement	3.9-29	same	added NEF to HYD-5 impact statement
3.9 Hydro/Water Quality	Table 3.9-1 separated from text reference	3.9-26	3.9-25	Reformatted table to fit in text closer to table reference
3.10 Land use	--	entire section	--	changed Draft EIR to Final EIR in footer--did not mark change
3.10 Land use	Applicable Projects box under Impact LU-2 incomplete	3.10-9	same	added MSCI Project (McAllister Way parking restoration) to Applicable Projects under Impact LU-2
3.10 Land use	Lacked Table of Contents			recreated TOC
3.11 Noise	Error in NOIS-2 impact block	3.11-13	same	In NOIS-2 impact block, corrected "Applicable Projects" box from Not Applicable to CBB.
3.11 Noise	NOIS-4 residual significance says "Not Applicable"	3.11-17	same	in NOIS-4 impact block, corrected residual significance from Not Applicable to Less than Significant
3.11 Noise	--	entire section	--	changed Draft EIR to Final EIR in footer--did not mark change
3.15 Trans. and Traffic	minor formatting errors	through out	through out	possible minor shifts up or downward relative to DEIR page numbers; also corrected pagination in TOC

**Table 8-2. Changes to the Draft EIR Text**

<b>Chapter</b>	<b>DEIR</b>	<b>DEIR Pg.#</b>	<b>Correct Page #</b>	<b>FEIR Correction or Update</b>
3.15 Trans. and Traffic	Details of railroad route near MSC	3.15-4	same	Each of these streets that connect Mission Street and Delaware Avenue crosses the UPRR tracks.
3.15 Trans. and Traffic	Details of railroad route near MSC	3.15-4	same	Added, "Natural Bridges Drive crosses the UPRR tracks at an at-grade crossing. The crossing includes signal arms, warning lights and bells, and pedestrian sidewalks".
3.15 Trans. and Traffic	Clarification needed	3.15-13	same	Added to description of Shaffer Road: ", which currently does not cross the railroad tracks,"
3.15 Trans. and Traffic	Mitigation measure format inconsistencies	through out Section 3.15.5.3	same	"Measure" inserted in text in impact blocks after "Mitigation" throughout section for consistency.
3.15 Trans. and Traffic	Typographic error, in TRA-1 impact block	3.15-30	same	Deleted sentence fragment
3.15 Trans. and Traffic	Clarification of project-level analysis, Impact TRA-2	3.15-38	3.15-38, -39	Amended final sentence of analysis as follows: "As discussed above, the MSC Projects are projected to generate 108 new AM and 104 new PM peak hours trips, and <del>is thus below</del> <u>will not meet or exceed</u> the previously identified threshold. The current analysis indicates that the MSC Projects would result in an LOS impact only at Western Dr./High St. and not at the other intersections identified in the CLRDP EIR."
3.15 Trans. and Traffic	Railroad crossing issues not addressed with respect to potential hazards from incompatible uses	3.15-42	same	Modified Impact TRA-4 as follows: The MSC Projects would <u>result in increased motor vehicle, pedestrian and bicycle traffic in the project vicinity and on the MSC,</u> <u>would</u> alter the roadway at the MSC entrance, and would introduce new parking lot intersections with campus roadways and new pedestrian crossings of campus roadways, but <u>the Project-related traffic would not be incompatible with existing campus or local roadway uses.</u> <del>New campus roadways these</del> would be designed consistent with roadway safety standards and CLRDP guidelines to ensure that the project does not result in any increase in hazards related to design features.
3.15 Trans. and Traffic	Traffic calming measures for campus entrance	3.15-42	same	<b>MSC Projects Mitigation Measure TRA-4B</b> modified as follows: A stop sign will be installed on the new Delaware Avenue Extension at the campus exit (eastbound), <u>and other traffic-calming measures will be included in the entrance design if warranted based on design assessment.</u> <del>and</del> The University also will coordinate with the City of Santa Cruz regarding recommended installation of stop signs at the campus entrance intersection on Shaffer Road (southbound), Delaware Avenue (westbound) and the exit from the De Anza residential community.

**Table 8-2. Changes to the Draft EIR Text**

<b>Chapter</b>	<b>DEIR</b>	<b>DEIR Pg.#</b>	<b>Correct Page #</b>	<b>FEIR Correction or Update</b>
3.15 Trans. and Traffic	Augmented analysis of railroad crossing issues as requested by Public Utilities Commission	3.15-43	same	Added to text under <b>Previous Analysis</b> to provide more information about the adjacent railroad and explain why it does not pose significant risk to campus affiliates or the public
3.15 Trans. and Traffic	Railroad issues	3.15-43	same	Added new mitigation measure for less-than-significant impact TRA-4: <b>MSC Projects Mitigation Measures TRA-4C, as follows: "When new fencing is installed along the northern and eastern boundaries of the campus, signage will be posted on the fence at a location adjacent to each pedestrian route advising caution in crossing the adjacent railroad tracks."</b>
3.15 Trans. and Traffic	Clarification of Campus' intention on dealing with traffic complaints	3.15-45	same	Modified MM TRA-5F as follows: <b>MSC Projects Mitigation Measure TRA-5F:</b> The University will post flyers and/or signs at the MSC entrance and major campus facilities and provide the same for the Homeless Garden Project and the De Anza facility, with a University phone number or other means for the public to submit questions or complaints regarding construction traffic or traffic incidents, <del>and</del> will respond promptly to inquiries and complaints and, <u>if warranted after investigation, take specific actions to resolve the complaint.</u>
3.15 Trans. and Traffic	References require update	3.15-51	same	Added to References: "Federal Railroad Administration. 2011. <a href="http://safetydata.fra.dot.gov/OfficeofSafety/">http://safetydata.fra.dot.gov/OfficeofSafety/</a> web site accessed July, 2011" and updated traffic tech report reference to: "Fehr and Peers. 2011. Final Draft, UC Santa Cruz Marine Science Campus Coastal Biology Building Transportation Impact Analysis. Prepared for UC Santa Cruz. July." and "Santa Cruz County Regional Transportation Commission (SCCRTC). 2011. Santa Cruz Branch Rail Line Acquisition Fact Sheet. February 2011. Accessed July 1, 2011 at <a href="http://www.sccrtc.org">www.sccrtc.org</a> "
3.15 Trans. and Traffic	References require update	3.15-51	same	Add to References: Schneiter, Christophe, Santa Cruz Department of Public Work. 2011. Personal communication to Sally Morgan, UCSC, regarding railroad crossing of Natural Bridges Drive. July 1.
3.15 Trans. and Traffic	References require update	3.15-51	same	Add to References: Schneiter, Christophe, Santa Cruz Department of Public Work. 2011. Personal communication to Sally Morgan, UCSC, regarding City planning for Shaffer Road railroad crossing. August 1.
3.15 Trans. and Traffic	Table 3.15-8 at end of analysis text	3.15-50	3.15-49	Table 3.15-8 moved up in text of final section for improved reference
3.16 Utilities and Service Systems	Minor format errors			Corrected formatting shifted slightly shifted pagination in second half of chapter.

**Table 8-2. Changes to the Draft EIR Text**

<b>Chapter</b>	<b>DEIR</b>	<b>DEIR Pg.#</b>	<b>Correct Page #</b>	<b>FEIR Correction or Update</b>
3.16 Utilities and Service Systems	Footnote to table 3.16-5 incorrectly indicates basis of water use calculations. Actual calculations of consumption are correct as written	3.16-14	same	Assumes water-use factor of 0.1 gallon/gsf/ <del>yr</del> <u>day</u> for Marine Research and Education Facilities, from CLRDP EIR, Table 4.16-3
3.16 Utilities and Service Systems	Format inconsistencies	3.16-27	same	"Measure" inserted after "Mitigation" in text in impact block
4.0 Alternatives	Minor formatting errors	through out section	same	Corrected heading formatting for consistency throughout
6.0 Consultation and Coord.	Incorrect identification of personnel depts.	6-1 and 6-2	same	Corrected to "UCSC Physical Planning and Construction"
8.0 Comments, Responses to Comments and Changes to the DEIR	Not included in DEIR	Added chapter		Added chapter that includes all numbered comments, responses to each comment, and table of changes
9.0 Mitigation Monitoring Program	No included in DEIR	Added chapter		Added chapter that describes the function of the MMP and includes a table for each of the MSC Projects that details the MMP for each project

## Chapter 9 Mitigation Monitoring and Reporting Program

TABLES

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Table 9-1	CBB Mitigation Monitoring and Reporting Program (including MSC Parking Phase 1 Project, MSC EH&S Facility Project and former MSCI Project)
Table 9-2	NEF Mitigation Monitoring and Reporting Program
Table 9-3	SRP Phase 1B Mitigation Monitoring and Reporting Program

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## Mitigation Monitoring and Reporting Program

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

This chapter presents a Mitigation Monitoring and Reporting Program (MMRP) for each of the proposed Marine Science Campus Projects. The MMRP for each project is presented as a separate table. Each table includes the full text of the mitigation measures identified in the Final EIR, details procedures and timing through which each mitigation measure will be implemented, assigns the responsibility for mitigation implementation, and indicates how compliance will be monitored and reported. Consistent with CEQA guidance, the Campus may modify the means by which a mitigation measure will be implemented, subsequent to the adoption of the MMRP for each project, as long as the alternative means of implementing the measure will be equally or more effective in ensuring compliance with the identified mitigation measures. Mitigation measures from the CLRDP EIR that are applicable to the MSC Project will be implemented pursuant to the MMRP previously adopted by the Regents in conjunction with the certification of the CLRDP EIR in September, 2004. The CLRDP EIR mitigation measures applicable to the MSC Projects are listed in Appendix D, as well as in the relevant sections of Chapter 3 of this EIR.

MMRP tables 9-1 through 9-3, below (for the CBB [including former MSC Project], Parking Phase 1, EH&S facility, NEF and SRP Phase 1B projects, respectively), are organized as follows:

**Mitigation Number:** Identifies the number assigned to the each mitigation measure in the Final EIR.

**Mitigation Procedures:** Summarizes the steps to be taken to implement the mitigation measures.

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

**Mitigation Responsibility:** Assigns responsibility for implementation of the mitigation measure.

**Monitoring and Reporting Procedure:** Specifies procedures for documenting and reporting the mitigation implementation.

Note that mitigations applicable to the formerly-separate MSC Project, and for the MSC Parking Phase 1 Project and the MSC EH&S Project (which will be approved as separate projects), are included in and will be monitored under the CBB MMRP, Table 9-1.

The responsibilities for mitigation implementation, monitoring and reporting extend to several UC Santa Cruz departments and offices. The Unit Director or department lead officer of the identified unit or department will be directly responsible for ensuring that the responsible party complies with the

mitigation. U.C. Santa Cruz Physical Planning and Construction (PP&C) is responsible for the overall administration of the mitigation monitoring and reporting program and for assisting relevant departments and project managers with their oversight and reporting responsibilities, to ensure that they understand their charge and complete the required procedures accurately and on schedule. PP&C will maintain mitigation monitoring records for the proposed project.

In addition to overseeing the specific procedures identified in the following table for implementation of each mitigation measure, Physical Planning and Construction prepares an Annual Mitigation Monitoring Report for the Marine Science Campus, that reports report on progress in implementation of general campus mitigation measures (that is, those measures that are not tied to specific development projects) and documents the status of compliance for each project. Compliance with applicable CLRDP policies and implementation measures is documented in the Project Report that is submitted to the Coastal Commission as part of the Notice of Impending Development for each development project proposed under the CLRDP.



**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<p>feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).</p> <ul style="list-style-type: none"> <li>• Pave, apply water two times daily, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and construction staging areas.</li> <li>• Sweep daily with water sweepers any paved access roads, parking areas, and staging areas at construction sites.</li> <li>• Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.</li> <li>• Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas or previously graded areas left inactive for ten days or more.</li> <li>• Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).</li> <li>• Limit traffic speeds on unpaved roads to 15 miles per hour.</li> <li>• Install sandbags or other erosion control measures to prevent silt runoff to public roadways.</li> <li>• Replant vegetation in disturbed areas as quickly as possible.</li> <li>• In the event that grading and excavation at two or more large project sites is proposed to occur concurrently (large sites defined as involving more than 2 acres), install wheel washers at the entrance of the construction sites.</li> <li>• Phase construction projects in such a manner that minimizes the area of surface disturbance (e.g., grading, excavation) and the number of vehicle trips on unpaved surfaces.</li> <li>• <u>Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402.</u></li> </ul>				

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<p><b>MSC Project Mitigation Measure BIO-1:</b> A qualified botanist will conduct up to three focused surveys for target special-status plant species on and within the full extent of all vegetated areas that will be subject to project activity (ground disturbance, placement of spoils, construction vehicle parking or traffic, etc.) for each project element during the spring-summer (April-August) blooming period, within two years prior to the beginning of construction. If no special-status species are observed during the focused surveys, no additional mitigation is necessary. If special-status plants are observed, the population will be mapped and quantified and a suitable buffer zone established (based on species requirements, proximity to the work area, and other site specific factors), and other protection measures, such as fencing around the population to protect it from disturbance, will be implemented as determined necessary by the biologist. If the population cannot be avoided by the project, impacts to the population shall be quantified and regulatory agencies (California Department of Fish and Game, and/or U.S. Fish and Wildlife Service, as appropriate) contacted for guidance or permitting, depending on the species affected, and additional measures that may be identified by regulatory agencies to mitigate adverse effects, such as soil stockpiling, transplantation, and/or seed collection and propagation, would be implemented.</p>	<p>Campus will contract with qualified biologist to conduct survey as specified.</p> <p>Biologist will map and quantify species population and establish buffer.</p> <p>PM and planners will consult to determine whether plants can be avoided</p> <p>PM will ensure that fencing and other protective measures are implemented.</p> <p>If plants cannot be avoided, Campus will consult with regulatory agency(ies) and take additional measures as required.</p>	<p>Spring and summer (April-August) within two years before beginning of construction.</p> <p>Upon discovery of special-status species in project footprint.</p> <p>Prior to start of construction</p> <p>Throughout construction</p> <p>Upon determination that special-status plant population cannot be avoided. Timing of addtl. measures as specified by regulatory agencies</p>	<p>PP&amp;C Project Manager (PM)</p>	<p>PM will ensure that survey report is included in project file.</p> <p>Map and biologist's buffer recommendations in project file.</p> <p>Buffer and procedures included in contract documents.</p> <p>Daily biological monitoring logs will include inspection of any plant protections</p> <p>Agency correspondence in project file. Document additional measures as required.</p>
<p><b>MSC Projects Mitigation Measure BIO-2a</b> In the first fall after use of the staging area is discontinued, gravel and groundcover cloth will be removed, and the ground surface will be scarified to alleviate any compaction from construction. Then, the entire area will be seeded or replanted with a non-invasive erosion control seed mix or a mix composed of appropriate, locally-collected native grasses and forbs, selected in collaboration with YLR staff from the species listed in the approved SRP Phase 1A. Temporary irrigation will be supplied as needed to ensure that plantings are adequately established. Alternatively, the Campus may elect to retain the groundcover cloth and gravel and maintain the area as a temporary parking lot until such time as it is developed.</p>	<p>PM will consult with YLR Manager to develop appropriate seed /planting and irrigation specifications</p> <p>Construction contractor will seed or plant staging area as specified in the mitigation, and provide temporary irrigation as needed.</p>	<p>In the first fall after use of the staging area is discontinued, if Campus does not plan to use the area as a temporary parking lot.</p> <p>Same</p>	<p>PP&amp;C PM</p>	<p>PM will ensure that seeding and/or planting requirements are included in construction documents.</p>

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<b>MSC Projects Mitigation Measure BIO-2b:</b> If the area is replanted, the Campus will ensure that the restored area will be managed to prevent seed set of annual species and will monitor this area and will remove high priority weeds and control other weedy invasive annual grasses and herbs, consistent with IM 2.3.5 (Interim Weed Abatement Measures for Undeveloped Lands within Development Zones) until such time as the area is developed.	Grounds services will monitor restored area and remove high priority weeds and control other weedy invasive plants as specified in the mitigation.	At least annually, after replanting, until the area is developed.	Grounds Services, in consultation with YLR manager	Ground Services will document monitoring and restoration in annual CLRDP mitigation monitoring report files and summarize in annual mitigation monitoring report.
<b>MSC Project Mitigation Measure BIO-2c:</b> Grounds Services in collaboration with YLR staff will assess the effectiveness of the measures above in controlling the spread of invasive plants from this site into the YLR annually. If it is determined that the staging site has become a significant source of invasive plants that could migrate into YLR habitat, the Campus will till the area and reseed it annually with sterile grasses, and these planting will be maintained until such time as the site is developed.	Consult with YLR staff to determine whether invasive plants have been adequately controlled.  Till area and seed with sterile grasses.	Annually  Annually, until the site is developed, if staging site has become a significant source of invasive plants.	Grounds Services, in consultation with YLR manager.	Ground Services will document monitoring and restoration in annual CLRDP mitigation monitoring report files and Environmental Planning will summarize in annual mitigation monitoring report.
<b>MSC Projects Mitigation Measure BIO-3A:</b> Within two weeks prior to the start of construction, and each time a new crew starts work, a qualified biologist will present a worker education program and associated documentation to all new construction personnel at the project site. The on-site foremen will ensure that all construction personnel and subcontractors receive a copy of the written biological education materials. The education program shall include a description of the CRLF and its habitat, the general provisions of the Endangered Species Act, the necessity of adhering to the Act to avoid penalty, and measures that will be implemented, specific to the project and the work boundaries of the project, to avoid affecting CRLF.	PM will include training requirement in contract documents.  PM will contract with biologist to provide training and brochure and will coordinate with contractor to schedule training session.  Biologist will contract training as needed and document on <u>daily monitoring log</u>	Within two weeks prior to the start of construction, and each time a new crew starts work.  Prior to start of construction  Prior to start of construction and ongoing as needed	PP&C PM	PM will cite relevant contract document section in mitigation monitoring checklist.  PM will include brochure and biologist's daily monitoring logs in project file.  PM will include record of trainings in project file.
<b>MSC Projects Mitigation Measure BIO-3B:</b> In consultation with a qualified biologist (see MSC Projects Mitigation Measure BIO-15 [Biological Mitigation Coordination]), the Campus will ensure that an exclusion fence for CRLF and western pond turtle is installed around each work area that contains vegetation that could provide appropriate cover for CRLF and/or appropriate nesting habitat for western pond	PM will consult with biologist to map appropriate fencing alignment and include fencing alignments and specifications, including biological monitoring requirements for installation and construction, in contract	Before project goes out to bid.	PP&C PM	PM will cite relevant contract document section in mitigation monitoring checklist.

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<p>turtle (see MSC Projects Impact BIO-6 below), prior to construction, to prevent CRLF and western pond turtle from moving onto the site. Areas that will be disturbed by SRP Phase 1B activities, road and trail construction and utility construction will be subject to separate mitigation measures, as exclusion fencing would not be effective or practicable for these areas. Fencing alignments will be determined as follows: During development of project specifications and construction drawings, the project biologist will review site-work, grading and other pertinent plans with the UCSC Project Manager to determine locations where exclusion fencing for frogs and turtles (as described below) 1) would be effective in excluding wildlife from construction activity areas, 2) could be employed without unduly hindering construction activity, and 3) appears more likely than allowing free night movement through the construction zone to benefit the target species. To minimize unnecessary exclusion of wildlife that may safely pass through, and subject to consultation between the qualified biologist and the project construction manager, areas where disturbance will be short term and/or temporary may be subject to biological monitoring during vegetation clearing and/or during construction, rather than to fencing. The agreed upon fencing alignments will be marked on the plans during biological coordination, as specified in Mitigation Measure BIO-15, and included in the project specifications. Prior to any surface disturbance at each location, a qualified biologist will meet in the field with the UCSC project manager and construction foreman to adjust the fencing alignment and timing of erection and removal based on the habitat that will be affected, as well as on the configuration and location of specific construction tasks. The alignments as shown on plans will be subject to adjustment by mutual agreement between the biologist, the project manager and the construction contractors, as necessary to ensure wildlife protection, without unnecessarily impeding construction.</p> <p>Installation of fencing will be monitored by a qualified biologist. Exclusion fence materials may be high-grade nylon silt-fencing, plywood, or other appropriate materials. The base</p>	<p>documents, following process specified in the mitigation.</p> <p>PM will coordinate with biologist and contractor to adjust fencing alignment.</p> <p>Biologist will document integrity of fencing and any adjustments in daily monitoring log.</p>	<p>Fence to be installed by April 15 (see MSC Projects Mitigation Measure BIO-6, below), prior to the beginning of construction. Maintain fence throughout construction</p> <p>Inspections throughout construction</p>		<p>PM will document any changes to fencing in project file.</p> <p>PP&amp;C project manager confirm that fence is in place throughout construction and include biologist's documentation in project file</p>

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<p>of the fence shall be buried at least 6 inches and it shall extend at least 2.5 feet above grade and shall surround the entire exclusion area. If necessary, an appropriate gate shall be engineered, in consultation with a biologist experienced in implementation of these provisions, to access construction areas that excludes the target species at night, but allows egress by workers and equipment during the day. Roads and pathways necessary to access existing facilities will not be fenced or gated. A cover-board (4 by 4-foot 1/2-inch square of plywood) shall be placed at approximately 100-foot intervals outside the exclusion fence to provide predator protection for small animals that encounter the fence. Each cover-board shall be elevated approximately two inches using two attached 6-inch wooden blocks. The elevated edge of each cover-board shall be placed flush against the outside of the exclusion fence. The cover-boards will be labeled with signage to ensure they are not disturbed, and each shall be regularly inspected by the biological monitor to ensure that they remain in place.</p> <p>Fencing may be removed, upon approval of the qualified biologist, when all construction-related activities that could harm or kill CRLF or damage turtle nests (see MSC Projects Impact BIO-6, below) are complete; generally, when the majority of exterior work is complete.</p>				
<p><b>MSC Projects Mitigation Measure BIO-3C:</b> Immediately prior to vegetation removal at each project element/work site, including both fenced and unfenced sites, a qualified biologist will survey each work site for CRLF. The biologist will then monitor the initial removal of vegetation in each work area, including the work areas within exclusion fencing and unfenced areas, including trail alignments, utility alignments outside of existing roadways, and the areas of grading proposed for SRP Phase 1B wetland work. Next, vegetation will be cleared, with hand-held equipment, to a height of 3–6 inches above grade. The qualified biologist will then repeat the inspection before any ground disturbance or heavy equipment movement into the area. If CRLF are observed in the work area at any time during this process, ground disturbing work</p>	<p>PM will contract with Biologist to conduct survey and monitoring as specified, and to document results.</p> <p>Biologist will monitor as specified and document results in daily monitoring log.</p> <p>PM will stop ground disturbing</p>	<p>Prior to start of construction</p> <p>Immediately prior to vegetation removal at each project element/work site; during initial removal of vegetation in each work area; before any ground disturbance or heavy equipment movement into the area.</p> <p>Upon discovery that a CRLF is</p>	<p>PP&amp;C PM</p>	<p>PM will include Biologist's survey and monitoring reports, and any correspondence with USFWS in project files.</p>

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
will be postponed and the USFWS contacted for guidance.	work and contact USFWS if biologist reports CRLF observation and will ensure work does not resume while CRLF are present.  PM will consult with USFWS and implement additional requirements.	present		
<b>MSC Projects Mitigation Measure BIO-3D:</b> Subsequent to vegetation removal, a qualified biologist will inspect every work area each morning prior to the start of construction activity, until all surface-disturbing activities are complete. If no CRLF are observed during the morning inspection, the biologist will depart. After all potential habitat is cleared within the work area, daily monitoring will cease, but the biologist will inspect exclusion fencing weekly and the contractor will repair fencing as identified by the biologist, by nightfall on the same day. If CRLF are observed on or near the work area at any time, work shall cease in proximity to the observation and a qualified biologist and the USFWS will be contacted immediately. Full-time biological monitoring and/or other mitigation measures may then be required.	PM will ensure that Biologist inspects every work area daily and documents inspection results on daily log.  Biologist will inspect exclusion fencing; contractor repair fencing as needed. Biologist report on daily log	Each morning before construct activity begins, after vegetation is removed, until all surface-disturbing activities are complete.  Weekly, after all potential habitat is cleared within the work area.	PP&C	PM will include Biologist's reports in project file.
<b>MSC Projects Mitigation Measure BIO-3E:</b> Construction work and all construction vehicle movement on the site will be restricted to the hours between dawn and dusk. In addition, construction vehicles and heavy equipment will be restricted from parking at night along road margins except where roads immediately abut existing development. The biological monitor will inspect the area around and under each piece of equipment not parked within the exclusion areas, prior to equipment movement each morning.	PM will ensure that hours of work and equipment inspection requirements are specified in contract documents.  Biological monitor inspect under and around equipment and document in daily log.	Before project goes out to bid.  Each morning, before equipment is moved.	PP&C	PM will cite relevant contract document section in mitigation monitoring checklist.  PM will include Biologist's reports in project file.
<b>MSC Projects Mitigation Measure BIO-4:</b> A qualified biologist will conduct a survey following CDFG guidelines (1995) for wintering burrowing owls during the winter season immediately preceding the start of construction. If the species is detected within the project area, the Campus will contact	PM will contract with Biologist to conduct survey as specified.  Biologist will conduct survey	Prior to the start of construction  During winter season	PP&C PM	PM will include Biologist's survey report, and any correspondence with CDFG, in projects file.

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
CDFG for guidance regarding feasible methods to protect owls during construction, and will implement CDFG recommendations to avoid potential impacts to owls.	as specified and notify PM if owl burrows are present.  PM will contact CDFG for guidance and implement CDFG recommendations if owl burrows are present.	immediately preceding the start of construction.  Upon discovery of burrowing owls. CDFG recommendations for avoidance or protection will be implemented throughout construction		
<b>MSC Projects Mitigation Measure BIO-5:</b> Within 15 days prior to surface disturbance in each project area, a qualified biologist will conduct a pre-construction survey for badger dens and diggings at each project site and within 200 feet of project margins (exclusive of the portion of the YLR surrounding the lagoon, which is already fenced and protected). If a badger den is detected within the project site or the buffer zone (exclusive of the YLR, where no disturbance will occur), a wildlife-friendly exclusion fence shall be installed (steel T-posts and yellow nylon rope or similar material), 25-feet from the den in all directions, and CDFG shall be contacted for guidance. Additional mitigation measures recommended by CDFG will be implemented to ensure that any badgers present in or near project areas are protected or appropriately relocated.	PM will contract with biologist to conduct pre-construction survey as specified in mitigation and will ensure that fencing specifications are included in construction contract and that biologist conducts survey.  Biologist to notify PM if protective measures are needed.  Contractor will install fence as specified in mitigation, PM will contact CDFG, and implement additional mitigation measures recommended by CDFG.	Contract prior to start of construction/ prior to issuing bid documents  Survey within 15 days prior to surface disturbance in each project area.  Prior to start of construction  Upon discovery of occupied badger burrow, prior to the start of construction	PP&C PM	PM will include Biologist's report(s) and any correspondence with CDFG in project file.
<b>MSC Projects Mitigation Measure BIO-6:</b> The construction crew training described in MSC Projects Mitigation BIO-3A, above, also shall include information on avoidance and protection of western pond turtles and their nests. In addition, prior to April 15, prior to April 15 during the year of construction (prior to the beginning of nesting season), work areas shall be enclosed with a wildlife exclusion fence as specified in Mitigation Measure BIO-3B (above), before surface disturbance occurs, to reduce the chance that turtles may deposit eggs within the work area. If construction begins before April 15, the exclusion fence requirement specified in	PM include training on western pond turtles and monitoring for turtles in contract with biologist.  Installation and maintenance of fence as specified under Mitigation Measure BIO-3B.	Before construction begins.  Fence installed prior to April 15 during the year of construction, or before construction begins, whichever comes first.	PP&C	PM cite to relevant sections/drawings of contract documents in mitigation monitoring checklist.  PM include Biologist's reports and any correspondence with CDFG in project file.

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
Mitigation Measure BIO-3B is still required. In areas that will be temporarily disturbed, such as installation of underground utilities or trail construction, a qualified biologist shall search for any evidence of western pond turtle nesting prior to surface disturbance. If a western pond turtle or nest is discovered, CDFG will be contacted for guidance regarding appropriate protection or, if necessary, relocation of the nest.	Biologist will conduct survey.  Biologist contact CDFG and follow agency's guidance regarding protection or relocation of nest.	Before surface disturbance.  Upon discovery of a turtle and/or nest. CDFG recommendations will for avoidance and/or protection will be followed throughout construction.		
<b>MSC Projects Mitigation Measure BIO-7A:</b> If work in any project site area must commence during the avian breeding season (February 1 to August 31), a qualified biologist shall conduct a pre-construction breeding bird survey throughout areas of suitable habitat within 300 feet of the work area within 15 days prior to the onset of any construction activity. If nesting birds or active nests of any species are observed within a project work area or surrounding buffer, an appropriate buffer zone shall be established around each active nest to protect nesting adults and their young from construction disturbance. The size and configuration of buffer zones for each nest site shall be determined by a qualified biologist in consultation with CDFG based on site conditions and species. Construction work within the buffer zone will be postponed until all the young are fledged, as determined by a qualified biologist.	PM will contract with Biologist to conduct survey, which will be carried out prior to start of construction  PM and biologist will consult with CDFG to determine appropriate buffer. PM will notify construction contractor of buffer and ensure it is appropriately marked.  Biologist will monitor nest and integrity of buffer, maintain daily log, and notify PM when buffer can be discontinued.	Contract will be in place prior to the start of construction; survey will be conducted within 15 days before any construction activity begins, if work in any project site area must commence during the avian breeding season (February 1 to August 31).  Prior to the start of construction, upon discovery of active nest  Until nest is no longer active	PP&C PM	PM include Biologist's reports and any correspondence with CDFG in project file.
<b>MSC Projects Mitigation Measure BIO-7B:</b> In addition, to avoid interference by construction noise with bird nesting within YLR, construction work in development Subareas 6 and 7 (the Greenhouse Complex and adjacent parking lot, plus berm and fence alternations along YLR margin) will not begin during the peak nesting season (March 1 through August 1) unless the biological monitor determines that starting work during this time period will not impact birds that are present. If work begins after August 1 or before March 1, it may continue	PM will include limits on scheduling work in Subareas 6 and 7 in contract specifications, subject to consultation with biologist.  Biologist will conduct nesting bird survey and inform PM if activity limitations are needed	Before construction begins, as specified in BIO-7B.  Same	PP&C PM	PM cite to relevant sections/drawings in contract documents in mitigation monitoring checklist.  PM include Biologist's reports in project file.

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
during the nesting season.	based on whether birds are present.			
<b>MSC Projects Mitigation Measure BIO-7C:</b> Berm construction along Subarea 7 shall be completed as early as possible in the construction period, such that the berm will provide buffering for YLR from noise and activity associated with subsequent construction.	PM will include proviso in contract specifications that berm construction should be scheduled as specified.  PM will consult with contractor regarding scheduling constraints.	Prior to issuing bid documents  Before construction begins.	PP&C PM	PM cite to relevant sections/drawings in contract documents, in mitigation monitoring checklist.  PM to confirm during construction at quarterly updates of mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-7D:</b> Prior to berm construction, Subarea 6 will be used for the least noisy construction staging activities, such as contractor offices and parking.	Include limitations on use of Subarea 6 in contract documents.	Prior to issuing bid documents.	PP&C PM	PM cite to relevant sections/drawings in contract documents, in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-8:</b> The Campus will ensure that a qualified biologist conducts a pre-construction survey for special-status bats of the greenhouses and associated sheds before demolition occurs. If special-status bats are detected, the campus will contact CDFG for recommendations on appropriate measures to be taken to exclude bats such that they would not be harmed, and these measures will be implemented prior to demolition. If maternity roosts that would be displaced by demolition or construction are identified, the Campus will consult with CDFG to determine whether artificial replacement roosts should be installed in appropriate habitat nearby, and carry out CDFG recommendations.	PM will contract with Biologist to conduct survey and document results.  PM and Biologist will consult with CDFG if bats are present. PM will ensure that recommended measures to exclude bats and, if necessary, construction of artificial replacement roosts are implemented, as determined in consultation with CDFG.	Survey to be conducted before demolition of the existing greenhouses begins.  Upon discovery of special-status bats, with any necessary exclusion implemented prior to start of construction	PP&C PM	PM include Biologist's reports and any correspondence with CDFG in project file.
<b>MSC Projects Mitigation Measure BIO-9A:</b> A pre-construction survey for the SFDW will be conducted within 15 days prior to demolition, vegetation removal or ground disturbance at each site. If no active SFDW houses are found, no further mitigation is necessary at that location. If SFDW houses are found and they can be avoided, a buffer zone will be erected around the SFDW house, using a temporary fence that does not inhibit the natural movements of wildlife (such as steel T-posts and a single strand of yellow rope or similar	PM will contract with Biologist to conduct survey as specified and document results.  PM ensure that buffer is established as determined by biologist.	Survey to be conducted within 15 days before demolition begins.  Prior to start of construction, upon discovery of active nest	PP&C PM	PM include Biologist's reports and any correspondence with CDFG in project file.

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
materials) and all construction activity will be prohibited within that zone. If one or more SFDW houses cannot be avoided, and relocation is necessary, CDFG will be contacted for approval for a qualified and permitted biologist to live-trap and relocate individual rats. For each house lost, one stick pile "house" will be relocated or created in the nearest suitable habitat outside the construction zone, in the animal's home range if possible, and the live-trapped individual will be released into the stick pile, to minimize the potential impact.	Biologist inspect buffer and document its maintenance in daily monitoring logs  Consult with CDFG and implement agency recommendations.	Throughout construction in vicinity.  Prior to start of construction, if one or more SFDW houses cannot be avoided.		
<b>MSC Projects Mitigation BIO-9B:</b> In addition, in the vicinity of each relocated house, preferably within the relocated animal's home range, SFDW habitat will be enhanced, in consultation with a biologist with SFDW experience, by placement of an anchor log and, if sufficient suitable material is not readily available, additional woody debris suitable for creation of additional nests, to ensure that there are sufficient suitable nest sites for SFDW already present as well as any that are relocated.	PM consult with Biologist on procedures for enhancement of habitat.  PM ensure that habitat is enhanced as recommended by biologist.	Prior to relocation of any SFDW house  Same	PP&C PM	PM include Biologist's reports in project file.  PM include documentation of habitat enhancement in project file.
<b>MSC Projects Mitigation Measure BIO-10a:</b> Any new or replaced fencing will be designed and installed in such a way as to provide 4 inches of clearance between the ground and the bottom of the fence to allow small animals to pass beneath.	PM include fencing specifications in contract documents.  Biology inspect fence	Before project goes out to bid.  Upon installation of the fence	PP&C PM	PM cite to relevant sections and/or drawings in contract documents.  PP&C PM document in project file that fence is installed as specified.
<b>MSC Projects Mitigation Measure BIO-10B:</b> Wherever the paved access road crosses terrace portions of the YLR, no parking will be allowed along the road from sunset to sunrise.	PM include parking limitation in contract documents.	Before project goes out to bid.	PP&C	PM cite to relevant sections of contract documents.
<b>MSC Projects Mitigation Measure BIO-10C:</b> No construction activity that involves movement of vehicles or heavy equipment on or off road will be allowed during night hours, that is, from 30 minutes after sunset to 30 minutes before sunrise unless approved by a qualified biologist.	PM include limitation on construction activity in contract documents.	Before project goes out to bid.	PP&C PM	PM cite to relevant sections of contract documents. Include in project file documentation of biologist's approval of any night-time construction activity.
<b>MSC Projects Mitigation Measure BIO-11:</b> The walls and roofs of the greenhouses will be equipped with appropriate	PM include requirement for shading in contract documents.	Before project goes out to bid.	PP&C PM	PM cite to relevant sections of contract documents in mitigation

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shades, which will be used during periods of night lighting, or will be screened with earthen berms and vegetation designed and positioned in such a way as to exclude direct light from the greenhouses from spilling into YLR during night time.	Inspect shade installation for light control effectiveness and work with contractor to modify if necessary for light control.	Upon installation		monitoring checklist.  PP&C PM confirms shades are installed as specified.
<b>MSC Projects Mitigation Measure BIO-12A:</b> During the first rainy season after brush wattles are installed in the outflow channel downstream of wetland W1, a biologist will inspect the channel after each major storm to assess whether wattles have been effective in slowing flows and decreasing erosion, and have not introduced any unanticipated effects, such as increased erosion under the wattles. If new erosion is observed, the wattles would be removed and an alternative solution for erosion repairs proposed.	Reserve will contract with qualified biologist to conduct survey as specified.  Biologist inspect channel for erosion.  Reserve remove wattles and implement alternative solution.	Before October 1 of the first rainy season after brush wattles are installed.  After each major storm, during first rainy season after brush wattles are installed.  If new erosion is observed.	YLR	YLR staff document inspections and any subsequent actions in SRP annual report.
<b>MSC Projects Mitigation Measure BIO-12B:</b> A silt fence will be erected along the north side of the Delaware Avenue Extension prior to any work on the roadbed removal project and will be maintained throughout construction on this project element. If any silt or other material is inadvertently dropped into wetland W3, it will be removed by hand shovel.	Include fencing specifications and requirements for hand removal of materials from wetlands in contract documents.  Inspect silt fence to confirm effectiveness	Before project goes out to bid.  Periodically throughout construction	PP&C PM  PP&C Inspector	PM cite to relevant sections of contract documents in mitigation monitoring checklist.  Document in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-12C:</b> Erosion repairs at the NOAA outfall west of McAllister Way will be confined to hand placement of rocks, or in conjunction with "soft" engineering solutions, such as placement of brush wattles in the channel, which will serve as a wetland restoration measure. Fence design will minimize or avoid intrusion into the channel.	PM ensure that mitigation requirements are incorporated into project design.	During construction drawing phase.	PP&C PM	PM cite to relevant sections of contract documents in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-12D:</b> At the point where the proposed De Anza pedestrian trail crosses the outlet culvert at the east end of wetland W4, the trail crossing will be designed to avoid fill into the wetland and outflow channel. This may be accomplished by use of buttresses placed outside wetland margins to support an elevated walkway, or any other	PM ensure that mitigation requirements are incorporated into project design.	During construction drawing phase.	PP&C PM	PM cite to relevant sections of contract documents in mitigation monitoring checklist.  PP&C PM confirms work is completed as specified.

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
solution that ensures that no fill is spilled into the wetland during construction.				
<b>MSC Projects Mitigation Measure BIO-15:</b> A qualified biologist or biologists will be identified as Biological Mitigation Coordinator, prior to the start of the construction documentation phase of the project to be involved in coordination and communication of biological mitigation requirements throughout project planning and construction. The responsibilities of the Biological Mitigation Coordinator will include: review of project specifications to ensure that biological mitigation measures are accurately conveyed to contractors; review of project plans to advise on the need for and specific placement of exclusion fencing for each project elements; assistance with regulatory consultation as needed; attendance at regular meeting with project managers and contractors to ensure that biological mitigation measures are appropriately included in the construction schedule to ensure that these measures are effective; and coordination of biological monitoring.	<p>Campus will contract with qualified biologist to conduct survey as specified.</p> <p>PM set up and coordinate regular project meetings to include Biologist</p> <p>Biological monitor review project specifications and plans, attend regular meetings with University project manager and contractors, with PM to coordinate biological surveys and monitoring with construction activities and document in monitoring logs</p>	<p>Before project goes out to bid</p> <p>Throughout construction</p> <p>Throughout construction</p>	PP&C PM	PM include in project file: comments of biological monitor on project plans and specifications; responses to these comments; meeting minutes or other meeting documentation, and Biologist's monitoring logs.
<b>CLRDP Project-Specific Mitigation Measure 4.5-1:</b> If human remains are discovered during the construction of a development project under the CLRDP, the University and/or its employees shall notify the Santa Cruz County Coroner's Office immediately. Upon determination by the County Coroner that the remains are Native American, the Coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and the County Coordinator of Indian Affairs and appropriate Native American consultation shall be conducted, as outlined by PRC 5097.98.  Implementation Measure 3.9.1, Construction Monitoring, as identified in the CLRDP, shall also apply. UCSC will be responsible for implementing this mitigation measure.	<p>Include in construction contract the requirement that the University be notified if suspected human bone is discovered or in the event of an archaeological discovery.</p> <p>Stop work in vicinity and contact archaeologist in the event of an archaeological discovery and archaeologist and County Coroner in the event of discovery of suspected human bone. Contact California Native American Heritage Commission and conduct Native American consultation if Coroner</p>	<p>Prior to issuing bid packet.</p> <p>Upon discovery , prior to continuing construction</p>	<p>PP&amp;C</p> <p>PP&amp;C</p>	<p>Cited specification in project MMR</p> <p>Document find, consultation results, archaeological report in project file.</p>

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
	determines the remains are Native American.			
<b>MSC Projects Mitigation Measure CULT-2A:</b> An archaeologist will be present during road ripping along the Delaware Avenue Extension to document the cross section of the roadbed and any associated railroad-related features that might be uncovered. If potentially significant features are uncovered, work in the immediate vicinity will stop until the find can be recorded and assessed. An archaeologist also will be present during any work in the W1 channel that may modify any existing concrete features in the channel to document and assess these features.	<p>Campus will contract with qualified archaeologist to conduct survey as specified.</p> <p>Archaeologist will monitor during road ripping and during work in W1 channel that may modify existing concrete structures.</p> <p>PM will stop work until find can be recorded and assessed.</p>	<p>Before work begins on the restoration of Delaware Avenue Extension or in W1 channel.</p> <p>During road ripping and during work in W1 channel.</p> <p>If potentially significant features are uncovered.</p>	PP&C PM	PM include archaeologist's monitoring report in project file.
<b>MSC Project Mitigation Measure CULT-2B:</b> The interpretive signage included in the proposed MSCI Phase A and NEF Projects will include at least one sign commemorating the history of the Ocean Shore Railroad. The Campus will develop appropriate content for the sign through archival research into the construction, route, and history of the railroad. The sign will at a minimum delineate the route of the railroad line; provide a brief discussion of its significance in local history; and interpret any physical remnants that are uncovered during construction. The manager of the YLR will be consulted about the appropriate placement of historic signage along the pedestrian path that follows the former railroad route.	PM coordinate with historian or archaeologist to ensure that appropriate text is developed and that sign is included in MSCI Phase A or NEF project specifications.	During detailed design and prior to issuing bid documents.	PP&C PM	PM cite relevant sections of contract specifications in mitigation monitoring checklist.
<b>MSC Projects Mitigation HYD-2:</b> The Campus shall monitor water levels in the root zones in wetlands W4 and W5 on a weekly basis for at least one full wet season (Oct. 1-May 15) before development of the CBB and MSCI Projects begins, and use the data to relate water levels at the monitoring points to an Antecedent Precipitation Index (API). After construction of the proposed CBB and MSCI Projects has been completed, the Campus shall continue the monitoring weekly for two winters. If the measured water levels at the monitoring points fall below the lower 95-percent confidence limit of the water	YLR and PP&C civil engineering or environmental planning staff install piezometers in wetlands W4 and W5 using methodologies set forth in the US Army Corps of Engineers 2005 <i>Technical Standard for Water-Table Monitoring of Potential Wetland Sites</i> . Monitor water	Monitor weekly for at least one full wet season (Oct. 1-May 15) before project construction begins.	YLR and PP&C civil engineering or environmental planning staff	PP&C environmental planning staff include all monitoring data and analysis in project file.

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSC I Project)**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
level-API curve for 2 consecutive weeks during any monitored wet season, the Campus shall take actions as necessary to return the wetland water levels to pre-project conditions. Examples of the types of actions the Campus could undertake are modifying the outlet of Detention Basin 1 or the outlet to the wetland W4 buffer from Parking Lot D to increase the flow to wetland W4.	<p>levels in the piezometers, obtain site precipitation data, and create an API.</p> <p>YLR continue monitoring after construction and compare results to API.</p> <p>PP&amp;C ensure that storm water management features are modified as necessary to return the wetland water levels to pre-project conditions as defined by the API.</p>	<p>Weekly, during the wet season, for two years after construction of the CBB and MSC I projects has been completed.</p> <p>If the measured water levels at the monitoring points fall below the lower 95-percent confidence limit of the water level-API curve for 2 consecutive weeks during any monitored wet season.</p>	<p>YLR and PP&amp;C</p> <p>PP&amp;C</p>	
<b>MSC Projects Mitigation Measure HYD-3:</b> Where the new sewer line extends below the bedrock surface, concrete trench plugs that will act hydraulic barriers to groundwater flow shall be installed in the trench. Between the bedrock of bedrock and the pavement section, the trench backfill shall consist of permeable materials.	PM ensure that mitigation requirement is incorporated into sewer line design.	During construction drawing phase.	PP&C	PM cite to relevant drawings in mitigation monitoring checklist.  PP&C PM confirm sewer line is constructed as specified.
<b>MSC Mitigation Measure LU-1:</b> Implement CLRDP Amendment #1, proposed actions 1 through 10.	The Regents or delegated authority adopt proposed CLRDP Amendment #1 actions 1 through 10.	With the first approval of any of the MSC Projects.	PP&C/ Regents/ Delegated authority	PM include approved Action Item in project file.
<b>MSC Mitigation Measure LU-2A:</b> Amend CLRDP IM 5.3.7, as follows: " <del>All parking demand for employees, students and visitors shall be satisfied on Campus and n</del> New development shall include adequate and enforceable measures to ensure that <del>all parking demand is satisfied on campus</del> associated with CLRDP development does not impact public parking or coastal access on streets adjacent to the MSC, including Delaware Avenue.	Include proposed CLRDP Amendment #1 action 11 in action for CBB or MSC I, whichever is adopted first.	With approval of the CBB Project and/or MSC I Project	PP&C/ Regents/ Delegated authority	PM include approved Action Item in project file.
<b>MSC Mitigation Measure LU-2B:</b> The Campus will implement MSC Mitigation Measures TRA-1A through -1C.	See below.			
<b>CLRDP Project-Specific Mitigation Measure 4.11-4:</b> Prior	Develop construction noise	Prior to initiation of	Physical Planning	Document measures adopted and

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<p>to the initiation of construction, the University shall approve a construction noise mitigation program including but not limited to the following:</p> <p>The University shall require that construction activities be limited to a schedule that minimizes disruption to noise-sensitive uses on the project site and in the vicinity through implementation of the following:</p> <ul style="list-style-type: none"> <li>• Construction activities during daytime and evening hours (7:00 AM to 10:00 PM) shall not occur within 150 feet of sensitive receptors, when feasible. Construction activities within 500 feet of sensitive receptors activities shall not occur during nighttime hours (10:00 PM to 7:00 AM).</li> <li>• Whenever possible, academic and administrative staff, as well as residents who will be subject to construction noise, shall be informed one week before the start of each construction project.</li> <li>• Loud construction activity as described above within 150 feet of an academic or residential use shall, to the extent feasible, be scheduled during holidays, spring break, or summer break.</li> <li>• To reduce noise impacts from construction, the University shall require that construction contractors muffle or otherwise control noise from construction equipment through implementation of the measures below. The effectiveness of these measures is quantified in Table 4.11-4 above.</li> <li>• Internal combustion engines used for any purpose at the construction sites shall be equipped with a muffler of a type recommended by the manufacturer.</li> <li>• Equipment used for construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible);</li> <li>• Impact tools (e.g., jack hammers, pavement breakers,</li> </ul>	<p>mitigation program and adopt as part of standard construction contract specifications</p> <p>Inspect construction site to verify that measures are being implemented.</p>	<p>construction under the CLRDP</p> <p>During construction</p>	<p>and Construction</p> <p>Physical Planning and Construction</p>	<p>compliance monitoring in CLRDP annual mitigation monitoring report</p>

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<p>and rock drills) used for construction shall be hydraulically or electrically powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. Such mufflers can lower noise levels from the exhaust as much as 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures such as using drilling equipment rather than impact equipment shall be implemented whenever feasible.</p> <ul style="list-style-type: none"> <li>Stationary noise sources shall be located as far from sensitive receptors as feasible. If they must be located near sensitive receptors, they shall be muffled to the extent feasible and/or, where practicable, enclosed within temporary sheds.</li> <li>The University shall require that a temporary wooden wall be placed around construction activity areas that are within 150 feet of sensitive receptors to provide additional noise attenuation, where feasible. The wall should impede the direct line of site between the noise sources and sensitive receptors.</li> <li>The University shall require that construction-related material haul trips access the campus via Natural Bridges Drive and Delaware Avenue in order to minimize noise exposure to residential land uses.</li> <li>The University shall identify potential noise impacts related to construction of long-term projects proposed under the CLRDP, and develop project-specific noise mitigation measures as may be necessary. The University shall take into account the location of the five campus facilities that will have been developed in the near-term as well as off-campus developments nearby. The analysis shall also take into account the sequence in which long-term projects are to be constructed and shall identify appropriate mitigation, as</li> </ul>	<p>Conduct project-specific noise analysis and develop appropriate mitigation measures, as necessary.</p>	<p>During CEQA analysis for long-term projects</p>	<p>Physical Planning and Construction</p>	<p>Document analyses in CEQA document</p>

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
may be required. These future facilities may be sensitive receptors or may act as barriers to noise approaching other sensitive receptors.				
<b>MSC Projects Mitigation NOIS-4:</b> If construction of the proposed MSCI and NEF project elements in the vicinity of the MSC entrance overlaps with construction of a desalination plant on the property at the northeast corner of Delaware Avenue and Shaffer Road, the Campus shall evaluate potential cumulative noise impacts at the residences to the east of the MSC. If necessary to reduce noise at these residential receptors to levels below the relevant significance threshold, the Campus shall construct a temporary wood sound wall between the MSC entrance construction and the eastern boundary of the campus. The Campus shall also coordinate with the City of Santa Cruz on the scheduling of construction activities in the MSC entrance area to minimize the generation of cumulative construction noise.	<p>Consult with the City of Santa Cruz to determine whether and what elements of desalination plant construction will coincide with MSC Projects construction schedule.</p> <p>If construction will be concurrent, evaluate concurrent activity locations and equipment to determine whether construction noise threshold will be exceeded at nearby residences.</p> <p>If thresholds will be exceeded, coordinate with City to reduce concurrent activity, or install noise-attenuating devices as needed.</p>	<p>Prior to the start of MSCI and NEF construction.</p> <p>Upon determining that planned construction schedules will overlap.</p> <p>Prior to any period of concurrent construction activity.</p>	<p>PP&amp;C</p> <p>PP&amp;C/ PM</p> <p>PP&amp;C in consultation with City of Santa Cruz</p>	<p>Document consultation in project file</p> <p>Include noise evaluation report in project file</p> <p>Include documentation of consultation and installation of noise attenuation (if needed) in project file.</p>
<b>CLRDP General Mitigation Measure 4.15-2:</b> UCSC will contribute its fair-share towards construction of a separate pedestrian path on the north side of Delaware Avenue from Shaffer Road to the existing sidewalk west of Natural Bridges Drive. This improvement could be as simple as installing a raised asphalt curb approximately five to six feet away from the existing curb or edge of pavement with openings to maintain existing drainage. Design and construction of this improvement to close the existing gap in pedestrian facilities in this area can and should be completed by the City of Santa Cruz since Delaware Avenue is under its jurisdiction.	Negotiate with City to determine an appropriate fair share contribution towards necessary road improvements.	Prior to occupancy of first project	Physical Planning and Construction	Report fair share payments in CLRDP Annual MMR
<b>CLRDP General Mitigation Measure 4.15-6</b> [applicable portions]: ...The University shall contribute its fair share toward the cost of improvements to the intersections at High	For each project proposed under CLRDP, analyze number of peak hour trips added to	During project-level environmental review	Physical Planning and Construction	Report analytical results in CEQA document

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
Street/Western Drive....Mitigation measures include traffic signals at the High Street/Western ....	intersections by each project.  Negotiate with City to determine an appropriate fair share contribution towards necessary road improvements.	Prior to Project occupancy	Physical Planning and Construction	Report payments in CLRDP annual MMR
<b>MSC Projects Mitigation TRA-1A:</b> UCSC shall widely disseminate transportation information to visitors, staff, faculty, and students at the Marine Science Campus through the UCSC Web page. Printed information shall also be made available at central locations on the Marine Science Campus, and new employees at the site will be informed of transportation options and referred to the online materials.  In addition, students registering for classes or internships at the MSC shall be informed of parking restriction at the MSC and of transportation options including computer-matched carpooling, transit, and bicycle and pedestrian routes to the site. All such TDM and other transportation materials shall include clear description of the available shuttles, SCMTD bus options, and other alternative transportation programs (including schedules, costs, etc.); availability of secured bicycle storage facilities within buildings for employees; availability of lockers and showers; Campus maps with appropriate facilities identified; etc.	TAPS will include information about transportation options and parking restrictions at the MSC on the TAPS website and make this information available to Human Resources.  TAPS shall ensure that information is provided to students at registration or at first class meeting or at first class meeting.	At occupancy of the CBB Project and at the beginning of each quarter thereafter.	TAPS	TAPS provide documentation of informational programs to PP&C planning staff to include in annual CLRDP mitigation monitoring file and summarize in annual mitigation monitoring report.
<b>MSC Projects Mitigation Measure TRA-1B:</b> UC Santa Cruz will conduct a baseline survey of parking utilization on both sides of the segment of Delaware Avenue between Natural Bridges Dr. and the campus entrance in fall 2011 and then will monitor Delaware Ave. parking utilization in this area twice annually (fall and spring) during times and days when MSC classes are scheduled. If parking utilization exceeds 80 percent and there is evidence of increasing utilization from year to year, or if there is qualitative evidence of unmet public coastal access parking demand, such as public complaints, increased circulation by drivers seeking parking, or parking shortages in the 2300 Delaware Ave. lots independent of increased population at that facility, implement TRA-1C.	TAPS will conduct baseline parking utilization survey and circulation monitoring as specified in the mitigation.  TAPS will post email, phone and other contact information on its website, on the Seymour Discovery Center website, and in all published parking information materials, and will assign a staff member to be responsible for monitoring and addressing parking complaints	Twice a year during academic class periods and days, beginning in Fall 2011.  Prior to occupancy of CBB	TAPS  TAPS	TAPS provide document results of survey to PP&C planning staff for inclusion in annual CLRDP mitigation monitoring file.  TAPS will tabulate complaints and provide explanation of how complaints were addressed and this information will be summarized in the annual CLRDP mitigation monitoring file. TAPS also will report when TRA-1C has been triggered, or provide evidence based on

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
	and reporting on results as basis for determining whether implementation of TRA-1C is needed.			monitoring and complaint resolution that TRA-1C has not been triggered.
<p><b>MSC Projects Mitigation Measure TRA-1C:</b> UCSC will implement the following or other equally effective measures in a coordinated program to reduce UCSC contributions to parking on Delaware Ave. such that total parking utilization during weekday class times is 70 percent or less:</p> <ul style="list-style-type: none"> <li>• Work with the City of Santa Cruz to evaluate whether parking regulation is needed and, if so, assist the City in developing and implementing a City-UCSC permit program for Delaware Ave. parking to regulate the number of vehicles that may park or parking duration.</li> <li>• Provide off-street parking by permit at UCSC's 2300 Delaware Ave. facility or other nearby locations. This option would be implemented most effectively in conjunction with parking management on Delaware Ave.</li> <li>• Implement CLRDP IM 5.7.3: UCSC shall provide a shuttle service or bike shuttle service between the main campus and MSC as demand warrants and as needed to meet the 40 percent travel mode split goal. Shuttles shall be scheduled to correspond with classes, and class schedules will be developed in coordination with TAPS to minimize operational demands.</li> </ul>	Procedures will vary depending on the measure selected.	This mitigation to be implemented if conditions described in MSC Projects Mitigation Measure TRA-1B are met, based on results of monitoring and annual monitoring report.	TAPS	TAPS will provide documentation of measures taken to reduce parking demand to PP&C planning staff annually, for inclusion in annual CLRDP mitigation monitoring file.
<p><b>MSC Mitigation Measure TRA-2:</b> The University made a fair share payment in 2008 for impacts to this intersection under the 2008 Comprehensive Settlement Agreement. The CBB Project will contribute equivalent payments to the City's Traffic Impact Fee program for the project's proportionate share contribution to the cost of the improvement consistent with CLRDP General MM 4.15-6, which is included in the project, and based on trips generated by building gsf (or other methodology agreed to by the City to determine trip contribution), as agreed under the 2008 Comprehensive Settlement Agreement. The City has included the required improvement and its cost on its Traffic Improvement Fee study list.</p>	Director of Campus Planning consult with City to determine project payment based on trip contribution; Executive Vice Chancellor authorize payment.	Before occupancy of the CBB Project.	PP&C planning staff, EVC	Campus planning staff document in project file and annual CLRDP report that payment has been made.

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<b>MSC Projects Mitigation Measure TRA-3A:</b> UC Santa Cruz will implement MSC Projects Mitigation Measure TRA-1A to reduce campus-related motor vehicle trip generation and related parking demand.	See TRA-1A, above			
<b>MSC Projects Mitigation Measure TRA-3B:</b> UCSC will implement CLRDP General Mitigation Measure 4.15-2, to contribute toward sidewalk improvements for increased pedestrian safety and ease of access.	Implemented and monitored as part of the CLRDP mitigation monitoring and reporting program.	When City determines to make improvement	PP&C/ City of Santa Cruz	PP&C will report status of sidewalk contribution in CLRDP annual MMR
<b>MSC Projects Mitigation TRA-4A:</b> Parking lot entrances to campus roads will be stop sign-controlled to minimize potential motor vehicle, pedestrian and bicycle traffic conflicts.	PM will ensure that stop signs are included in final bid drawings.	During final design and before project goes out to bid.	PP&C PM	PM cite relevant construction specifications and drawings in mitigation monitoring checklist.
<b>MSC Projects Mitigation TRA-4B:</b> A stop sign will be installed on the new Delaware Avenue Extension at the campus exit (eastbound) and other traffic-calming measures will be included in the entrance design if warranted based on design assessment. and The University also will coordinate with the City of Santa Cruz regarding recommended installation of stop signs at the MSC entrance intersection on Shaffer Road (southbound), Delaware Avenue (westbound), and the exit from the De Anza residential community.	PM will ensure that design measures as needed for traffic calming at the entrance, such as a speed bump, are assessed during final design and that, at a minimum, stop sign at campus entrance is included in project design and construction specifications.  Director of Campus Planning/ TAPS consult with City regarding installation of stop signs at other locations at the Delaware Avenue and Shaffer Road intersection.	During final design, before project construction goes out to bid.  Before the new campus road is operational	PP&C PM  PP&C Director of Campus Planning/ TAPS	PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist and include project notes documenting consideration of other traffic calming measures for the entrance in project file.  PM document coordination with City in project file.
<b>MSC Projects Mitigation Measures TRA-4C:</b> When new fencing is installed along the northern and eastern boundaries of the campus, signage will be posted on the fence at a location adjacent to each pedestrian route advising caution in crossing the adjacent railroad tracks.	PM ensure that signage is included in fence specifications and drawings in construction bid documents	Prior to issuing bid documents	PP&C/ PM	PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist
<b>MSC Projects Mitigation Measure TRA-5A:</b> Delaware Avenue Extension will not be closed to vehicle traffic until the new entry road proposed by the MSCI Phase A Project is	PM include requirement in contract documents.	Before project goes out to bid.	PP&C PM	PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist.

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
operational for normal vehicle use.				
<p><b>MSC Projects Mitigation Measure TRA-5B:</b> The University will include the following requirements in construction contract specifications to minimize traffic blockage and delays:</p> <ul style="list-style-type: none"> <li>• Construction work shall be conducted so as to ensure the least possible obstruction to traffic.</li> <li>• At no time will more than one lane of Delaware Avenue Extension or McAllister Way be blocked.</li> <li>• Contractors shall provide traffic control when any vehicle lane is blocked.</li> <li>• Contractors shall notify the University's representative at least two weeks before any partial road closure.</li> <li>• When a pedestrian/bicycle path will be blocked, detour signs will be installed to clearly designate an alternate route. Temporary fencing or other indicators of pedestrian and bicycle hazards will be provided.</li> <li>• Fire hydrants shall be kept accessible to fire- fighting equipment at all times.</li> </ul>	PM include specified requirements in contract documents.	Before project goes out to bid.	PP&C	<p>PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist.</p> <p>PM confirm implementation of mitigation at quarterly mitigation monitoring checklists during construction phase.</p>
<p><b>MSC Projects Mitigation Measure TRA-5C:</b> Construction project managers will notify City police and fire departments, the Director of the Seymour Center, NOAA, CDFG, and campus dispatchers in advance of lane closures, to ensure adequate access for routine operation and emergency vehicles during temporary lane closures.</p>	As specified in the mitigation.	Ongoing, throughout construction.	PP&C PM	PM maintain record of notifications in project file.
<p><b>MSC Projects Mitigation Measure TRA-5D:</b> The Campus will coordinate among contractors and subcontractors to minimize the number and extent of simultaneous construction activities that affect driveways, paths, and roadways, and will require contractors to plan for daily construction activities a week in advance, provide a schedule, and observe the schedule to the greatest extent feasible. The University's representative will develop a weekly schedule of contractor activities and provide to NOAA, CDFG, the Director of the Seymour Center and other affected parties. Construction project managers will coordinate regularly with the University's representative who will notify NOAA, CDFG, the manager of LML, and the director of the Seymour Marine Discovery Center to keep</p>	<p>PM include scheduling requirements in project contract documents.</p> <p>PM develop weekly schedule of contractor activities and make notifications as specified in the mitigation.</p>	<p>Before project goes out to bid.</p> <p>Ongoing, throughout construction.</p>	PP&C PM	<p>PM cite relevant section of contract documents in mitigation monitoring checklist.</p> <p>PM maintain record of notifications in project file.</p>

<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&amp;S Facility Projects and former MSCI Project)</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
them informed of upcoming construction activities; path, lane or parking lot closures; and major equipment activity or material hauling as far in advance as feasible, to minimize potential construction conflicts with routine and special event traffic.				
<b>MSC Projects Mitigation Measure TRA-5E:</b> The Campus will coordinate regularly with the City of Santa Cruz on the timing and nature of work at the campus entrance and along Shaffer Road to minimize construction traffic conflicts with residents of the De Anza facility and with users of the Homeless Garden Project, and will inform De Anza residents and Homeless Garden Project users of construction activity with signs or flyers.	PM coordinate with City and notify De Anza residents and Homeless Garden Project as specified in the mitigation.	Throughout construction, at times of heavy truck traffic.	PP&C PM	PM maintain record of communications with City, De Anza residents, and Homeless Garden Project.
<b>MSC Projects Mitigation Measure TRA-5F:</b> The University will post flyers and/or signs at the MSC entrance and major campus facilities and provide the same for the Homeless Garden Project and the De Anza facility, with a University phone number or other means for the public to submit questions or complaints regarding construction traffic or traffic incidents, and will respond promptly to inquiries and complaints and, if warranted after investigation, take specific actions to resolve the complaint.	PM post flyers and/or sign as specified in the mitigation.	Throughout construction.	PP&C PM	PM maintain record of postings in project file.
<b>MSC Projects Mitigation Measure TRA-6:</b> Implement MSC Projects Mitigation TRA-2, above.	See TRA-2, above			
<b>CLRDP General Mitigation Measure 4.16-1A:</b> All toilets, urinals, showers, and washing machines installed as part of this project shall be specified as low-flush and low-flow in order to reduce onsite water consumption. The University shall install low-flow toilets and urinals that are 1.6 gallon/flush or less and low-flow showers that are 2 gallons per minute (gpm) or less in new development. Further, in all new residential uses washing machines must be certified by the Consortium on Energy Efficiency (CEE) to be water- and energy-efficient (such as those with the Energy Star® label).	Include in construction specifications the requirement for low-flush and low-flow equipment.	Prior to issuing bid package	Physical Planning and Construction	Cite specification numbers in MMR
<b>CLRDP General Mitigation Measure 4.16-1B:</b> If and when	To be determined, based on	During the design of each	Physical Planning	Report water saving offsets in

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**

**Table 9-1. Coastal Biology Building Project (including MSC Parking Phase 1 and MSC EH&S Facility Projects and former MSCI Project)**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
the City adopts policies requiring all projects (or all similar institutional or commercial projects) within the water system to offset new water demand or any other water demand reduction policies, the University will consider voluntary compliance with the policy, with appropriate credit being given to account for UCSC's previous water conservation activities (in excess of that accomplished by the similar institutional and/or commercial entities covered by the City policy).	City policy.	project, following the adoption of pertinent policies by the City of Santa Cruz OT	and Construction	CLRDP Annual MMR
<b>CLRDP General Mitigation Measure 4.16-1D:</b> The City can and should identify and develop new water supplies to reliably accommodate increases in water supply due to UCSC Marine Science Campus CLRDP-related growth and other background growth during normal and drought conditions.	Outside the jurisdiction of UCSC.	--	City of Santa Cruz	Report status in CLRDP Annual MMR
<b>MSC Projects Mitigation Measure UTIL-9:</b> Before CBB Project construction is completed, the Campus shall conduct a water efficiency study of existing University facilities at the MSC. The study will assess existing campus water uses, identify options for reducing water consumption, prioritize feasible improvements based on the amount of potential water savings and cost effectiveness, and recommend top priority measures for implementation within the succeeding five years. The Campus shall implement the top priority measures within five years of completing the study.	Physical Plant conduct study.  Physical Plant and other units identified in the study implement top priority measures.	Before occupancy of CBB Project.  Within five years of completing the study.	Physical Plant  Physical Plant	Physical Plant provide results of study to Campus planning staff, who will summarize the results in the annual CLRDP mitigation monitoring report.  Physical Plant track implementation and annually provide summary to Campus planning staff, who will summarize the information in the annual CLRDP mitigation monitoring report.

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<p><b>CLRDP EIR General Mitigation Measure 4.2-1:</b> UCSC will install a four-foot-high landscaped fence along the Younger Ranch property line that will extend from the bend in the existing access road, northward along the property line. The fence will be sited and constructed to have a uniform gap of 16 inches between a smooth wire defining the bottom of the fence and the ground. This will assure that wildlife passage can continue to occur through the fence.</p> <p>UCSC will install tree and shrub landscaping approximately 25 feet inside the fence (to minimize shading effects on Younger Ranch crops), consisting of an indigenous, drought-resistant mosaic of mid-level shrubs and taller trees to help dissipate dust generation from the west. Tree and shrub choices will be made in conjunction with the landscape architect experienced in the use of native plants and vegetation. Trees and shrubs will be selected for non-invasive character. Native blackberries are recommended, as they would serve as an access barrier.</p> <p>UCSC will install the fence and landscaping prior to groundbreaking of any CLRDP project components.</p>	<p>Install fence and landscaping.</p> <p>Document that fence and landscaping have been installed consistent with requirements in the mitigation measure</p>	<p>Prior to groundbreaking of any project component</p> <p>Prior to construction</p>	<p>PP&amp;C</p> <p>PP&amp;C</p>	<p>Report in CLRDP EIR annual mitigation monitoring report</p> <p>Report in annual MMR</p>
<p><b>MSC Projects Mitigation Measure AIR-1:</b> The University shall revise CLRDP General Mitigation 4.3-1 as shown below:</p> <p><b>CLRDP EIR Mitigation Measure 4.3-1:</b> The University shall require construction contractors to implement a dust abatement program to reduce the contribution of project construction to local respirable particulate matter concentrations. Elements of this program shall include the following as appropriate for each project:</p> <ul style="list-style-type: none"> <li>Water all active construction areas at least twice times daily <b><i>and at least three times daily during the months of February through November. Frequency shall be based on the type of operation, soil, and wind exposure.</i></b></li> </ul>	<p>PM will include measures from bullet list that are applicable to the project in construction specifications.</p> <p>Inspector will monitor and require correction of any violations.</p> <p>PM will register and respond to any dust complaints.</p>	<p>Identify appropriate measures prior to issuing construction bid documents.</p> <p>Throughout construction</p> <p>Throughout construction</p>	<p>PP&amp;C/ PM</p> <p>Inspector/ PM</p> <p>PP&amp;C/ PM</p>	<p>PM cite numbers of construction specifications where measures are identified in mitigation monitoring report (MMR)</p> <p>Any violations will be noted in MMRP.</p> <p>Any complaints and their resolution will be recorded in annual MMR.</p>

**Table 9-2**  
**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**  
**Nature Education Facilities Project**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<ul style="list-style-type: none"> <li>• Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).</li> <li>• Pave, apply water two times daily, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and construction staging areas.</li> <li>• Sweep daily with water sweepers any paved access roads, parking areas, and staging areas at construction sites.</li> <li>• Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.</li> <li>• Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas or previously graded areas left inactive for ten days or more.</li> <li>• Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).</li> <li>• Limit traffic speeds on unpaved roads to 15 miles per hour.</li> <li>• Install sandbags or other erosion control measures to prevent silt runoff to public roadways.</li> <li>• Replant vegetation in disturbed areas as quickly as possible.</li> <li>• In the event that grading and excavation at two or more large project sites is proposed to occur concurrently (large sites defined as involving more than 2 acres), install wheel washers at the entrance of the construction sites.</li> <li>• Phase construction projects in such a manner that minimizes the area of surface disturbance (e.g., grading, excavation) and the number of vehicle trips on unpaved surfaces.</li> <li>• <u><i>Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and</i></u></li> </ul>				

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<u>take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402.</u>				
<b>MSC Project Mitigation BIO-1:</b> A qualified botanist will conduct up to three focused surveys for special-status plant species on and within the full extent of all vegetated areas that will be subject to project activity (ground disturbance, placement of spoils, construction vehicle parking, or traffic, etc.) for each project element during the spring-summer (April-August) blooming period, within two years prior to the beginning of construction. If no special-status species are observed during the focused surveys, no additional mitigation is necessary. If special-status plants are observed, the population will be mapped and quantified and a suitable buffer zone established (based on species requirements, proximity to the work area, and other site specific factors), and other protection measures, such as fencing around the population to protect it from disturbance, will be implemented as determined necessary by the biologist. If the population cannot be avoided by the project, impacts to the population shall be quantified and regulatory agencies (California Department of Fish and Game, and/or U.S. Fish and Wildlife Service, as appropriate) contacted for guidance or permitting, depending on the species affected, and additional measures that may be identified by regulatory agencies to mitigate adverse effects, such as soil stockpiling, transplantation, and/or seed collection and propagation, would be implemented.	<p>Campus will contract with qualified biologist to conduct survey as specified.</p> <p>Biologist will map and quantify species population and establish buffer.</p> <p>PM and planners will consult to determine whether plants can be avoided</p> <p>PM will ensure that fencing and other protective measures are implemented.</p> <p>If plants cannot be avoided, Campus will consult with regulatory agency(ies) and take additional measures as required.</p>	<p>Spring and summer (April-August) within two years before beginning of construction.</p> <p>Upon discovery of special-status species in project footprint.</p> <p>Prior to start of construction</p> <p>Throughout construction</p> <p>Upon determination that special-status plant population cannot be avoided. Timing of additional measures as specified by regulatory agencies</p>	PP&C Project Manager (PM)	<p>PM will ensure that survey report is included in project file.</p> <p>Map and biologist's buffer recommendations in project file.</p> <p>Buffer and procedures included in contract documents.</p> <p>Daily biological monitoring logs will include inspection of any plant protections</p> <p>Agency correspondence in project file. Document additional measures as required.</p>
<b>MSC Projects Mitigation Measure BIO-3A:</b> Within two weeks prior to the start of construction, and each time a new crew starts work, a qualified biologist will present a worker education program and associated documentation to all new construction personnel at the project site. The on-site foremen will ensure that all construction personnel and subcontractors receive a copy of the written biological education materials. The education program shall include a description of the CRLF	<p>PM will include training requirement in contract documents.</p> <p>PM will contract with biologist to provide training and brochure and will coordinate</p>	<p>Within two weeks prior to the start of construction, and each time a new crew starts work.</p> <p>Prior to start of construction</p>	PP&C PM	<p>PM will cite relevant contract document section in mitigation monitoring checklist.</p> <p>PM will include brochure and biologist's daily monitoring logs in project file.</p>

**Table 9-2**  
**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**  
**Nature Education Facilities Project**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
and its habitat, the general provisions of the Endangered Species Act, the necessity of adhering to the Act to avoid penalty, and measures that will be implemented, specific to the project and the work boundaries of the project, to avoid affecting CRLF.	with contractor to schedule training session.  Biologist will contract training as needed and document on daily monitoring log	Prior to start of construction and ongoing as needed		PM will include record of trainings in project file.
<p><b>MSC Projects Mitigation Measure BIO-3B:</b> In consultation with a qualified biologist (see MSC Projects Mitigation Measure BIO-15 [Biological Mitigation Coordination]), the Campus will ensure that an exclusion fence for CRLF and western pond turtle is installed around each work area that contains vegetation that could provide appropriate cover for CRLF and/or appropriate nesting habitat for western pond turtle (see MSC Projects Impact BIO-6 below), prior to construction, to prevent CRLF and western pond turtle from moving onto the site. Areas that will be disturbed by SRP Phase 1B activities, road and trail construction and utility construction will be subject to separate mitigation measures, as exclusion fencing would not be effective or practicable for these areas. Fencing alignments will be determined as follows: During development of project specifications and construction drawings, the project biologist will review site-work, grading and other pertinent plans with the UCSC Project Manager to determine locations where exclusion fencing for frogs and turtles (as described below) 1) would be effective in excluding wildlife from construction activity areas, 2) could be employed without unduly hindering construction activity, and 3) appears more likely than allowing free night movement through the construction zone to benefit the target species. To minimize unnecessary exclusion of wildlife that may safely pass through, and subject to consultation between the qualified biologist and the project construction manager, areas where disturbance will be short term and/or temporary may be subject to biological monitoring during vegetation clearing and/or during construction, rather than to fencing. The agreed upon fencing alignments will be marked on the plans during biological</p>	<p>PM will consult with biologist to map appropriate fencing alignment and include fencing alignments and specifications, including biological monitoring requirements for installation and construction, in contract documents, following process specified in the mitigation.</p> <p>PM will coordinate with biologist and contractor to adjust fencing alignment.</p> <p>Biologist will document integrity of fencing and any adjustments in daily monitoring log.</p>	<p>Before project goes out to bid.</p> <p>Fence to be installed by April 15 (see MSC Projects Mitigation Measure BIO-6, below), prior to the beginning of construction. Maintain fence throughout construction</p> <p>Inspections throughout construction</p>	PP&C PM	<p>PM will cite relevant contract document section in mitigation monitoring checklist.</p> <p>PM will document any changes to fencing in project file.</p> <p>PP&amp;C project manager confirm that fence is in place throughout construction and include biologist's documentation in project file</p>

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<p>coordination, as specified in Mitigation Measure BIO-15, and included in the project specifications. Prior to any surface disturbance at each location, a qualified biologist will meet in the field with the UCSC project manager and construction foreman to adjust the fencing alignment and timing of erection and removal based on the habitat that will be affected, as well as on the configuration and location of specific construction tasks. The alignments as shown on plans will be subject to adjustment by mutual agreement between the biologist, the project manager and the construction contractors, as necessary to ensure wildlife protection, without unnecessarily impeding construction.</p> <p>Installation of fencing will be monitored by a qualified biologist. Exclusion fence materials may be high-grade nylon silt-fencing, plywood, or other appropriate materials. The base of the fence shall be buried at least 6 inches and it shall extend at least 2.5 feet above grade and shall surround the entire exclusion area. If necessary, an appropriate gate shall be engineered, in consultation with a biologist experienced in implementation of these provisions, to access construction areas that excludes the target species at night, but allows egress by workers and equipment during the day. Roads and pathways necessary to access existing facilities will not be fenced or gated. A cover-board (4 by 4-foot 1/2-inch square of plywood) shall be placed at approximately 100-foot intervals outside the exclusion fence to provide predator protection for small animals that encounter the fence. Each cover-board shall be elevated approximately two inches using two attached 6-inch wooden blocks. The elevated edge of each cover-board shall be placed flush against the outside of the exclusion fence. The cover-boards will be labeled with signage to ensure they are not disturbed, and each shall be regularly inspected by the biological monitor to ensure that they remain in place.</p> <p>Fencing may be removed, upon approval of the qualified biologist, when all construction-related activities that could harm or kill CRLF or damage turtle nests (see MSC Projects</p>				

**Table 9-2**  
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**Nature Education Facilities Project**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
Impact BIO-6, below) are complete; generally, when the majority of exterior work is complete.				
<p><b>MSC Projects Mitigation Measure BIO-3C:</b> Immediately prior to vegetation removal at each project element/work site, including both fenced and unfenced sites, a qualified biologist will survey each work site for CRLF. The biologist will then monitor the initial removal of vegetation in each work area, including the work areas within exclusion fencing and unfenced areas, including trail alignments, utility alignments outside of existing roadways, and the areas of grading proposed for SRP Phase 1B wetland work. Next, vegetation will be cleared, with hand-held equipment, to a height of 3–6 inches above grade. The qualified biologist will then repeat the inspection before any ground disturbance or heavy equipment movement into the area. If CRLF are observed in the work area at any time during this process, ground disturbing work will be postponed and the USFWS contacted for guidance.</p>	<p>PM will contract with Biologist to conduct survey and monitoring as specified, and to document results.</p> <p>Biologist will monitor as specified and document results in daily monitoring log.</p> <p>PM will stop ground disturbing work and contact USFWS if biologist reports CRLF observation and will ensure work does not resume while CRLF are present.</p> <p>PM will consult with USFWS and implement additional requirements.</p>	<p>Prior to start of construction</p> <p>Immediately prior to vegetation removal at each project element/work site; during initial removal of vegetation in each work area; before any ground disturbance or heavy equipment movement into the area.</p> <p>Upon discovery that a CRLF is present</p>	PP&C PM	PM will include Biologist's survey and monitoring reports, and any correspondence with USFWS in project files.
<p><b>MSC Projects Mitigation Measure BIO-3D:</b> Subsequent to vegetation removal, a qualified biologist will inspect every work area each morning prior to the start of construction activity, until all surface-disturbing activities are complete. If no CRLF are observed during the morning inspection, the biologist will depart. After all potential habitat is cleared within the work area, daily monitoring will cease, but the biologist will inspect exclusion fencing weekly and the contractor will repair fencing as identified by the biologist, by nightfall on the same day. If CRLF are observed on or near the</p>	<p>PM will ensure that Biologist inspects every work area daily and documents inspection results on daily log.</p> <p>Biologist will inspect exclusion fencing; contractor repair fencing as needed. Biologist report on daily log</p>	<p>Each morning before construct activity begins, after vegetation is removed, until all surface-disturbing activities are complete.</p> <p>Weekly, after all potential habitat is cleared within the work area.</p>	PP&C	PM will include Biologist's reports in project file.

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work area at any time, work shall cease in proximity to the observation and a qualified biologist and the USFWS will be contacted immediately. Full-time biological monitoring and/or other mitigation measures may then be required.				
<b>MSC Projects Mitigation Measure BIO-3E:</b> Construction work and all construction vehicle movement on the site will be restricted to the hours between dawn and dusk. In addition, construction vehicles and heavy equipment will be restricted from parking at night along road margins except where roads immediately abut existing development. The biological monitor will inspect the area around and under each piece of equipment not parked within the exclusion areas, prior to equipment movement each morning.	PM will ensure that hours of work and equipment inspection requirements are specified in contract documents.  Biological monitor inspect under and around equipment and document in daily log.	Before project goes out to bid.  Each morning, before equipment is moved.	PP&C	PM will cite relevant contract document section in mitigation monitoring checklist.  PM will include Biologist's reports in project file.
<b>MSC Projects Mitigation Measure BIO-4:</b> A qualified biologist will conduct a survey following CDFG guidelines (1995) for wintering burrowing owls during the winter season immediately preceding the start of construction. If the species is detected within the project area, the Campus will contact CDFG for guidance regarding feasible methods to protect owls during construction, and will implement CDFG recommendations to avoid potential impacts to owls.	PM will contract with Biologist to conduct survey as specified.  Biologist will conduct survey as specified and notify PM if owl burrows are present.  PM will contact CDFG for guidance and implement CDFG recommendations if owl burrows are present.	Prior to the start of construction  During winter season immediately preceding the start of construction.  Upon discovery of burrowing owls. CDFG recommendations for avoidance or protection will be implemented throughout construction	PP&C PM	PM will include Biologist's survey report, and any correspondence with CDFG, in projects file.
<b>MSC Projects Mitigation Measure BIO-5:</b> Within 15 days prior to surface disturbance in each project area, a qualified biologist will conduct a pre-construction survey for badger dens and diggings at each project site and within 200 feet of project margins (exclusive of the portion of the YLR surrounding the lagoon, which is already fenced and protected). If a badger den is detected within the project site or the buffer zone (exclusive of the YLR, where no disturbance will occur), a wildlife-friendly exclusion fence shall be installed (steel T-posts and yellow nylon rope or similar	PM will contract with biologist to conduct pre-construction survey as specified in mitigation and will ensure that fencing specifications are included in construction contract.  Biologist to notify PM if protective measures are needed.	Prior to start of construction/ prior to issuing bid documents  Within 15 days prior to surface disturbance in each project area.  Prior to start of construction	PP&C PM	PM will include Biologist's report(s) and any correspondence with CDFG in project file.

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material), 25-feet from the den in all directions, and CDFG shall be contacted for guidance. Additional mitigation measures recommended by CDFG will be implemented to ensure that any badgers present in or near project areas are protected or appropriately relocated.	Contractor will install fence as specified in mitigation, PM will contact CDFG, and implement additional mitigation measures recommended by CDFG.	Upon discovery of occupied badger burrow, prior to the start of construction		
<b>MSC Projects Mitigation Measure BIO-6:</b> Subject to the specifications set forth in MSC Projects Mitigation BIO-3A, above, prior to April 15 during the year of construction (prior to the beginning of nesting season), work areas shall be enclosed with a wildlife exclusion fence as specified in Mitigation Measure BIO-3B (above), before surface disturbance occurs, to reduce the chance that turtles may deposit eggs within the work area. If construction begins before April 15, the exclusion fence requirement specified in Mitigation Measure BIO-3B (above) is still required. In areas that will be temporarily disturbed, such as installation of underground utilities or trail construction, a qualified biologist shall search for any evidence of western pond turtle nesting prior to surface disturbance. If a western pond turtle or nest is discovered, CDFG will be contacted for guidance regarding appropriate protection or, if necessary, relocation of the nest.	PM include training on western pond turtles and monitoring for turtles in contract with biologist.  Installation and maintenance of fence as specified under Mitigation Measure BIO-3B.  Biologist will conduct survey.  Biologist contact CDFG and follow agency's guidance regarding protection or relocation of nest.	Before construction begins.  Fence installed prior to April 15 during the year of construction, or before construction begins, whichever comes first.  Before surface disturbance.  Upon discovery of a turtle and/or nest. CDFG recommendations will for avoidance and/or protection will be followed throughout construction.	PP&C	PM cite to relevant sections/drawings of contract documents in mitigation monitoring checklist.  PM include Biologist's reports and any correspondence with CDFG in project file.
<b>MSC Projects Mitigation Measure BIO-7A:</b> If work in any project site area must commence during the avian breeding season (February 1 to August 31), a qualified biologist shall conduct a pre-construction breeding bird survey throughout areas of suitable habitat within 300 feet of the work area within 15 days prior to the onset of any construction activity. If nesting birds or active nests of any species are observed within a project work area or surrounding buffer, an appropriate buffer zone shall be established around each active nest to protect nesting adults and their young from construction disturbance. The size and configuration of buffer zones for	PM will contract with Biologist to conduct survey, which will be carried out prior to start of construction  PM and biologist will consult	Contract will be in place prior to the start of construction; survey will be conducted within 15 days before any construction activity begins, if work in any project site area must commence during the avian breeding season (February 1 to August 31).  Prior to the start of	PP&C PM	PM include Biologist's reports and any correspondence with CDFG in project file.

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each nest site shall be determined by a qualified biologist in consultation with CDFG based on site conditions and species. Construction work within the buffer zone will be postponed until all the young are fledged, as determined by a qualified biologist.	with CDFG to determine appropriate buffer. PM will notify construction contractor of buffer and ensure it is appropriately marked.  Biologist will monitor nest and integrity of buffer, maintain daily log, and notify PM when buffer can be discontinued.	construction, upon discovery of active nest  Until nest is no longer active		
<b>MSC Projects Mitigation Measure BIO-7B:</b> In addition, to avoid interference by construction noise with bird nesting within YLR, construction work in development Subareas 6 and 7 (the Greenhouse Complex and adjacent parking lot, plus berm and fence alternations along YLR margin) will not begin during the peak nesting season (March 1 through August 1) unless the biological monitor determines that starting work during this time period will not impact birds that are present. If work begins after August 1 or before March 1, it may continue during the nesting season.	PM will include limits on scheduling work in Subareas 6 and 7 in contract specifications, subject to consultation with biologist. Biologist will conduct nesting bird survey and inform PM if activity limitations are needed based on whether birds are present.	Before construction begins, as specified in BIO-7B.  Same	PP&C PM	PM cite to relevant sections/drawings in contract documents in mitigation monitoring checklist.  PM include Biologist's reports in project file.
<b>MSC Projects Mitigation Measure BIO-7C:</b> Berm construction along Subarea 7 shall be completed as early as possible in the construction period, such that the berm will provide buffering for YLR from noise and activity associated with subsequent construction.	PM will include proviso in contract specifications that berm construction should be scheduled as specified.  PM will consult with contractor regarding scheduling constraints.	Prior to issuing bid documents  Before construction begins.	PP&C PM	PM cite to relevant sections/drawings in contract documents, in mitigation monitoring checklist.  PM to confirm during construction at quarterly updates of mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-7D:</b> Prior to berm construction, Subarea 6 will be used for the least noisy construction staging activities, such as contractor offices and parking.	Include limitations on use of Subarea 6 in contract documents.	Prior to issuing bid documents.	PP&C PM	PM cite to relevant sections/drawings in contract documents, in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-9A:</b> A pre-construction survey for the SFDW will be conducted within 15	PM will contract with Biologist to conduct survey as specified and document results.	Survey to be conducted within 15 days before demolition begins.	PP&C PM	PM include Biologist's reports and any correspondence with CDFG in project file.

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
days prior to demolition, vegetation removal or ground disturbance at each site. If no active SFDW houses are found, no further mitigation is necessary at that location. If SFDW houses are found and they can be avoided, a buffer zone will be erected around the SFDW house, using a temporary fence that does not inhibit the natural movements of wildlife (such as steel T-posts and a single strand of yellow rope or similar materials) and all construction activity will be prohibited within that zone. If one or more SFDW houses cannot be avoided, and relocation is necessary, CDFG will be contacted for approval for a qualified and permitted biologist to live-trap and relocate individual rats. For each house lost, one stick pile "house" will be relocated or created in the nearest suitable habitat outside the construction zone, in the animal's home range if possible, and the live-trapped individual will be released into the stick pile, to minimize the potential impact.	<p>PM ensure that buffer is established as determined by biologist.</p> <p>Biologist inspect buffer and document its maintenance in daily monitoring logs</p> <p>Consult with CDFG and implement agency recommendations.</p>	<p>Prior to start of construction, upon discovery of active nest</p> <p>Throughout construction in vicinity.</p> <p>Prior to start of construction, if one or more SFDW houses cannot be avoided.</p>		
<b>MSC Projects Mitigation BIO-9B:</b> In addition, in the vicinity of each relocated house, preferably within the relocated animal's home range, SFDW habitat will be enhanced, in consultation with a biologist with SFDW experience, by placement of an anchor log and, if sufficient suitable material is not readily available, additional woody debris suitable for creation of additional nests, to ensure that there are sufficient suitable nest sites for SFDW already present as well as any that are relocated.	<p>PM consult with Biologist on procedures for enhancement of habitat.</p> <p>PM ensure that habitat is enhanced as recommended by biologist.</p>	<p>Prior to relocation of any SFDW house</p> <p>Same</p>	PP&C PM	<p>PM include Biologist's reports in project file.</p> <p>PM include documentation of habitat enhancement in project file.</p>
<b>MSC Projects Mitigation Measure BIO-10a:</b> Any new or replaced fencing will be designed and installed in such a way as to provide 4 inches of clearance between the ground and the bottom of the fence to allow small animals to pass beneath.	<p>PM include fencing specifications in contract documents.</p> <p>Biology inspect fence</p>	<p>Before project goes out to bid.</p> <p>Upon installation of the fence</p>	PP&C PM	<p>PM cite to relevant sections and/or drawings in contract documents.</p> <p>PP&amp;C PM document in project file that fence is installed as specified.</p>
<b>MSC Projects Mitigation Measure BIO-10B:</b> Wherever the paved access road crosses terrace portions of the YLR, no parking will be allowed along the road from sunset to sunrise.	PM include parking limitation in contract documents.	Before project goes out to bid.	PP&C	PM cite to relevant sections of contract documents.

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<b>MSC Projects Mitigation Measure BIO-10C:</b> No construction activity that involves movement of vehicles or heavy equipment on or off road will be allowed during night hours, that is, from 30 minutes after sunset to 30 minutes before sunrise unless approved by a qualified biologist.	PM include limitation on construction activity in contract documents.	Before project goes out to bid.	PP&C PM	PM cite to relevant sections of contract documents. Include in project file documentation of biologist's approval of any night-time construction activity.
<b>MSC Projects Mitigation Measure BIO-12A:</b> During the first rainy season after brush wattles are installed in the outflow channel downstream of wetland W1, a biologist will inspect the channel after each major storm to assess whether wattles have been effective in slowing flows and decreasing erosion, and have not introduced any unanticipated effects, such as increased erosion under the wattles. If new erosion is observed, the wattles would be removed and an alternative solution for erosion repairs proposed.	Reserve will contract with qualified biologist to conduct survey as specified.  Biologist inspect channel for erosion.  Reserve remove wattles and implement alternative solution.	Before October 1 of the first rainy season after brush wattles are installed.  After each major storm, during first rainy season after brush wattles are installed.  If new erosion is observed.	YLR	YLR staff document inspections and any subsequent actions in SRP annual report.
<b>MSC Projects Mitigation Measure BIO-12B:</b> A silt fence will be erected along the north side of the Delaware Avenue Extension prior to any work on the roadbed removal project and will be maintained throughout construction on this project element. If any silt or other material is inadvertently dropped into wetland W3, it will be removed by hand shovel.	Include fencing specifications and requirements for hand removal of materials from wetlands in contract documents.  Inspect silt fence to confirm effectiveness	Before project goes out to bid.  Periodically throughout construction	PP&C PM  PP&C Inspector	PM cite to relevant sections of contract documents in mitigation monitoring checklist.  Document in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-12C:</b> Erosion repairs at the NOAA outfall west of McAllister Way will be confined to hand placement of rocks, or in conjunction with "soft" engineering solutions, such as placement of brush wattles in the channel, which will serve as a wetland restoration measure. Fence design will minimize or avoid intrusion into the channel.	PM ensure that mitigation requirements are incorporated into project design.	During construction drawing phase.	PP&C PM	PM cite to relevant sections of contract documents in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-12D:</b> At the point where the proposed De Anza pedestrian trail crosses the outlet culvert at the east end of wetland W4, the trail crossing will be designed to avoid fill into the wetland and outflow channel.	PM ensure that mitigation requirements are incorporated into project design.	During construction drawing phase.	PP&C PM	PM cite to relevant sections of contract documents in mitigation monitoring checklist.  PP&C PM confirm work is

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This may be accomplished by use of buttresses placed outside wetland margins to support an elevated walkway, or any other solution that ensures that no fill is spilled into the wetland during construction.				completed as specified.
<b>MSC Projects Mitigation Measure BIO-15:</b> A qualified biologist or biologists will be identified as Biological Mitigation Coordinator, prior to the start of the construction documentation phase of the project to be involved in coordination and communication of biological mitigation requirements throughout project planning and construction. The responsibilities of the Biological Mitigation Coordinator will include: review of project specifications to ensure that biological mitigation measures are accurately conveyed to contractors; review of project plans to advise on the need for and specific placement of exclusion fencing for each project elements; assistance with regulatory consultation as needed; attendance at regular meeting with project managers and contractors to ensure that biological mitigation measures are appropriately included in the construction schedule to ensure that these measures are effective; and coordination of biological monitoring.	<p>Campus will contract with qualified biologist to conduct survey as specified.</p> <p>PM set up and coordinate regular project meetings to include Biologist</p> <p>Biological monitor review project specifications and plans, attend regular meetings with University project manager and contractors, with PM to coordinate biological surveys and monitoring with construction activities and document in monitoring logs</p>	<p>Before project goes out to bid</p> <p>Throughout construction</p> <p>Throughout construction</p>	PP&C PM	PM include in project file: comments of biological monitor on project plans and specifications; responses to these comments; meeting minutes or other meeting documentation, and Biologist's monitoring logs.
<b>CLRDP Project-Specific Mitigation Measure 4.5-1:</b> If human remains are discovered during the construction of a development project under the CLRDP, the University and/or its employees shall notify the Santa Cruz County Coroner's Office immediately. Upon determination by the County Coroner that the remains are Native American, the Coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and the County Coordinator of Indian Affairs and appropriate Native American consultation shall be conducted, as outlined by PRC 5097.98.  Implementation Measure 3.9.1, Construction Monitoring, as identified in the CLRDP, shall also apply. UCSC will be	<p>Include in construction contract the requirement that the University be notified if suspected human bone is discovered or in the event of an archaeological discovery. Stop work in vicinity and contact archaeologist in the event of an archaeological discovery and archaeologist and County Coroner in the event of discovery of suspected human bone. Contact California Native American</p>	<p>Prior to issuing bid packet.</p> <p>Upon discovery , prior to continuing construction</p>	<p>PP&amp;C</p> <p>PP&amp;C</p>	<p>Cited specification in project MMR</p> <p>Document find, consultation results, archaeological report in project file.</p>

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responsible for implementing this mitigation measure.	Heritage Commission and conduct Native American consultation if Coroner determines the remains are Native American.			
<b>MSC Project Mitigation Measure CULT-2B:</b> The interpretive signage included in the proposed MSC Phase A and NEF Projects will include at least one sign commemorating the history of the Ocean Shore Railroad. The Campus will develop appropriate content for the sign through archival research into the construction, route, and history of the railroad. The sign will at a minimum delineate the route of the railroad line; provide a brief discussion of its significance in local history; and interpret any physical remnants that are uncovered during construction. The manager of the YLR will be consulted about the appropriate placement of historic signage along the pedestrian path that follows the former railroad route.	PM coordinate with historian or archaeologist to ensure that appropriate text is developed and that sign is included in MSC Phase A or NEF project specifications.	During detailed design and prior to issuing bid documents.	PP&C PM	PM cite relevant sections of contract specifications in mitigation monitoring checklist.
<b>MSC Projects Mitigation HYD-2:</b> The Campus shall monitor water levels in the root zones in wetlands W4 and W5 on a weekly basis for at least one full wet season (Oct. 1-May 15) before development of the CBB, and MSC and NEF Projects begins, and use the data to relate water levels at the monitoring points to an Antecedent Precipitation Index (API). After construction of the proposed CBB and MSC and NEF Projects has been completed, the Campus shall continue the monitoring weekly for two winters. If the measured water levels at the monitoring points fall below the lower 95-percent confidence limit of the water level-API curve for 2 consecutive weeks during any monitored wet season, the Campus shall take actions as necessary to return the wetland water levels to pre-project conditions. Examples of the types of actions the Campus could undertake are modifying the outlet of Detention Basin 1 or the outlet to the wetland W4 buffer from Parking Lot D to increase the flow to wetland W4.	YLR and PP&C civil engineering or environmental planning staff install piezometers in wetlands W4 and W5 using methodologies set forth in the US Army Corps of Engineers 2005 <i>Technical Standard for Water-Table Monitoring of Potential Wetland Sites</i> . Monitor water levels in the piezometers, obtain site precipitation data, and create an API.  YLR continue monitoring after construction and compare results to API.	Monitor weekly for at least one full wet season (Oct. 1-May 15) before project construction begins.  Weekly, during the wet season, for two years after construction of the CBB and MSC projects has been completed.	YLR and PP&C civil engineering or environmental planning staff  YLR and PP&C	PP&C environmental planning staff include all monitoring data and analysis in project file.

**Table 9-2**  
**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**  
**Nature Education Facilities Project**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
	PP&C ensure that storm water management features are modified as necessary to return the wetland water levels to pre-project conditions as defined by the API.	If the measured water levels at the monitoring points fall below the lower 95-percent confidence limit of the water level-API curve for 2 consecutive weeks during any monitored wet season.	PP&C	
<b>MSC Mitigation Measure LU-1:</b> Implement CLRDP Amendment #1, proposed actions 1 through 10.	The Regents or delegated authority adopt proposed CLRDP Amendment #1 actions 1 through 10.	With the first approval of any of the MSC Projects.	PP&C/ Regents/ Delegated authority	PM include approved Action Item in project file.
<p><b>CLRDP Project-Specific Mitigation Measure 4.11-4:</b> Prior to the initiation of construction, the University shall approve a construction noise mitigation program including but not limited to the following:</p> <p>The University shall require that construction activities be limited to a schedule that minimizes disruption to noise-sensitive uses on the project site and in the vicinity through implementation of the following:</p> <ul style="list-style-type: none"> <li>• Construction activities during daytime and evening hours (7:00 AM to 10:00 PM) shall not occur within 150 feet of sensitive receptors, when feasible. Construction activities within 500 feet of sensitive receptors activities shall not occur during nighttime hours (10:00 PM to 7:00 AM).</li> <li>• Whenever possible, academic and administrative staff, as well as residents who will be subject to construction noise, shall be informed one week before the start of each construction project.</li> <li>• Loud construction activity as described above within 150 feet of an academic or residential use shall, to the extent feasible, be scheduled during holidays, spring break, or summer break.</li> <li>• To reduce noise impacts from construction, the</li> </ul>	<p>Develop construction noise mitigation program and adopt as part of standard construction contract specifications</p> <p>Inspect construction site to verify that measures are being implemented.</p>	<p>Prior to initiation of construction under the CLRDP</p> <p>During construction</p>	<p>Physical Planning and Construction</p> <p>Physical Planning and Construction</p>	<p>Document measures adopted and compliance monitoring in CLRDP annual mitigation monitoring report</p>

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<p>University shall require that construction contractors muffle or otherwise control noise from construction equipment through implementation of the measures below. The effectiveness of these measures is quantified in Table 4.11-4 above.</p> <ul style="list-style-type: none"> <li>• Internal combustion engines used for any purpose at the construction sites shall be equipped with a muffler of a type recommended by the manufacturer.</li> <li>• Equipment used for construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible);</li> <li>• Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. Such mufflers can lower noise levels from the exhaust as much as 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures such as using drilling equipment rather than impact equipment shall be implemented whenever feasible.</li> <li>• Stationary noise sources shall be located as far from sensitive receptors as feasible. If they must be located near sensitive receptors, they shall be muffled to the extent feasible and/or, where practicable, enclosed within temporary sheds.</li> <li>• The University shall require that a temporary wooden wall be placed around construction activity areas that are within 150 feet of sensitive receptors to provide additional noise attenuation, where feasible. The wall</li> </ul>				

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<p>should impede the direct line of site between the noise sources and sensitive receptors.</p> <ul style="list-style-type: none"> <li>The University shall require that construction-related material haul trips access the campus via Natural Bridges Drive and Delaware Avenue in order to minimize noise exposure to residential land uses.</li> <li>The University shall identify potential noise impacts related to construction of long-term projects proposed under the CLRDP, and develop project-specific noise mitigation measures as may be necessary. The University shall take into account the location of the five campus facilities that will have been developed in the near-term as well as off-campus developments nearby. The analysis shall also take into account the sequence in which long-term projects are to be constructed and shall identify appropriate mitigation, as may be required. These future facilities may be sensitive receptors or may act as barriers to noise approaching other sensitive receptors.</li> </ul>	<p>Conduct project-specific noise analysis and develop appropriate mitigation measures, as necessary.</p>	<p>During CEQA analysis for long-term projects</p>	<p>Physical Planning and Construction</p>	<p>Document analyses in CEQA document</p>
<p><b>CLRDP General Mitigation Measure 4.15-2:</b> UCSC will contribute its fair-share towards construction of a separate pedestrian path on the north side of Delaware Avenue from Shaffer Road to the existing sidewalk west of Natural Bridges Drive. This improvement could be as simple as installing a raised asphalt curb approximately five to six feet away from the existing curb or edge of pavement with openings to maintain existing drainage. Design and construction of this improvement to close the existing gap in pedestrian facilities in this area can and should be completed by the City of Santa Cruz since Delaware Avenue is under its jurisdiction.</p>	<p>Negotiate with City to determine an appropriate fair share contribution towards necessary road improvements.</p>	<p>Prior to occupancy of first project</p>	<p>Physical Planning and Construction</p>	<p>Report fair share payments in CLRDP Annual MMR</p>
<p><b>CLRDP General Mitigation Measure 4.15-6</b> [applicable portions]: ...The University shall contribute its fair share toward the cost of improvements to the intersections at High Street/Western Drive....Mitigation measures include traffic</p>	<p>For each project proposed under CLRDP, analyze number of peak hour trips added to intersections by each project.</p>	<p>During project-level environmental review</p>	<p>Physical Planning and Construction</p>	<p>Report analytical results in CEQA document</p>

**Table 9-2**  
**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**  
**Nature Education Facilities Project**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
signals at the High Street/Western ....	Negotiate with City to determine an appropriate fair share contribution towards necessary road improvements.	Prior to Project occupancy	Physical Planning and Construction	Report payments in CLRDP annual MMR
<b>MSC Projects Mitigation NOIS-4:</b> If construction of the proposed MSC and NEF project elements in the vicinity of the MSC entrance overlaps with construction of a desalination plant on the property at the northeast corner of Delaware Avenue and Shaffer Road, the Campus shall evaluate potential cumulative noise impacts at the residences to the east of the MSC. If necessary to reduce noise at these residential receptors to levels below the relevant significance threshold, the Campus shall construct a temporary wood sound wall between the MSC entrance construction and the eastern boundary of the campus. The Campus shall also coordinate with the City of Santa Cruz on the scheduling of construction activities in the MSC entrance area to minimize the generation of cumulative construction noise.	Consult with the City of Santa Cruz to determine whether and what elements of desalination plant construction will coincide with MSC Projects construction schedule. If construction will be concurrent, evaluate concurrent activity locations and equipment to determine whether construction noise threshold will be exceeded at nearby residences.	Prior to the start of MSC and NEF construction.	PP&C	Document consultation in project file
	If thresholds will be exceeded, coordinate with City to reduce concurrent activity, or install noise-attenuating devices as needed.	Upon determining that planned construction schedules will overlap.	PP&C/ PM	Include noise evaluation report in project file
		Prior to any period of concurrent construction activity.	PP&C in consultation with City of Santa Cruz	Include documentation of consultation and installation of noise attenuation (if needed) in project file.
<b>MSC Projects Mitigation TRA-1A:</b> UCSC shall widely disseminate transportation information to visitors, staff, faculty, and students at the Marine Science Campus through the UCSC Web page. Printed information shall also be made available at central locations on the Marine Science Campus, and new employees at the site will be informed of transportation options and referred to the online materials. In addition, students registering for classes or internships at the MSC shall be informed of parking restriction at the MSC and of transportation options including computer-matched carpooling, transit, and bicycle and pedestrian routes to the site. All such TDM and other transportation materials shall include clear description of the available shuttles, SCMTD bus	TAPS will include information about transportation options and parking restrictions at the MSC on the TAPS website and make this information available to Human Resources.  TAPS shall ensure that information is provided to students at registration or at	At occupancy of the CBB Project and at the beginning of each quarter thereafter.	TAPS	TAPS provide documentation of informational programs to PP&C planning staff to include in annual CLRDP mitigation monitoring file and summarize in annual mitigation monitoring report.

**Table 9-2**  
**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**  
**Nature Education Facilities Project**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
options, and other alternative transportation programs (including schedules, costs, etc.); availability of secured bicycle storage facilities within buildings for employees; availability of lockers and showers; Campus maps with appropriate facilities identified; etc.	first class meeting or at first class meeting.			
<b>MSC Projects Mitigation Measure TRA-1B:</b> UC Santa Cruz will conduct a baseline survey of parking utilization on both sides of the segment of Delaware Avenue between Natural Bridges Dr. and the campus entrance in fall 2011 and then will monitor Delaware Ave. parking utilization in this area twice annually (fall and spring) during times and days when MSC classes are scheduled. If parking utilization exceeds 80 percent and there is evidence of increasing utilization from year to year, or if there is qualitative evidence of unmet public coastal access parking demand, such as public complaints, increased circulation by drivers seeking parking, or parking shortages in the 2300 Delaware Ave. lots independent of increased population at that facility, implement TRA-1C.	TAPS will conduct baseline parking utilization survey and circulation monitoring as specified in the mitigation.  TAPS will post email, phone and other contact information on its website, on the Seymour Discovery Center website, and in all published parking information materials, and will assign a staff member to be responsible for monitoring and addressing parking complaints and reporting on results as basis for determining whether implementation of TRA-1C is needed.	Twice a year during academic class periods and days, beginning in Fall 2011.  Prior to occupancy of CBB	TAPS  TAPS	TAPS provide document results of survey to PP&C planning staff for inclusion in annual CLRDP mitigation monitoring file.  TAPS will tabulate complaints and provide explanation of how complaints were addressed and this information will be summarized in the annual CLRDP mitigation monitoring file. TAPS also will report when TRA-1C has been triggered, or provide evidence based on monitoring and complaint resolution that TRA-1C has not been triggered.
<b>MSC Projects Mitigation Measure TRA-1C:</b> UCSC will implement the following or other equally effective measures in a coordinated program to reduce UCSC contributions to parking on Delaware Ave. such that total parking utilization during weekday class times is 70 percent or less: <ul style="list-style-type: none"> <li>• Work with the City of Santa Cruz to evaluate whether parking regulation is needed and, if so, assist the City in developing and implementing a City-UCSC permit program for Delaware Ave. parking to regulate the number of vehicles that may park or parking duration.</li> <li>• Provide off-street parking by permit at UCSC's 2300 Delaware Ave. facility or other nearby locations. This option would be implemented most effectively in</li> </ul>	Procedures will vary depending on the measure selected.	This mitigation to be implemented if conditions described in MSC Projects Mitigation Measure TRA-1B are met, based on results of monitoring and annual monitoring report.	TAPS	TAPS will provide documentation of measures taken to reduce parking demand to PP&C planning staff annually, for inclusion in annual CLRDP mitigation monitoring file.

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<p>conjunction with parking management on Delaware Ave.</p> <ul style="list-style-type: none"> <li>• Implement CLRDP IM 5.7.3: UCSC shall provide a shuttle service or bike shuttle service between the main campus and MSC as demand warrants and as needed to meet the 40 percent travel mode split goal. Shuttles shall be scheduled to correspond with classes, and class schedules will be developed in coordination with TAPS to minimize operational demands.</li> </ul>				
<p><b>MSC Mitigation Measure TRA-2:</b> The University made a fair share payment in 2008 for impacts to this intersection under the 2008 Comprehensive Settlement Agreement. The CBB Project will contribute equivalent payments to the City's Traffic Impact Fee program for the project's proportionate share contribution to the cost of the improvement consistent with CLRDP General MM 4.15-6, which is included in the project, and based on trips generated by building gsf (or other methodology agreed to by the City to determine trip contribution), as agreed under the 2008 Comprehensive Settlement Agreement. The City has included the required improvement and its cost on its Traffic Improvement Fee study list.</p>	<p>Director of Campus Planning consult with City to determine project payment based on trip contribution; Executive Vice Chancellor authorize payment.</p>	<p>Before occupancy of the CBB Project.</p>	<p>PP&amp;C planning staff, EVC</p>	<p>Campus planning staff document in project file and annual CLRDP report that payment has been made.</p>
<p><b>MSC Projects Mitigation TRA-4A:</b> Parking lot entrances to campus roads will be stop sign-controlled to minimize potential motor vehicle, pedestrian and bicycle traffic conflicts.</p>	<p>PM will ensure that stop signs are included in final bid drawings.</p>	<p>During final design and before project goes out to bid.</p>	<p>PP&amp;C PM</p>	<p>PM cite relevant construction specifications and drawings in mitigation monitoring checklist.</p>
<p><b>MSC Projects Mitigation TRA-4B:</b> A stop sign will be installed on the new Delaware Avenue Extension at the campus exit (eastbound), and the Campus will coordinate with the City of Santa Cruz regarding recommended installation of stop signs at the MSC entrance intersection on Shaffer Road (southbound), Delaware Avenue (westbound), and the exit from the De Anza residential community.</p>	<p>PM will ensure that design measures as needed for traffic calming at the entrance, such as a speed bump, are assessed during final design and that, at a minimum, stop sign at campus entrance is included in project design and construction specifications.</p> <p>Director of Campus Planning/ TAPS consult with City</p>	<p>During final design, before project construction goes out to bid.</p> <p>Before the new campus road is operational</p>	<p>PP&amp;C PM</p> <p>PP&amp;C Director of Campus Planning/</p>	<p>PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist and include project notes documenting consideration of other traffic calming measures for the entrance in project file.</p> <p>PM document coordination with City in project file.</p>

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
	regarding installation of stop signs at other locations at the Delaware Avenue and Shaffer Road intersection.		/ TAPS	
<b>MSC Projects Mitigation Measures TRA-4C:</b> When new fencing is installed along the northern and eastern boundaries of the campus, signage will be posted on the fence at a location adjacent to each pedestrian route advising caution in crossing the adjacent railroad tracks.	PM ensure that signage is included in fence specifications and drawings in construction bid documents	Prior to issuing bid documents	PP&C/ PM	PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist
<b>MSC Projects Mitigation Measure TRA-5A:</b> Delaware Avenue Extension will not be closed to vehicle traffic until the new entry road proposed by the MSC Phase A Project is operational for normal vehicle use.	PM include requirement in contract documents.	Before project goes out to bid.	PP&C PM	PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure TRA-5B:</b> The University will include the following requirements in construction contract specifications to minimize traffic blockage and delays: <ul style="list-style-type: none"> <li>• Construction work shall be conducted so as to ensure the least possible obstruction to traffic.</li> <li>• At no time will more than one lane of Delaware Avenue Extension or McAllister Way be blocked.</li> <li>• Contractors shall provide traffic control when any vehicle lane is blocked.</li> <li>• Contractors shall notify the University's representative at least two weeks before any partial road closure.</li> <li>• When a pedestrian/bicycle path will be blocked, detour signs will be installed to clearly designate an alternate route. Temporary fencing or other indicators of pedestrian and bicycle hazards will be provided.</li> <li>• Fire hydrants shall be kept accessible to fire- fighting equipment at all times.</li> </ul>	PM include specified requirements in contract documents.	Before project goes out to bid.	PP&C	PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist.  PM confirm implementation of mitigation at quarterly mitigation monitoring checklists during construction phase.
<b>MSC Projects Mitigation Measure TRA-5C:</b> Construction project managers will notify City police and fire departments, the Director of the Seymour Center, NOAA, CDFG, and campus dispatchers in advance of lane closures, to ensure	As specified in the mitigation.	Ongoing, throughout construction.	PP&C PM	PM maintain record of notifications in project file.

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
adequate access for routine operation and emergency vehicles during temporary lane closures.				
<b>MSC Projects Mitigation Measure TRA-5D:</b> The Campus will coordinate among contractors and subcontractors to minimize the number and extent of simultaneous construction activities that affect driveways, paths, and roadways, and will require contractors to plan for daily construction activities a week in advance, provide a schedule, and observe the schedule to the greatest extent feasible. The University's representative will develop a weekly schedule of contractor activities and provide to NOAA, CDFG, the Director of the Seymour Center and other affected parties. Construction project managers will coordinate regularly with the University's representative who will notify NOAA, CDFG, the manager of LML, and the director of the Seymour Marine Discovery Center to keep them informed of upcoming construction activities; path, lane or parking lot closures; and major equipment activity or material hauling as far in advance as feasible, to minimize potential construction conflicts with routine and special event traffic.	PM include scheduling requirements in project contract documents.  PM develop weekly schedule of contractor activities and make notifications as specified in the mitigation.	Before project goes out to bid.  Ongoing, throughout construction.	PP&C PM	PM cite relevant section of contract documents in mitigation monitoring checklist.  PM maintain record of notifications in project file.
<b>MSC Projects Mitigation Measure TRA-5E:</b> The Campus will coordinate regularly with the City of Santa Cruz on the timing and nature of work at the campus entrance and along Shaffer Road to minimize construction traffic conflicts with residents of the De Anza facility and with users of the Homeless Garden Project, and will inform De Anza residents and Homeless Garden Project users of construction activity with signs or flyers.	PM coordinate with City and notify De Anza residents and Homeless Garden Project as specified in the mitigation.	Throughout construction, at times of heavy truck traffic.	PP&C PM	PM maintain record of communications with City, De Anza residents, and Homeless Garden Project.
<b>MSC Projects Mitigation Measure TRA-5F:</b> The University will post flyers and/or signs at the MSC entrance and major campus facilities and provide the same for the Homeless Garden Project and the De Anza facility, with a University phone number or other means for the public to submit questions or complaints regarding construction traffic or traffic incidents, and will respond promptly to inquiries.	PM post flyers and/or sign as specified in the mitigation.	Throughout construction.	PP&C PM	PM maintain record of postings in project file.

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<b>MSC Projects Mitigation Measure TRA-6:</b> Implement MSC Projects Mitigation TRA-2, above.	See above			
<b>CLRDP General Mitigation Measure 4.16-1A:</b> All toilets, urinals, showers, and washing machines installed as part of this project shall be specified as low-flush and low-flow in order to reduce onsite water consumption. The University shall install low-flow toilets and urinals that are 1.6 gallon/flush or less and low-flow showers that are 2 gallons per minute (gpm) or less in new development. Further, in all new residential uses washing machines must be certified by the Consortium on Energy Efficiency (CEE) to be water- and energy-efficient (such as those with the Energy Star® label).	Include in construction specifications the requirement for low-flush and low-flow equipment.	Prior to issuing bid package	Physical Planning and Construction	Cite specification numbers in MMR
<b>CLRDP General Mitigation Measure 4.16-1B:</b> If and when the City adopts policies requiring all projects (or all similar institutional or commercial projects) within the water system to offset new water demand or any other water demand reduction policies, the University will consider voluntary compliance with the policy, with appropriate credit being given to account for UCSC's previous water conservation activities (in excess of that accomplished by the similar institutional and/or commercial entities covered by the City policy).	To be determined, based on City policy.	During the design of each project, following the adoption of pertinent policies by the City of Santa Cruz OT	Physical Planning and Construction	Report water saving offsets in CLRDP Annual MMR
<b>CLRDP General Mitigation Measure 4.16-1D:</b> The City can and should identify and develop new water supplies to reliably accommodate increases in water supply due to UCSC Marine Science Campus CLRDP-related growth and other background growth during normal and drought conditions.	Outside the jurisdiction of UCSC.	--	City of Santa Cruz	Report status in CLRDP Annual MMR
<b>MSC Projects Mitigation Measure UTIL-9:</b> Before CBB Project construction is completed, the Campus shall conduct a water efficiency study of existing University facilities at the MSC. The study will assess existing campus water uses, identify options for reducing water consumption, prioritize feasible improvements based on the amount of potential water savings and cost effectiveness, and recommend top priority measures for implementation within the succeeding five years.	Physical Plant conduct study.  Physical Plant and other units identified in the study implement top priority	Before occupancy of CBB Project.  Within five years of completing the study.	Physical Plant  Physical Plant	Physical Plant provide results of study to Campus planning staff, who will summarize the results in the annual CLRDP mitigation monitoring report.  Physical Plant track implementation and annually provide summary to Campus

<b>Table 9-2</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Nature Education Facilities Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
The Campus shall implement the top priority measures within five years of completing the study.	measures.			planning staff, who will summarize the information in the annual CLRDP mitigation monitoring report.



Table 9-3

**Marine Science Campus Projects Mitigation Monitoring and Reporting Program  
Specific Resource Plan Phase 1B Project**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<p>materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).</p> <ul style="list-style-type: none"> <li>• Pave, apply water two times daily, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and construction staging areas.</li> <li>• Sweep daily with water sweepers any paved access roads, parking areas, and staging areas at construction sites.</li> <li>• Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.</li> <li>• Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas or previously graded areas left inactive for ten days or more.</li> <li>• Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).</li> <li>• Limit traffic speeds on unpaved roads to 15 miles per hour.</li> <li>• Install sandbags or other erosion control measures to prevent silt runoff to public roadways.</li> <li>• Replant vegetation in disturbed areas as quickly as possible.</li> <li>• In the event that grading and excavation at two or more large project sites is proposed to occur concurrently (large sites defined as involving more than 2 acres), install wheel washers at the entrance of the construction sites.</li> <li>• Phase construction projects in such a manner that minimizes the area of surface disturbance (e.g., grading, excavation) and the number of vehicle trips on unpaved surfaces.</li> <li>• <u>Post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District</u></li> </ul>				

<b>Table 9-3</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Specific Resource Plan Phase 1B Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<i>shall be visible to ensure compliance with Rule 402.</i>				
<p><b>MSC Project Mitigation BIO-1:</b> A qualified botanist will conduct up to three focused surveys for special-status plant species on and within the full extent of all vegetated areas that will be subject to project activity (ground disturbance, placement of spoils, construction vehicle parking, or traffic, etc.) for each project element during the spring-summer (April-August) blooming period, within two years prior to the beginning of construction. If no special-status species are observed during the focused surveys, no additional mitigation is necessary. If special-status plants are observed, the population will be mapped and quantified and a suitable buffer zone established (based on species requirements, proximity to the work area, and other site specific factors), and other protection measures, such as fencing around the population to protect it from disturbance, will be implemented as determined necessary by the biologist. If the population cannot be avoided by the project, impacts to the population shall be quantified and regulatory agencies (California Department of Fish and Game, and/or U.S. Fish and Wildlife Service, as appropriate) contacted for guidance or permitting, depending on the species affected, and additional measures that may be identified by regulatory agencies to mitigate adverse effects, such as soil stockpiling, transplantation, and/or seed collection and propagation, would be implemented.</p>	<p>Campus will contract with qualified biologist to conduct survey as specified.</p> <p>Biologist will map and quantify species population and establish buffer.</p> <p>PM and planners will consult to determine whether plants can be avoided</p> <p>PM will ensure that fencing and other protective measures are implemented.</p> <p>If plants cannot be avoided, Campus will consult with regulatory agency(ies) and take additional measures as required.</p>	<p>Spring and summer (April-August) within two years before beginning of construction.</p> <p>Upon discovery of special-status species in project footprint.</p> <p>Prior to start of construction</p> <p>Throughout construction</p> <p>Upon determination that special-status plant population cannot be avoided. Timing of additional measures as specified by regulatory agencies</p>	<p>PP&amp;C Project Manager (PM)</p>	<p>PM will ensure that survey report is included in project file.</p> <p>Map and biologist's buffer recommendations in project file.</p> <p>Buffer and procedures included in contract documents.</p> <p>Daily biological monitoring logs will include inspection of any plant protections</p> <p>Agency correspondence in project file. Document additional measures as required.</p>
<p><b>MSC Projects Mitigation Measure BIO-3A:</b> Within two weeks prior to the start of construction, and each time a new crew starts work, a qualified biologist will present a worker education program and associated documentation to all new construction personnel at the project site. The on-site foremen will ensure that all construction personnel and subcontractors receive a copy of the written biological education materials. The education program shall include a description of the CRLF and its habitat, the general provisions of the Endangered Species Act, the necessity of adhering to the Act to avoid penalty, and measures that will be implemented, specific to the</p>	<p>PM will include training requirement in contract documents.</p> <p>PM will contract with biologist to provide training and brochure and will coordinate with contractor to schedule training session.</p>	<p>Within two weeks prior to the start of construction, and each time a new crew starts work.</p> <p>Prior to start of construction</p>	<p>PP&amp;C PM</p>	<p>PM will cite relevant contract document section in mitigation monitoring checklist.</p> <p>PM will include brochure and biologist's daily monitoring logs in project file.</p>

**Table 9-3**  
**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**  
**Specific Resource Plan Phase 1B Project**

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
project and the work boundaries of the project, to avoid affecting CRLF.	Biologist will contract training as needed and document on daily monitoring log	Prior to start of construction and ongoing as needed		PM will include record of trainings in project file.
<p><b>MSC Projects Mitigation Measure BIO-3B:</b> In consultation with a qualified biologist (see MSC Projects Mitigation Measure BIO-15 [Biological Mitigation Coordination]), the Campus will ensure that an exclusion fence for CRLF and western pond turtle is installed around each work area that contains vegetation that could provide appropriate cover for CRLF and/or appropriate nesting habitat for western pond turtle (see MSC Projects Impact BIO-6 below), prior to construction, to prevent CRLF and western pond turtle from moving onto the site. Areas that will be disturbed by SRP Phase 1B activities, road and trail construction and utility construction will be subject to separate mitigation measures, as exclusion fencing would not be effective or practicable for these areas. Fencing alignments will be determined as follows: During development of project specifications and construction drawings, the project biologist will review site-work, grading and other pertinent plans with the UCSC Project Manager to determine locations where exclusion fencing for frogs and turtles (as described below) 1) would be effective in excluding wildlife from construction activity areas, 2) could be employed without unduly hindering construction activity, and 3) appears more likely than allowing free night movement through the construction zone to benefit the target species. To minimize unnecessary exclusion of wildlife that may safely pass through, and subject to consultation between the qualified biologist and the project construction manager, areas where disturbance will be short term and/or temporary may be subject to biological monitoring during vegetation clearing and/or during construction, rather than to fencing. The agreed upon fencing alignments will be marked on the plans during biological coordination, as specified in Mitigation Measure BIO-15, and included in the project specifications. Prior to any surface disturbance at each location, a qualified biologist will meet in</p>	<p>PM will consult with biologist to map appropriate fencing alignment and include fencing alignments and specifications, including biological monitoring requirements for installation and construction, in contract documents, following process specified in the mitigation.</p> <p>PM will coordinate with biologist and contractor to adjust fencing alignment.</p> <p>Biologist will document integrity of fencing and any adjustments in daily monitoring log.</p>	<p>Before project goes out to bid.</p> <p>Fence to be installed by April 15 (see MSC Projects Mitigation Measure BIO-6, below), prior to the beginning of construction. Maintain fence throughout construction</p> <p>Inspections throughout construction</p>	PP&C PM	<p>PM will cite relevant contract document section in mitigation monitoring checklist.</p> <p>PM will document any changes to fencing in project file.</p> <p>PP&amp;C project manager confirm that fence is in place throughout construction and include biologist's documentation in project file</p>

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Specific Resource Plan Phase 1B Project**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<p>the field with the UCSC project manager and construction foreman to adjust the fencing alignment and timing of erection and removal based on the habitat that will be affected, as well as on the configuration and location of specific construction tasks. The alignments as shown on plans will be subject to adjustment by mutual agreement between the biologist, the project manager and the construction contractors, as necessary to ensure wildlife protection, without unnecessarily impeding construction.</p> <p>Installation of fencing will be monitored by a qualified biologist. Exclusion fence materials may be high-grade nylon silt-fencing, plywood, or other appropriate materials. The base of the fence shall be buried at least 6 inches and it shall extend at least 2.5 feet above grade and shall surround the entire exclusion area. If necessary, an appropriate gate shall be engineered, in consultation with a biologist experienced in implementation of these provisions, to access construction areas that excludes the target species at night, but allows egress by workers and equipment during the day. Roads and pathways necessary to access existing facilities will not be fenced or gated. A cover-board (4 by 4-foot 1/2-inch square of plywood) shall be placed at approximately 100-foot intervals outside the exclusion fence to provide predator protection for small animals that encounter the fence. Each cover-board shall be elevated approximately two inches using two attached 6-inch wooden blocks. The elevated edge of each cover-board shall be placed flush against the outside of the exclusion fence. The cover-boards will be labeled with signage to ensure they are not disturbed, and each shall be regularly inspected by the biological monitor to ensure that they remain in place.</p> <p>Fencing may be removed, upon approval of the qualified biologist, when all construction-related activities that could harm or kill CRLF or damage turtle nests (see MSC Projects Impact BIO-6, below) are complete; generally, when the majority of exterior work is complete.</p>				

**Table 9-3**  
**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**  
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<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
<p><b>MSC Projects Mitigation Measure BIO-3C:</b> Immediately prior to vegetation removal at each project element/work site, including both fenced and unfenced sites, a qualified biologist will survey each work site for CRLF. The biologist will then monitor the initial removal of vegetation in each work area, including the work areas within exclusion fencing and unfenced areas, including trail alignments, utility alignments outside of existing roadways, and the areas of grading proposed for SRP Phase 1B wetland work. Next, vegetation will be cleared, with hand-held equipment, to a height of 3–6 inches above grade. The qualified biologist will then repeat the inspection before any ground disturbance or heavy equipment movement into the area. If CRLF are observed in the work area at any time during this process, ground disturbing work will be postponed and the USFWS contacted for guidance.</p>	<p>PM will contract with Biologist to conduct survey and monitoring as specified, and to document results.</p> <p>Biologist will monitor as specified and document results in daily monitoring log.</p> <p>PM will stop ground disturbing work and contact USFWS if biologist reports CRLF observation and will ensure work does not resume while CRLF are present.</p> <p>PM will consult with USFWS and implement additional requirements.</p>	<p>Prior to start of construction</p> <p>Immediately prior to vegetation removal at each project element/work site; during initial removal of vegetation in each work area; before any ground disturbance or heavy equipment movement into the area.</p> <p>Upon discovery that a CRLF is present</p>	PP&C PM	PM will include Biologist's survey and monitoring reports, and any correspondence with USFWS in project files.
<p><b>MSC Projects Mitigation Measure BIO-3D:</b> Subsequent to vegetation removal, a qualified biologist will inspect every work area each morning prior to the start of construction activity, until all surface-disturbing activities are complete. If no CRLF are observed during the morning inspection, the biologist will depart. After all potential habitat is cleared within the work area, daily monitoring will cease, but the biologist will inspect exclusion fencing weekly and the contractor will repair fencing as identified by the biologist, by nightfall on the same day. If CRLF are observed on or near the work area at any time, work shall cease in proximity to the observation and a qualified biologist and the USFWS will be</p>	<p>PM will ensure that Biologist inspects every work area daily and documents inspection results on daily log.</p> <p>Biologist will inspect exclusion fencing; contractor repair fencing as needed. Biologist report on daily log</p>	<p>Each morning before construct activity begins, after vegetation is removed, until all surface-disturbing activities are complete.</p> <p>Weekly, after all potential habitat is cleared within the work area.</p>	PP&C	PM will include Biologist's reports in project file.

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<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
contacted immediately. Full-time biological monitoring and/or other mitigation measures may then be required.				
<b>MSC Projects Mitigation Measure BIO-3E:</b> Construction work and all construction vehicle movement on the site will be restricted to the hours between dawn and dusk. In addition, construction vehicles and heavy equipment will be restricted from parking at night along road margins except where roads immediately abut existing development. The biological monitor will inspect the area around and under each piece of equipment not parked within the exclusion areas, prior to equipment movement each morning.	PM will ensure that hours of work and equipment inspection requirements are specified in contract documents.  Biological monitor inspect under and around equipment and document in daily log.	Before project goes out to bid.  Each morning, before equipment is moved.	PP&C	PM will cite relevant contract document section in mitigation monitoring checklist.  PM will include Biologist's reports in project file.
<b>MSC Projects Mitigation Measure BIO-4:</b> A qualified biologist will conduct a survey following CDFG guidelines (1995) for wintering burrowing owls during the winter season immediately preceding the start of construction. If the species is detected within the project area, the Campus will contact CDFG for guidance regarding feasible methods to protect owls during construction, and will implement CDFG recommendations to avoid potential impacts to owls.	PM will contract with Biologist to conduct survey as specified.  Biologist will conduct survey as specified and notify PM if owl burrows are present.  PM will contact CDFG for guidance and implement CDFG recommendations if owl burrows are present.	Prior to the start of construction  During winter season immediately preceding the start of construction.  Upon discovery of burrowing owls. CDFG recommendations for avoidance or protection will be implemented throughout construction	PP&C PM	PM will include Biologist's survey report, and any correspondence with CDFG, in projects file.
<b>MSC Projects Mitigation Measure BIO-5:</b> Within 15 days prior to surface disturbance in each project area, a qualified biologist will conduct a pre-construction survey for badger dens and diggings at each project site and within 200 feet of project margins (exclusive of the portion of the YLR surrounding the lagoon, which is already fenced and protected). If a badger den is detected within the project site or the buffer zone (exclusive of the YLR, where no disturbance will occur), a wildlife-friendly exclusion fence shall be installed (steel T-posts and yellow nylon rope or similar material), 25-feet from the den in all directions, and CDFG shall be contacted for guidance. Additional mitigation	PM will contract with biologist to conduct pre-construction survey as specified in mitigation and will ensure that fencing specifications are included in construction contract.  Biologist to notify PM if protective measures are needed.  Contractor will install fence as	Prior to start of construction/ prior to issuing bid documents  Within 15 days prior to surface disturbance in each project area.  Prior to start of construction  Upon discovery of occupied	PP&C PM	PM will include Biologist's report(s) and any correspondence with CDFG in project file.

<b>Table 9-3</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Specific Resource Plan Phase 1B Project</b>				
<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
measures recommended by CDFG will be implemented to ensure that any badgers present in or near project areas are protected or appropriately relocated.	specified in mitigation, PM will contact CDFG, and implement additional mitigation measures recommended by CDFG.	badger burrow, prior to the start of construction		
<b>MSC Projects Mitigation Measure BIO-6:</b> Subject to the specifications set forth in MSC Projects Mitigation BIO-3A, above, prior to April 15 during the year of construction (prior to the beginning of nesting season), work areas shall be enclosed with a wildlife exclusion fence as specified in Mitigation Measure BIO-3B (above), before surface disturbance occurs, to reduce the chance that turtles may deposit eggs within the work area. If construction begins before April 15, the exclusion fence requirement specified in Mitigation Measure BIO-3B (above) is still required. In areas that will be temporarily disturbed, such as installation of underground utilities or trail construction, a qualified biologist shall search for any evidence of western pond turtle nesting prior to surface disturbance. If a western pond turtle or nest is discovered, CDFG will be contacted for guidance regarding appropriate protection or, if necessary, relocation of the nest.	PM include training on western pond turtles and monitoring for turtles in contract with biologist.  Installation and maintenance of fence as specified under Mitigation Measure BIO-3B.  Biologist will conduct survey.  Biologist contact CDFG and follow agency's guidance regarding protection or relocation of nest.	Before construction begins.  Fence installed prior to April 15 during the year of construction, or before construction begins, whichever comes first.  Before surface disturbance.  Upon discovery of a turtle and/or nest. CDFG recommendations will for avoidance and/or protection will be followed throughout construction.	PP&C	PM cite to relevant sections/drawings of contract documents in mitigation monitoring checklist.  PM include Biologist's reports and any correspondence with CDFG in project file.
<b>MSC Projects Mitigation Measure BIO-7A:</b> If work in any project site area must commence during the avian breeding season (February 1 to August 31), a qualified biologist shall conduct a pre-construction breeding bird survey throughout areas of suitable habitat within 300 feet of the work area within 15 days prior to the onset of any construction activity. If nesting birds or active nests of any species are observed within a project work area or surrounding buffer, an appropriate buffer zone shall be established around each active nest to protect nesting adults and their young from construction disturbance. The size and configuration of buffer zones for each nest site shall be determined by a qualified biologist in consultation with CDFG based on site conditions and species.	PM will contract with Biologist to conduct survey, which will be carried out prior to start of construction  PM and biologist will consult with CDFG to determine appropriate buffer. PM will	Contract will be in place prior to the start of construction; survey will be conducted within 15 days before any construction activity begins, if work in any project site area must commence during the avian breeding season (February 1 to August 31).  Prior to the start of construction, upon discovery of active nest	PP&C PM	PM include Biologist's reports and any correspondence with CDFG in project file.

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**Marine Science Campus Projects Mitigation Monitoring and Reporting Program**  
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<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
Construction work within the buffer zone will be postponed until all the young are fledged, as determined by a qualified biologist.	notify construction contractor of buffer and ensure it is appropriately marked.  Biologist will monitor nest and integrity of buffer, maintain daily log, and notify PM when buffer can be discontinued.	Until nest is no longer active		
<b>MSC Projects Mitigation Measure BIO-7B:</b> In addition, to avoid interference by construction noise with bird nesting within YLR, construction work in development Subareas 6 and 7 (the Greenhouse Complex and adjacent parking lot, plus berm and fence alternations along YLR margin) will not begin during the peak nesting season (March 1 through August 1) unless the biological monitor determines that starting work during this time period will not impact birds that are present. If work begins after August 1 or before March 1, it may continue during the nesting season.	PM will include limits on scheduling work in Subareas 6 and 7 in contract specifications, subject to consultation with biologist.  Biologist will conduct nesting bird survey and inform PM if activity limitations are needed based on whether birds are present.	Before construction begins, as specified in BIO-7B.  Same	PP&C PM	PM cite to relevant sections/drawings in contract documents in mitigation monitoring checklist.  PM include Biologist's reports in project file.
<b>MSC Projects Mitigation Measure BIO-7C:</b> Berm construction along Subarea 7 shall be completed as early as possible in the construction period, such that the berm will provide buffering for YLR from noise and activity associated with subsequent construction.	PM will include proviso in contract specifications that berm construction should be scheduled as specified.  PM will consult with contractor regarding scheduling constraints.	Prior to issuing bid documents  Before construction begins.	PP&C PM	PM cite to relevant sections/drawings in contract documents, in mitigation monitoring checklist.  PM to confirm during construction at quarterly updates of mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-7D:</b> Prior to berm construction, Subarea 6 will be used for the least noisy construction staging activities, such as contractor offices and parking.	Include limitations on use of Subarea 6 in contract documents.	Prior to issuing bid documents.	PP&C PM	PM cite to relevant sections/drawings in contract documents, in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-9A:</b> A pre-construction survey for the SFDW will be conducted within 15 days prior to demolition, vegetation removal or ground disturbance at each site. If no active SFDW houses are found,	PM will contract with Biologist to conduct survey as specified and document results.	Survey to be conducted within 15 days before demolition begins.	PP&C PM	PM include Biologist's reports and any correspondence with CDFG in project file.

<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
no further mitigation is necessary at that location. If SFDW houses are found and they can be avoided, a buffer zone will be erected around the SFDW house, using a temporary fence that does not inhibit the natural movements of wildlife (such as steel T-posts and a single strand of yellow rope or similar materials) and all construction activity will be prohibited within that zone. If one or more SFDW houses cannot be avoided, and relocation is necessary, CDFG will be contacted for approval for a qualified and permitted biologist to live-trap and relocate individual rats. For each house lost, one stick pile "house" will be relocated or created in the nearest suitable habitat outside the construction zone, in the animal's home range if possible, and the live-trapped individual will be released into the stick pile, to minimize the potential impact.	PM ensure that buffer is established as determined by biologist.  Biologist inspect buffer and document its maintenance in daily monitoring logs  Consult with CDFG and implement agency recommendations.	Prior to start of construction, upon discovery of active nest  Throughout construction in vicinity.  Prior to start of construction, if one or more SFDW houses cannot be avoided.		
<b>MSC Projects Mitigation BIO-9B:</b> In addition, in the vicinity of each relocated house, preferably within the relocated animal's home range, SFDW habitat will be enhanced, in consultation with a biologist with SFDW experience, by placement of an anchor log and, if sufficient suitable material is not readily available, additional woody debris suitable for creation of additional nests, to ensure that there are sufficient suitable nest sites for SFDW already present as well as any that are relocated.	PM consult with Biologist on procedures for enhancement of habitat.  PM ensure that habitat is enhanced as recommended by biologist.	Prior to relocation of any SFDW house  Same	PP&C PM	PM include Biologist's reports in project file.  PM include documentation of habitat enhancement in project file.
<b>MSC Projects Mitigation Measure BIO-10a:</b> Any new or replaced fencing will be designed and installed in such a way as to provide 4 inches of clearance between the ground and the bottom of the fence to allow small animals to pass beneath.	PM include fencing specifications in contract documents.  Biology inspect fence	Before project goes out to bid.  Upon installation of the fence	PP&C PM	PM cite to relevant sections and/or drawings in contract documents.  PP&C PM document in project file that fence is installed as specified.
<b>MSC Projects Mitigation Measure BIO-10B:</b> Wherever the paved access road crosses terrace portions of the YLR, no parking will be allowed along the road from sunset to sunrise.	PM include parking limitation in contract documents.	Before project goes out to bid.	PP&C	PM cite to relevant sections of contract documents.
<b>MSC Projects Mitigation Measure BIO-10C:</b> No	PM include limitation on construction activity in contract	Before project goes out to bid.	PP&C PM	PM cite to relevant sections of contract documents.

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<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
construction activity that involves movement of vehicles or heavy equipment on or off road will be allowed during night hours, that is, from 30 minutes after sunset to 30 minutes before sunrise unless approved by a qualified biologist.	documents.			Include in project file documentation of biologist's approval of any night-time construction activity.
<b>MSC Projects Mitigation Measure BIO-12A:</b> During the first rainy season after brush wattles are installed in the outflow channel downstream of wetland W1, a biologist will inspect the channel after each major storm to assess whether wattles have been effective in slowing flows and decreasing erosion, and have not introduced any unanticipated effects, such as increased erosion under the wattles. If new erosion is observed, the wattles would be removed and an alternative solution for erosion repairs proposed.	Reserve will contract with qualified biologist to conduct survey as specified.  Biologist inspect channel for erosion.  Reserve remove wattles and implement alternative solution.	Before October 1 of the first rainy season after brush wattles are installed.  After each major storm, during first rainy season after brush wattles are installed.  If new erosion is observed.	YLR	YLR staff document inspections and any subsequent actions in SRP annual report.
<b>MSC Projects Mitigation Measure BIO-12B:</b> A silt fence will be erected along the north side of the Delaware Avenue Extension prior to any work on the roadbed removal project and will be maintained throughout construction on this project element. If any silt or other material is inadvertently dropped into wetland W3, it will be removed by hand shovel.	Include fencing specifications and requirements for hand removal of materials from wetlands in contract documents.  Inspect silt fence to confirm effectiveness	Before project goes out to bid.  Periodically throughout construction	PP&C PM  PP&C Inspector	PM cite to relevant sections of contract documents in mitigation monitoring checklist.  Document in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-12C:</b> Erosion repairs at the NOAA outfall west of McAllister Way will be confined to hand placement of rocks, or in conjunction with "soft" engineering solutions, such as placement of bush wattles in the channel, which will serve as a wetland restoration measure. Fence design will minimize or avoid intrusion into the channel.	PM ensure that mitigation requirements are incorporated into project design.	During construction drawing phase.	PP&C PM	PM cite to relevant sections of contract documents in mitigation monitoring checklist.
<b>MSC Projects Mitigation Measure BIO-12D:</b> At the point where the proposed De Anza pedestrian trail crosses the outlet culvert at the east end of wetland W4, the trail crossing will be designed to avoid fill into the wetland and outflow channel. This may be accomplished by use of buttresses placed outside wetland margins to support an elevated walkway, or any other	PM ensure that mitigation requirements are incorporated into project design.	During construction drawing phase.	PP&C PM	PM cite to relevant sections of contract documents in mitigation monitoring checklist.  PP&C PM confirm work is completed as specified.

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<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
solution that ensures that no fill is spilled into the wetland during construction.				
<b>MSC Projects Mitigation Measure BIO-15:</b> A qualified biologist or biologists will be identified as Biological Mitigation Coordinator, prior to the start of the construction documentation phase of the project to be involved in coordination and communication of biological mitigation requirements throughout project planning and construction. The responsibilities of the Biological Mitigation Coordinator will include: review of project specifications to ensure that biological mitigation measures are accurately conveyed to contractors; review of project plans to advise on the need for and specific placement of exclusion fencing for each project elements; assistance with regulatory consultation as needed; attendance at regular meeting with project managers and contractors to ensure that biological mitigation measures are appropriately included in the construction schedule to ensure that these measures are effective; and coordination of biological monitoring.	<p>Campus will contract with qualified biologist to conduct survey as specified.</p> <p>PM set up and coordinate regular project meetings to include Biologist</p> <p>Biological monitor review project specifications and plans, attend regular meetings with University project manager and contractors, with PM to coordinate biological surveys and monitoring with construction activities and document in monitoring logs</p>	<p>Before project goes out to bid</p> <p>Throughout construction</p> <p>Throughout construction</p>	PP&C PM	PM include in project file: comments of biological monitor on project plans and specifications; responses to these comments; meeting minutes or other meeting documentation, and Biologist's monitoring logs.
<p><b>CLRDP Project-Specific Mitigation Measure 4.5-1:</b> If human remains are discovered during the construction of a development project under the CLRDP, the University and/or its employees shall notify the Santa Cruz County Coroner's Office immediately. Upon determination by the County Coroner that the remains are Native American, the Coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and the County Coordinator of Indian Affairs and appropriate Native American consultation shall be conducted, as outlined by PRC 5097.98.</p> <p>Implementation Measure 3.9.1, Construction Monitoring, as identified in the CLRDP, shall also apply. UCSC will be responsible for implementing this mitigation measure.</p>	<p>Include in construction contract the requirement that the University be notified if suspected human bone is discovered or in the event of an archaeological discovery.</p> <p>Stop work in vicinity and contact archaeologist in the event of an archaeological discovery and archaeologist and County Coroner in the event of discovery of suspected human bone. Contact California Native American Heritage Commission and</p>	<p>Prior to issuing bid packet.</p> <p>Upon discovery , prior to continuing construction</p>	<p>PP&amp;C</p> <p>PP&amp;C</p>	<p>Cited specification in project MMR</p> <p>Document find, consultation results, archaeological report in project file.</p>

<b>Table 9-3</b>				
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<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
	conduct Native American consultation if Coroner determines the remains are Native American.			
<b>MSC Projects Mitigation Measure CULT-2A:</b> An archaeologist will be present during road ripping along the Delaware Avenue Extension to document the cross section of the roadbed and any associated railroad-related features that might be uncovered. If potentially significant features are uncovered, work in the immediate vicinity will stop until the find can be recorded and assessed. An archaeologist also will be present during any work in the W1 channel that may modify any existing concrete features in the channel to document and assess these features.	Campus will contract with qualified archaeologist to conduct survey as specified.  Archaeologist will monitor during road ripping and during work in W1 channel that may modify existing concrete structures.  PM will stop work until find can be recorded and assessed.	Before work begins on the restoration of Delaware Avenue Extension or in W1 channel.  During road ripping and during work in W1 channel.  If potentially significant features are uncovered.	PP&C PM	PM include archaeologist's monitoring report in project file.
<b>MSC Project Mitigation Measure CULT-2B:</b> The interpretive signage included in the proposed MSC Phase A and NEF Projects will include at least one sign commemorating the history of the Ocean Shore Railroad. The Campus will develop appropriate content for the sign through archival research into the construction, route, and history of the railroad. The sign will at a minimum delineate the route of the railroad line; provide a brief discussion of its significance in local history; and interpret any physical remnants that are uncovered during construction. The manager of the YLR will be consulted about the appropriate placement of historic signage along the pedestrian path that follows the former railroad route.	PM coordinate with historian or archaeologist to ensure that appropriate text is developed and that sign is included in MSC Phase A or NEF project specifications.	During detailed design and prior to issuing bid documents.	PP&C PM	PM cite relevant sections of contract specifications in mitigation monitoring checklist.
<b>MSC Mitigation Measure LU-1:</b> Implement CLRDP Amendment #1, proposed actions 1 through 10.	The Regents or delegated authority adopt proposed CLRDP Amendment #1 actions 1 through 10.	With the first approval of any of the MSC Projects.	PP&C/ Regents/ Delegated authority	PM include approved Action Item in project file.
<b>MSC Projects Mitigation Measure TRA-5A:</b> Delaware Avenue Extension will not be closed to vehicle traffic until the	PM include requirement in contract documents.	Before project goes out to bid.	PP&C PM	PM cite relevant sections and drawings of contract documents in mitigation monitoring

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<b>Project-Specific Mitigation Measure</b>	<b>Mitigation Procedures</b>	<b>Mitigation Timing</b>	<b>Mitigation Responsibility</b>	<b>Monitoring and Reporting Procedure</b>
new entry road proposed by the MSC Phase A Project is operational for normal vehicle use.				checklist.
<p><b>CLRDP Project-Specific Mitigation Measure 4.11-4:</b> Prior to the initiation of construction, the University shall approve a construction noise mitigation program including but not limited to the following:</p> <p>The University shall require that construction activities be limited to a schedule that minimizes disruption to noise-sensitive uses on the project site and in the vicinity through implementation of the following:</p> <ul style="list-style-type: none"> <li>• Construction activities during daytime and evening hours (7:00 AM to 10:00 PM) shall not occur within 150 feet of sensitive receptors, when feasible. Construction activities within 500 feet of sensitive receptors activities shall not occur during nighttime hours (10:00 PM to 7:00 AM).</li> <li>• Whenever possible, academic and administrative staff, as well as residents who will be subject to construction noise, shall be informed one week before the start of each construction project.</li> <li>• Loud construction activity as described above within 150 feet of an academic or residential use shall, to the extent feasible, be scheduled during holidays, spring break, or summer break.</li> <li>• To reduce noise impacts from construction, the University shall require that construction contractors muffle or otherwise control noise from construction equipment through implementation of the measures below. The effectiveness of these measures is quantified in Table 4.11-4 above.</li> <li>• Internal combustion engines used for any purpose at the construction sites shall be equipped with a muffler of a type recommended by the manufacturer.</li> <li>• Equipment used for construction shall utilize the best</li> </ul>	<p>Develop construction noise mitigation program and adopt as part of standard construction contract specifications</p> <p>Inspect construction site to verify that measures are being implemented.</p>	<p>Prior to initiation of construction under the CLRDP</p> <p>During construction</p>	<p>Physical Planning and Construction</p> <p>Physical Planning and Construction</p>	<p>Document measures adopted and compliance monitoring in CLRDP annual mitigation monitoring report</p> <p>Same</p>

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**Specific Resource Plan Phase 1B Project**

Project-Specific Mitigation Measure	Mitigation Procedures	Mitigation Timing	Mitigation Responsibility	Monitoring and Reporting Procedure
<p>available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible);</p> <ul style="list-style-type: none"> <li>• Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. Such mufflers can lower noise levels from the exhaust as much as 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures such as using drilling equipment rather than impact equipment shall be implemented whenever feasible.</li> <li>• Stationary noise sources shall be located as far from sensitive receptors as feasible. If they must be located near sensitive receptors, they shall be muffled to the extent feasible and/or, where practicable, enclosed within temporary sheds.</li> <li>• The University shall require that a temporary wooden wall be placed around construction activity areas that are within 150 feet of sensitive receptors to provide additional noise attenuation, where feasible. The wall should impede the direct line of site between the noise sources and sensitive receptors.</li> <li>• The University shall require that construction-related material haul trips access the campus via Natural Bridges Drive and Delaware Avenue in order to minimize noise exposure to residential land uses.</li> <li>• The University shall identify potential noise impacts related to construction of long-term projects proposed under the CLRDP, and develop project-specific noise</li> </ul>	<p>Conduct project-specific noise analysis and develop appropriate mitigation measures, as necessary.</p>	<p>During CEQA analysis for long-term projects</p>	<p>Physical Planning and Construction</p>	<p>Document analyses in CEQA document</p>

<b>Table 9-3</b>				
<b>Marine Science Campus Projects Mitigation Monitoring and Reporting Program</b>				
<b>Specific Resource Plan Phase 1B Project</b>				
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mitigation measures as may be necessary. The University shall take into account the location of the five campus facilities that will have been developed in the near-term as well as off-campus developments nearby. The analysis shall also take into account the sequence in which long-term projects are to be constructed and shall identify appropriate mitigation, as may be required. These future facilities may be sensitive receptors or may act as barriers to noise approaching other sensitive receptors.				
<b>MSC Projects Mitigation Measure TRA-5B:</b> The University will include the following requirements in construction contract specifications to minimize traffic blockage and delays: <ul style="list-style-type: none"> <li>• Construction work shall be conducted so as to ensure the least possible obstruction to traffic.</li> <li>• At no time will more than one lane of Delaware Avenue Extension or McAllister Way be blocked.</li> <li>• Contractors shall provide traffic control when any vehicle lane is blocked.</li> <li>• Contractors shall notify the University's representative at least two weeks before any partial road closure.</li> <li>• When a pedestrian/bicycle path will be blocked, detour signs will be installed to clearly designate an alternate route. Temporary fencing or other indicators of pedestrian and bicycle hazards will be provided.</li> <li>• Fire hydrants shall be kept accessible to fire-fighting equipment at all times.</li> </ul>	PM include specified requirements in contract documents.	Before project goes out to bid.	PP&C	PM cite relevant sections and drawings of contract documents in mitigation monitoring checklist.  PM confirm implementation of mitigation at quarterly mitigation monitoring checklists during construction phase.
<b>MSC Projects Mitigation Measure TRA-5C:</b> Construction project managers will notify City police and fire departments, the Director of the Seymour Center, NOAA, CDFG, and campus dispatchers in advance of lane closures, to ensure adequate access for routine operation and emergency vehicles during temporary lane closures.	As specified in the mitigation.	Ongoing, throughout construction.	PP&C PM	PM maintain record of notifications in project file.
<b>MSC Projects Mitigation Measure TRA-5D:</b> The Campus will coordinate among contractors and subcontractors to	PM include scheduling requirements in project contract	Before project goes out to bid.	PP&C PM	PM cite relevant section of contract documents in mitigation

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minimize the number and extent of simultaneous construction activities that affect driveways, paths, and roadways, and will require contractors to plan for daily construction activities a week in advance, provide a schedule, and observe the schedule to the greatest extent feasible. The University's representative will develop a weekly schedule of contractor activities and provide to NOAA, CDFG, the Director of the Seymour Center and other affected parties. Construction project managers will coordinate regularly with the University's representative who will notify NOAA, CDFG, the manager of LML, and the director of the Seymour Marine Discovery Center to keep them informed of upcoming construction activities; path, lane or parking lot closures; and major equipment activity or material hauling as far in advance as feasible, to minimize potential construction conflicts with routine and special event traffic.	documents.  PM develop weekly schedule of contractor activities and make notifications as specified in the mitigation.	Ongoing, throughout construction.		monitoring checklist.  PM maintain record of notifications in project file.
<b>MSC Projects Mitigation Measure TRA-5E:</b> The Campus will coordinate regularly with the City of Santa Cruz on the timing and nature of work at the campus entrance and along Shaffer Road to minimize construction traffic conflicts with residents of the De Anza facility and with users of the Homeless Garden Project, and will inform De Anza residents and Homeless Garden Project users of construction activity with signs or flyers.	PM coordinate with City and notify De Anza residents and Homeless Garden Project as specified in the mitigation.	Throughout construction, at times of heavy truck traffic.	PP&C PM	PM maintain record of communications with City, De Anza residents, and Homeless Garden Project.
<b>MSC Projects Mitigation Measure TRA-5F:</b> The University will post flyers and/or signs at the MSC entrance and major campus facilities and provide the same for the Homeless Garden Project and the De Anza facility, with a University phone number or other means for the public to submit questions or complaints regarding construction traffic or traffic incidents, and will respond promptly to inquiries.	PM post flyers and/or sign as specified in the mitigation.	Throughout construction.	PP&C PM	PM maintain record of postings in project file.
<b>CLRDP General Mitigation Measure 4.16-1A:</b> All toilets, urinals, showers, and washing machines installed as part of this project shall be specified as low-flush and low-flow in order to reduce onsite water consumption. The University shall install low-flow toilets and urinals that are 1.6 gallon/flush or less and	Include in construction specifications the requirement for low-flush and low-flow equipment.	Prior to issuing bid package	Physical Planning and Construction	Cite specification numbers in MMR

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low-flow showers that are 2 gallons per minute (gpm) or less in new development. Further, in all new residential uses washing machines must be certified by the Consortium on Energy Efficiency (CEE) to be water- and energy-efficient (such as those with the Energy Star® label).				
<b>CLRDP General Mitigation Measure 4.16-1B:</b> If and when the City adopts policies requiring all projects (or all similar institutional or commercial projects) within the water system to offset new water demand or any other water demand reduction policies, the University will consider voluntary compliance with the policy, with appropriate credit being given to account for UCSC's previous water conservation activities (in excess of that accomplished by the similar institutional and/or commercial entities covered by the City policy).	To be determined, based on City policy.	During the design of each project, following the adoption of pertinent policies by the City of Santa Cruz OT	Physical Planning and Construction	Report water saving offsets in CLRDP Annual MMR
<b>CLRDP General Mitigation Measure 4.16-1D:</b> The City can and should identify and develop new water supplies to reliably accommodate increases in water supply due to UCSC Marine Science Campus CLRDP-related growth and other background growth during normal and drought conditions.	Outside the jurisdiction of UCSC.	--	City of Santa Cruz	Report status in CLRDP Annual MMR
<b>MSC Projects Mitigation Measure UTIL-9:</b> Before CBB Project construction is completed, the Campus shall conduct a water efficiency study of existing University facilities at the MSC. The study will assess existing campus water uses, identify options for reducing water consumption, prioritize feasible improvements based on the amount of potential water savings and cost effectiveness, and recommend top priority measures for implementation within the succeeding five years. The Campus shall implement the top priority measures within five years of completing the study.	Physical Plant conduct study.  Physical Plant and other units identified in the study implement top priority measures.	Before occupancy of CBB Project.  Within five years of completing the study.	Physical Plant  Physical Plant	Physical Plant provide results of study to Campus planning staff, who will summarize the results in the annual CLRDP mitigation monitoring report.  Physical Plant will track implementation and annually provide summary to Campus planning staff, who will summarize the information in the annual CLRDP mitigation monitoring report.