5.1 INDEX TO COMMENTS

As described in Chapter 1, all comments on the Draft EIR and the Recirculated Draft EIR received either in writing or orally at the public hearings on the Draft EIR have been coded, and the codes assigned to each comment are indicated on the written communication and the public hearing transcripts that follow. All agencies, organizations and individuals who commented on the Draft EIR are listed below. An asterisk in the first column indicates that the comment letter was received on the Recirculated Draft EIR. Those letters are presented at the end of each commenter group and are not in alphabetic order.

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Index to Comments

Commenter Code[1]	Agency/Organization/Individual - Name
FA-1	US Fish and Wildlife Service - David M. Pereksta
SA-1	State of California Public Utilities Commission - Kevin Boles
SA-2	California Department of Transportation - Jennifer Calate
SA-3	California Regional Water Quality Control Board Central Coast Region - Roger W. Briggs
SA-4	California Regional Water Quality Control Board Central Coast Region - Roger W. Briggs
SA-5	California Coastal Commission - Rick Hyman
SA-6	California Department of Fish and Game - Robert W. Floerke
SA-7	California Department of Forestry and Fire Protection – Richard Sampson
SA-8*	State of California Public Utilities Commission – Kevin Boles
SA-9*	State of California Department of Transportation – Jennifer Calate
RA-1	Monterey Bay Unified Air Pollution Control District - Jean Getchell
RA-2*	Monterey Bay Unified Air Pollution Control District –Jean Getchell
LA-1	Association of Monterey Bay Area Governments - Nicolas Papadakis
LA-2	County of Santa Cruz - Mardi Wormhoudt
LA-3	County of Santa Cruz Office of the County Counsel - Dana McRae
LA-4	Santa Cruz County Regional Transportation Commission - Pat Dellin
LA-5	Santa Cruz County Local Agency Formation Commission - Don Ramos
LA-6	County of Santa Cruz Planning Department - Tom Burns
LA-7	Santa Cruz Metropolitan Transit District - Leslie R. White
LA-8	Santa Cruz County Regional Transportation Commission, Bicycle Committee - Daniel Kostelec
LA-9	City of Santa Cruz - Cynthia Mathews
LA-10	Remy, Thomas, Moose and Manley, LLP for City of Santa Cruz - James G. Moose
LA-11	City of Santa Cruz - Cynthia Mathews
LA-12*	Association of Monterey Bay Area Governments – Nicholas Papadakis

[1] FA: Federal Agency; RA: Regional Agency; SA: State Agency; LA: Local Agency; OPA: Other Public Agency; ORG: Organization; I: Individual; PH: Public Hearing

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Commenter Code[1]	Agency/Organization/Individual - Name
LA-13*	Remy, Thomas, Moose and Manley, LLP for City of Santa Cruz - James G. Moose
LA-14*	Santa Cruz County Regional Transportation Commission – George Dondero
LA-15*	County of Santa Cruz – Mardi Wormhoudt
LA-16*	City of Santa Cruz – Cynthia Mathews
OPA-1	UC Santa Cruz Committee on Planning and Budget - Numerous Members
OPA-2	UC Santa Cruz Committee on Faculty Welfare - Numerous Members
OPA-3	UC Santa Cruz – Monterey Bay Archaeological Achieves - Gifford-Gonzalez, Diane
OPA-4	UC Santa Cruz – Director of UCSC Natural Reserve - Fusari, Margaret
ORG-1	Sierra Club - Aldo Giacchino
ORG-2	Metro Riders Union - R. Paul Marcelin-Sampson
ORG-3	Santa Cruzans for Responsible Planning - H. Reed Searle
ORG-4	Cave Gulch Neighborhood Association (also sent by CLUE) - Don Stevens
ORG-5	Campaign for Sensible Transportation - Peter Scott
ORG-6	Coalition for Limiting University Expansion Letter to City Council - Don Stevens
ORG-7	Wittwer & Parkin, LLP for the Coalition for Limiting University Expansion - William P. Parkin
ORG-8	Lawyers for Clean Water for the Coalition for Limiting University Expansion - Michael J. Chappell
I-1	Aird, John
I-2	Alpert, Holly
I-3	Altshuler, Eitan
I-4	Arnett, Jeff
I-5	Arnett, Jeff
I-6	Austin, Diana Joy
I-7	Barclay, Jack
I-8	Barrett, Kristen
I-9	Bengal, Valerie
I-10	Benhari, Ted
I-11	Caloss, Dario
I-12	Carillo-Mandel, Sophie
I-13	Chen, Dan
I-14	Coha, June
I-15	Cremin, John
I-16	Curry, Renwick
I-17	De Hart, Robert & Kathleen
I-18	Discipulo, Mykell
I-19	Dowling, Helen
I-20	Dunkell, Andre
I-21	Elston, Deborah
I-22	Eselius, David G
I-23	Fieberling, Wilson
I-24	Gere, Andrew R

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Commenter Code[1]	Agency/Organization/Individual - Name
I-25	Gill, James
I-26	Gill, James
I-27	Grodberg, Eric
I-28	Hadland, Norma and George
I-29	Haff, Tonya (1)
I-30	Haff, Tonya (2)
I-31	Harris, Angela
I-32	Hatcher, Robert
I-33	Haye, George
I-34	Hayes, Grey
I-35	Hoffman, Greg
I-36	Holeman, Sandy
I-37	Holl, Karen
I-38	Huskey, Doug
I-39	Huttinger, Louise
I-40	Jannarone, Kimberly
I-41	Janson, Amber Lisa
I-42	Jones, Steve
I-43	Kliger, Rachel
I-44	Kowalski, Natasha
I-45	Levin, Hal
I-46	Levy, Seth A
I-47	Linthicum, Janet
I-48	Luckenbach, Heidi
I-49	Maciel, Marissa
I-50	Macken, Niall
I-51	Malone, Bill
I-52	May, William L
I-53	McCombie, George
I-54	McGuire, John
I-55	McLaughlin, Sigrid
I-56	McManus, Philip
I-57	McStay, Sean
I-58	Moutrie, Dave
I-59	No name ("Pacificoffering")
I-60	No name ("newnum6")
I-61	Paige, Gail and Mitchell
I-62	Peifer, Marley Alexander
I-63	Perry, Frank
I-64	Potocky, Shauna

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Commenter Code[1]	Agency/Organization/Individual - Name
I-65	Rain, Kimberley
I-66	Rosen Sofen, Jeanne
I-67	Rowland, Annmarie
I-68	Ruby, Emily
I-69	Scott, Sam K
I-70	Searle, H. Reed
I-71	Sinervo, Barry
I-72	Smith, Alene
I-73	Sokolow, Sonya
I-74	Sokolow, Stanley
I-75	Stafford, Kate
I-76	Stevens, Don
I-77	Stickle, John D.
I-78	Stoops, Cindie
I-79	Thomas, Jacob J
I-80	Timbers, Amelia
I-81	Todd, Andrew
I-82	Warner, Jim
I-83	Waxman, Matt
I-84	Wedge, Scott
I-85	Weisz, Russell
I-86	Williams, John
I-87	Willis, Megan
I-88	Wittman, Jack
I-89	Mullen, Tom
I-90	Reeves, Lawrence
I-91	Snyder, Dan
I-92*	H. Reed Searle
I-93*	John McGuire
I-94*	Jim Gill
I-95*	David G Eselius
I-96*	Edward J. Davidson
I-97*	Diane Brookes
I-98*	David G Eselius
PH-1	Mike Rotkin
PH-2	Mardi Wormhoudt
PH-3	Andy Schiffrin
PH-4	Rick Longinotti
PH-5	Hal Levin
PH-6	Bill Malone

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Commenter Code[1]	Agency/Organization/Individual - Name
PH-7	Ryan Coonerty
PH-8	Susan Kipping
PH-9	Jack Barclay
PH-10	David Eselius
PH-11	Aldo Giacchino
PH-12	Josh Assink
PH-13	Don Stevens
PH-14	Eva Leuthold
PH-15	Russell Weisz
PH-16	Renwick Curry
PH-17	Richard Harrington
PH-18	Eric Grodberg
PH-19	Marie Beckham
PH-20	Kim Akol
PH-21	Brian Feraru
PH-22	Rachel Fields
PH-23	Eitan Altshuler
PH-24	Deborah Elston
PH-25	Ted Benhari
PH-26	George McCombe
PH-27	Ed Porter
PH-28	John Aird
PH-29	Susan Kipping
PH-30	Hal Levin
PH-31	David De Selin
PH-32	Richard Harrington
PH-33	Russell Weisz
PH-34	Eitan Altshuler
PH-35	Kaye Beth
PH-36	Eric Grodberg
PH-37	John Aird
PH-38	Ann Marie Roland
PH-39	Deborah Elston
PH-40	Amelia Timbers
PH-41	John Cremin
PH-42	Don Stevens
PH-43	Eric Grodberg
PH-44	Michael Bain
PH-45	John Aird
PH-46	Tonya Haff
PH-47	Dan Harder

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Commenter Code[1]	Agency/Organization/Individual - Name
PH-48	Julian Beckett
PH-49	Eva La Totte
PH-50	Ryan Probek
PH-51	Don Stevens
PH-52	Ron Pomerantz
PH-53	Eric Grodberg
PH-54	Andrew Haley
PH-55	William Codiga
PH-56	Paul Carol

* Indicates comment letter received on the Recirculated Draft EIR

5.2 MASTER RESPONSES

5.2.1 Master Response PD-1. Magnitude of Enrollment Growth

This Master Response addresses Comments LA-2-15, LA-6-6, LA-6-11, LA-6-118, LA-9-2, LA-9-3, ORG-7-7, I-45-29, I-87-2, and I-33-1.

5.2.1.1 UC Santa Cruz Enrollment Planning for 2005 LRDP

As described in Section 3.4 of the Draft EIR, the UC Santa Cruz Strategic Futures Committee identified the enrollment planning target for the 2005 LRDP through a lengthy process of program planning, which included consideration not only of the projected system-wide enrollment growth, but also of the Campus's academic goals and vision. The Campus proposes to recommend to The Regents the adoption of the Reduced Enrollment Growth Alternative previously analyzed in the 2005 LRDP Draft EIR and identified as the environmentally superior alternative. The Final Draft 2005 LRDP (September 2006) revises the Draft 2005 LRDP (January 2005) to reflect this change. The Campus's selection of 21,000 three-quarter-average FTE enrollment was based on the following considerations, which are also applicable to the selection of 19,500 three-quarter-average FTE enrollment for the Final Draft 2005 LRDP:

- As a comprehensive public research university, UC Santa Cruz seeks to develop a breadth and depth of undergraduate programs, a fully developed range of graduate programs, and appropriate professional programs. Individual departments must be large enough to provide a "critical mass" for interaction and to ensure the stability of the curriculum and program governance. Many campus departments are not yet of a size that is both fully sustainable and comparable to highly rated departments at peer institutions. Campus growth would help address this situation. The Strategic Futures Committee concluded that, based on the Campus's academic plans and aspirations, the Campus could grow to an enrollment of 25,000 FTE.

- UC Santa Cruz' academic plans allow for development of new programs as new areas of research emerge, as well as for expansion of existing programs. Campus researchers are pursuing many emerging research themes that were not evident at the time the 1988 LRDP was developed, including bio-molecular engineering, film and digital media, and social policy and public advocacy. In order for UC Santa Cruz to remain competitive in its position as a first-rate public research university, the Campus must ensure sufficient numbers of faculty to continue to develop sustainable programs in emerging fields and to support new models for research activities. Growth in research will promote advances in basic and applied research, and will also increase opportunities for graduate and undergraduate training.
- UC Santa Cruz is committed to contributing to the University's mission of providing higher education access for all qualified students. The projected increase in the number of UC undergraduates is a function of several factors: a projected increase in the number of high school graduates; improved student retention; and the demand for a University education by those outside the traditional 18-year-old new student cohort. In addition, UC system-wide planning assumes that graduate student enrollment growth will keep pace with, if not exceed, undergraduate growth. UC Santa Cruz is committed to increasing the proportion of graduate students to 15 percent in order to realize the benefits of graduate education for its research programs as well as to undergraduate teaching.

5.2.1.2 System-wide Demand for Enrollment Growth

The University of California Office of the President (UCOP) provides enrollment projections system-wide and for each campus for capital planning purposes. As discussed in the 2005 LRDP Draft EIR, page 1-4, in January 2000, the President of the University asked each campus to carefully study the feasibility of enrollment growth and instructed each campus to plan to accommodate an appropriate amount of growth. In 2000, the University of California projected that it would need to accommodate 63,000 additional students in the period 1998 through 2010 based on 1999 California State Department of Finance (DOF) projections. In April 2000, the University released a feasibility report on year-round instruction (UCOP 2000[2]). This report explores the options available to address the increases expected in undergraduate and graduate enrollment. For the purposes of future planning, the University suggested enrollment targets for each of the existing University of California campuses. Table PD-1 displays those suggested targets relative to the 1998/99 campus enrollment. Feasibility and planning studies such as the reports mentioned above are subject to a statutory exemption from CEQA (Public Resources Code Section 21102, CEQA Guidelines Section 15262). However, Public Resources Code Section 21080.09 requires an EIR for the approval of a long-range development plan by the University.

Table PD-1
University of California Suggested Enrollment Targets

		General Campus Enrollment Targets[1] (Budgeted FTE)	Percentage of Projected System-wide Growth between 2003 and 2010

[2] University of California, The Feasibility of Year-Round Instruction within the University of California, April 2000

Campus	1998–99 Enrollment[1]	2003-04	2010–11	Increase in Enrollment	Percentage Increase
Berkeley	27,800	30,159	31,800	1,641	5.4
Davis	20,300	25,262	26,400	1,138	3.9
Irvine	15,700	22,197	27,600	5,403	17.9
Los Angeles	28,500	30,813	32,900	2,087	6.8
Merced	—	0	5,000	5,000	16.6
Riverside	9,550	15,375	19,900	4,525	15.0
San Diego	16,850	22,179	27,600	5,421	18.0
Santa Barbara	17,880	19,486	21,900	2,414	8.0
Santa Cruz	10,420	14,348	16,900[2]	2,552	8.4
Total	147,000	179,819	210,000	30,181	

Source:

1. Accommodating Tidal Wave II: Elements of Current Planning, February 10, 2000
2. UC Santa Cruz's budgeted FTE for 2010-11 was revised in August 2005 to 17,215. This includes summer enrollment and students in off-campus programs. Without summer enrollment and students in off-campus programs, projected three-quarter average headcount enrollment for the campus in 2010-11 is 15,815.

Each campus has its own program goals and objectives and determines its own enrollment planning targets through consideration of a combination of academic, physical and demographic factors. Furthermore, the campuses vary widely in campus and community setting, developable area, environmental constraints, developed and developable infrastructure, and service population. Therefore, the projected system-wide enrollment growth is not evenly distributed among all campuses.

The University has not updated its 1999 system-wide plan or devised a plan for the years beyond 2010. The UC Santa Cruz Strategic Futures Committee based its analysis of 2020 system-wide enrollment demand on an extension of the 2003 DOF projections of public high school graduates, the most recent available at the time that the Draft 2005 LRDP was being formulated. Because the planning horizons for the campuses vary, it is not possible to calculate what proportion of system-wide growth through 2020 would be accommodated by the UC Santa Cruz 2005 LRDP.

5.2.1.3 UC Santa Cruz Share of System-wide Growth

Some commenters suggested that the University should reduce the amount of additional student enrollment proposed at UC Santa Cruz, and instead increase enrollment at other campuses. As shown in Table PD-1, above, the University's proposals for accommodating future enrollment growths through 2010 already allocate a substantial majority of the projected increase in enrollment at other UC campuses. For example, both the San Diego campus and the Irvine campus projected increased between 2003-04 and 2010-11 of about 5,400 FTE; thus, each of these campuses would accommodate about 18 percent of the projected system-wide increase between 2003-04 and 2010-11. UC Santa Cruz is projected to accommodate only 8.4 percent of the system's projected increase between 2003-04 and 2010-11. Among the northern California campuses, only UC Davis, UC Merced, and UC Santa Cruz have growth potential, having both available land, and academic goals that would be served by enrollment growth. Therefore, these campuses, along with several southern California campuses, propose to accommodate a larger share of the projected system-wide growth than the campuses that currently have the highest enrollments. At

19,500 FTE students, UC Santa Cruz would have a higher enrollment than only one other UC campus the new UC Merced campus.

It is possible that the demand for a UC education will not be as large as anticipated in the UC Santa Cruz Strategic Futures Committee report. In that case, enrollment at the Santa Cruz campus may not grow to the projected level. The planning target of 21,000 students was selected for analysis in the Draft EIR because it also would allow the Campus to make significant progress toward achieving its academic vision. By planning for a three-quarter-average enrollment of 19,500 FTE, the 2005 LRDP would still allow the Campus to move toward its academic objectives, but would also allow more time for the Campus and the local community to seek practical solutions to the challenges of growth at this site.

The UC Santa Cruz Strategic Futures Committee also considered historic growth trends in developing its recommended enrollment planning target for the 2005 LRDP. Table PD-2 shows enrollment growth trends since the opening of the campus in 1965 and projected growth rates for the years between 2005 and 2020, assuming enrollment reaches 19,500 in 2020-21.

Table PD-2
Enrollment Growth Rates at UC Santa Cruz

Year	Actual Enrollment[1]	Increase During the Preceding 5-Year Period	Projected Enrollment	Enrollment Growth Rate over this 5-Year Period	Average Increase in Enrollment over this 5-Year Period
1965	637				
1970	3,713	3,076	-	482.0%	615
1975	5,910	2,834	-	76.0%	567
1980	6,364	454	-	7.7%	91
1985	7,497	1,133	-	17.8%	227
1990	9,720	2,223	-	29.8%	445
1995	9,552	-168	-	-1.7%%	-53
2000	11,735	2,183	-	22.8%	437
2005	14,600	2,865	-	24.4%	573
2010	-	1,215	15,815[2]	8.3%	243 (projected)
2015	-	1,843	17,658	11.7%	369 (projected)
2020	-	1,842	19,500	10.4%	368 (projected)

1. Source: UC Santa Cruz Office of Planning and Budget, Institute of Research and Policy Studies, Three-Quarter Average (Headcount) Enrollments. Accessed at www.ucsc.edu, April 23, 2006. Includes students enrolled in off-campus programs.

2. Current projection of three-quarter-average headcount from UCOP Budget Office, "Enrollment Projections for Space Planning", 9/10/2004

3. Three-quarter-average headcount. Assumes enrollment will increase at steady rate under LRDP; this may not be the actual case.

As indicated in Table PD-2, growth rates have fluctuated significantly during the Campus' history. With the exception of the period of very rapid growth during the Campus' first decade, the period of most rapid growth was between 1985 and 1990, when enrollment grew by almost 30 percent. Since approximately 1975, the average 5-year-period growth rate has been about 16.8 percent. As shown in the table,

enrollment growth under the proposed 2005 LRDP is anticipated to increase at a significantly slower than average rate up to 2010, with an increase of about 8.3 percent during the period between 2005 and 2010, after which time enrollment would grow at 10 to 12 percent every five years. This rate would be slightly below the average growth rate. Thus, while the absolute number of students enrolled in 2020-21 would constitute enrollment growth of about 39 percent over the 2003-04 baseline number, the rate of enrollment growth at UC Santa Cruz under the proposed 2005 LRDP would be slower than the Campus's historic average rate. Moreover, the average annual increase in the number of students enrolled between 2010 and 2020 would be approximately 369, about equal to the average annual campus growth between 1965 and 2005.

5.2.1.4 Enrollment Growth After 2020-21

Each project proposed under the 2005 LRDP would be subject to project-level CEQA analysis, which would analyze whether any enrollment increase accommodated by the project would be within the range of the population analyzed in the 2005 LRDP EIR. If enrollment reaches 19,500 before or by the end of the 2005 LRDP planning horizon (2020), a new or amended LRDP and LRDP EIR would be prepared before enrollment could increase further.

5.2.2 Master Response MIT-1. Government Code Section 54999 Obligations and University Fair Share Contributions

This Master Response addresses Comments LA-2-123, LA-2-133, LA-3-28, LA-3-41, LA-4-1, LA-4-8, LA-5-2, LA-6-7, LA-6-94, LA-8-1, LA-9-25, LA-9-77, LA-9-78, LA-9-80, LA-9-86, LA-9-97, LA-9-119, LA-9-123, LA-9-126, LA-10-5, LA-13-2, LA-16-5, ORG-7-19, ORG-7-24, ORG-7-29, SA-4-2, SA-5-11, SA-7-12, SA-9-1, RA-1-14, RA-1-22, I-21-13, I-21-14, I-24-2, I-26-3, I-45-29, I-45-81, I-77-3, I-88-2, I-88-14, I-88-19, I-88-20, PH-2-14, PH-3-4, PH-8-5, PH-20-2, PH-24-1, and PH-28-1.

As explained in the Draft EIR, on pages 4.15-20 and 22, Government Code Section 54999 *et seq.* authorizes public agencies providing public utility services to charge the University a limited capital facilities fee under certain circumstances. This fee is a non-discriminatory charge imposed by a public utility service agency to defray the actual capital cost of that portion of a public utility facility (as defined in Government Code Section 54999.1 (d)) actually serving the University. The fee would cover the Campus's fair share of the construction costs for such improvements. Under Government Code Section 54999.1(f), "nondiscriminatory" means that,

> "the capital facilities fee does not exceed an amount determined on the basis of the same objective criteria and methodology applicable to comparable nonpublic users, and is not in excess of the proportionate share of the cost of the public utility facilities of benefit to the person or property being charged, based upon the proportionate share of use of those facilities."

The agency providing the services has the burden of producing evidence to establish that the capital facilities fee is non-discriminatory (Government Code Section 54999.3(c)). The University will comply with its obligations as authorized under Section 54999.

The Draft EIR describes the University's commitment to comply with the obligations authorized under Section 54999 *et seq.* by paying the University's fair share of the construction cost of necessary public

utility facilities, including a fair share of the cost of mitigation measures to address environmental impacts of construction of these facilities. The 2005 LRDP Draft EIR discusses these University obligations with reference to off-campus water infrastructure (page 4.15-20), off-campus waste treatment and conveyance (page 4.15-22), and the development of new water supplies and infrastructure that could be needed under drought conditions (page 4.15-36). The commitment to comply with this statute is not listed in the EIR as a mitigation measure, because it is a legal obligation with which the University must comply irrespective of environmental impact mitigation commitments made in the EIR.

The concept of "fair share" mitigation contributions, as used in this EIR, is modeled on Government Code 54999 *et seq.* "fair share" is defined on page 4.14-46 of the Draft EIR as follows:

> "In this EIR, 'Fair Share' is defined to mean that the University has agreed to negotiate for a contribution to the identified improvement pursuant to procedures similar to those described in Government Code Sections 54999 *et seq*. for contributions to utilities. In addition, in each case a fair-share payment is agreed upon, the University will pay its fair share only if the applicable jurisdiction has established and implemented a mechanism for collecting funds from any other developers and entities contributing to the identified impacts, and providing that the jurisdiction builds the identified improvements."[3]

Fair share contributions (outside of the Government Code context) are proposed in the EIR as mitigation when the action that needs to be taken to mitigate the impact is outside of the authority of the University, typically because the University does not own the land or have the authority to carry out the action or development that would mitigate the identified impact. For example, the Draft EIR analysis discloses that University traffic under the 2005 LRDP, under cumulative conditions, will contribute to significant impacts at 11 off-campus intersections. The RDEIR identifies significant impacts at five freeway facilities on State Route 1. The Draft EIR and RDEIR identify intersection improvements that would reduce these impacts to less-than-significant levels. However, because carrying out these improvements is outside the University's authority, the University cannot guarantee when or whether these mitigation measures will be implemented. For this reason, as CEQA requires, the Draft EIR and RDEIR find these impacts to be significant and unavoidable.

The criteria applicable to the University's fair share payments for off-campus mitigations to which it has committed are:

- The responsible entity must commit to using the University's contribution for a specified improvement of a facility that mitigates an impact to which the University has contributed, as identified in this EIR, and must earmark the funds for that specific improvement.
- The entity carrying out the mitigation must collect contributions from others for their share of the mitigation cost, on an equitable basis. For instance, the City collects fees from others for their contributions to traffic impacts. However, the City's recently instituted traffic impact fee explicitly does not permit this fee to be used as a CEQA mitigation measure. Should the City elect to use funds collected from others to carry out improvements for an intersection significantly adversely affected by

[3] After the Draft EIR was issued, the California Supreme Court issued its opinion in City of Marina et al. v. Board of Trustees of the California State University (July 31, 2006)(S117816, Ct. App. 6 H023158, Monterey County Superior Court Nos. M41795 & M41781). The opinion supports the University's fair share approach to mitigation. The text on page 4.14-46 of Draft EIR has been revised to reflect that this case has been decided.

University traffic, nonetheless, the University would contribute its fair share of the cost of that improvement.

The University will negotiate with the public entities involved to establish the University's fair share cost on a case-by-case basis, based on the University's contribution to the identified impact.

The University proposes in the Draft EIR and RDEIR (LRDP Mitigation TRA-2A) to make fair share contributions, as defined above, to improvements at off-campus intersections and freeway facilities as mitigation for impacts to which University traffic would contribute.

In addition, through mitigation measures identified in the Draft EIR and/or Final EIR, the University commits to collaborate or cooperate with the City and other jurisdictions in various ways to address off-campus impacts in the areas of recreation, transit capacity, and housing to which University population or development would contribute. For other mitigation measures, rather than fair share commitments the University would collaborate with other agencies, and the nature of the contribution either is specifically identified in the measure, or will be subject to negotiation. For example, under LRDP Mitigation POP-3C, the University will consult with the City on the scope of work, and fund and carry out a market analysis of the local housing market. The University will pay for this study, which will be useful to both parties. Under LRDP Mitigation REC-2C, the University will institute or strengthen measures to educate and inform campus bicyclists regarding use of bicycles in the Pogonip, (through campus signage and provision of bicycle maps) to discourage illicit bicycle use in the Pogonip (which is adjacent to the campus and may be used by campus affiliates) as a means of reducing erosion problems on trails. Under LRDP Mitigations TRA-4A through -4D, the University will continue to coordinate and collaborate with SCMTD in order to maintain and improve efficiency and capacity of the transit systems serving the campus, in support of TDM programs both on- and off-campus. The nature of coordination and collaboration is not specified in these last mitigation measures, because a wide range of measures is being considered, and cooperation with the City or other jurisdictions is required.

The University also will continue to collaborate outside of the CEQA process, with the City of Santa Cruz and other agencies to support services and facilities that are beneficial to both the University and to the community. The University's contractual payment on a per rider basis for transit services to the campus provided by SCMTD is an example of such an arrangement. The cost of certain future improvements to the capacity and the efficiency of transit is one element that may be taken into account in negotiating the University's future contractual payments to SCMTD.

5.2.3 Master Response BIO-1. Northern Maritime Chaparral and Santa Cruz Manzanita

This Master Response addresses Comments LA-2-59, LA-6-20, LA-6-23, LA-6-27, ORG-1-5, ORG-7-17, OPA-4-5, I-2-1, I-5-5, I-29-22, I-34-18, I-34-19, I-34-20, I-34-21, I-34-35, I-57-1, and PH-11-2.

5.2.3.1 Plant Community Mapping

The methodology used to map northern maritime chaparral and Santa Cruz manzanita in the *Botanical and Wildlife Assessment of the UC Santa Cruz North Campus Area* (EcoSystems West 2004a), prepared in support of the 2005 LRDP EIR, is described below.

Plant community distribution on the campus originally was mapped by Dr. Roy Buck (Buck 1986). Dr. Randall Morgan subsequently conducted field surveys of the north campus area (between February 7 and June 10, 2000), to confirm and update the previously prepared mapping. During February and March of that year, biologists examined the entire survey area on foot, in irregular 50-foot transects. Morgan mapped vegetation community types observed on the north campus on a 1 inch: 400 feet scale base map provided by UC Santa Cruz.

Morgan's vegetation mapping in the North Campus area was based on Buck's plant community classification scheme (1986, 1987). Morgan also consulted the generalized statewide plant community classification schemes of Munz and Keck (1973), Holland (1986), and Sawyer and Keeler-Wolf (1995) for a broader regional perspective on the plant community types of the survey area.

Chaparral on the UC Santa Cruz campus was characterized as a phase of the northern maritime chaparral habitat type of Holland (1986), corresponding to a phase of the woollyleaf manzanita series of Sawyer and Keeler-Wolf (1995). Northern maritime chaparral is a sensitive natural community. Some areas of northern maritime chaparral are dominated by Santa Cruz (heartleaf) manzanita (*Arctostaphylos andersonii*), a special status plant; these areas were mapped as distinct occurrences within the northern maritime chaparral. Elsewhere, brittleleaf manzanita (*Arctostaphylos tomentosa* ssp. *crinita*) predominates in the northern maritime chaparral community. In mapping the distribution of northern maritime chaparral and Santa Cruz manzanita, the species having the greatest relative cover out of all the species present was identified as the dominant species, although other chaparral species might be present. Typical associate species in the northern maritime chaparral—and also present in the areas dominated by Santa Cruz manzanita included sensitive manzanita (*A. nummularia*), wartleaf ceanothus (*Ceanothus papillosus*), blue blossom (*Ceanothus thyrsiflorus*), a shrubby form of Shreve oak (*Quercus parvula* var. *shrevei*), chaparral pea (*Pickeringia montana*), coffeeberry (*Rhamnus californica*), yerba santa (*Eriodictyon californicum*), huckleberry (*Vaccinium ovatum*), and chamise (*Adenostoma fasciculatum*). One tree species, knobcone pine (*Pinus attenuata*), occurs in varying abundance throughout much of the chaparral. Herbaceous vegetation is generally sparse in the chaparral, except where disturbance has occurred.

As noted in Buck (1986), plant communities such as northern maritime chaparral and mixed evergreen forest intergrade in the study area, so that boundaries of vegetation communities are approximate. Extensive areas of the north campus are characterized by vegetation that is a mixture of northern maritime chaparral and mixed evergreen forest (42 acres mapped as chaparral-forest transition), or a mixture of northern maritime chaparral, dwarf redwoods, and mixed evergreen forest (34 acres mapped as dwarf redwoods-mixed chaparral). Impacts to these mixed or transitional vegetation communities are discussed in the Draft EIR on page 4.4-39. It was observed that northern maritime chaparral and Santa Cruz manzanita communities tend to transition to mixed community types through natural succession, particularly in the absence of wildfire. Under existing conditions, much of the northern maritime chaparral on campus is likely to undergo succession to mixed evergreen forest. A case in point is the succession of a 42-acre area mapped by Buck in 1986 as northern maritime chaparral, which was remapped by Ecosystems West as northern maritime chaparral-forest transition in 2004.

Burning is an essential process needed to maintain the natural community. It is unknown how habitat fragmentation might affect the likelihood of natural fire within northern maritime chaparral. With the

exception of wildfires in 1997, there have been no documented wildfires on the campus since the early 1900s (Greenlee 1978). UC Santa Cruz currently suppresses all fires on campus. The envisioned development on the north campus, where northern maritime chaparral is present, will make this long-standing practice of fire suppression even more important to reduce wildfire risk to development. In the absence of fire and/or other management, the slow pattern of succession occurring within northern maritime chaparral (i.e., transition to forest communities on deeper soils) will therefore likely continue, and the extent of northern maritime chaparral on campus likely will continue to diminish, irrespective of on-going campus development.

Chaparral occurs at variable densities (ranging from dense to relatively open). EcoSystems West characterized each mapped unit of Santa Cruz manzanita according to one of three density classes (low, medium, or high) but did not quantify the differences among these categories. In response to comments on the Draft EIR, and in order to develop quantitative density criteria for use in identifying comparable manzanita stands for compensatory mitigation, Jones & Stokes conducted a systematic survey of identified chaparral and Santa Cruz manzanita patches to assess and define patch densities (Jones & Stokes 2006). Based on observations of chaparral and manzanita patches of variable size, Jones and Stokes determined that the minimal discretely identifiable patch size for Santa Cruz manzanita is about 0.25 acres. This patch size was used as the basic survey unit for determining the density of manzanita within a given surveyed stand, and also serves as the minimum unit for assessment of impacts to Santa Cruz manzanita. Jones & Stokes botanists Drs. Joel Gerwein and Amanda Petel collected data on Santa Cruz manzanita density in the study area on March 29, 2006. Four 100-ft-long transects were located randomly within areas previously mapped as high density and low density Santa Cruz manzanita (two in each density category). No transects were located in medium density areas because these mapped areas were too small to precisely locate in the field through the dense chaparral canopies. All Santa Cruz manzanita individuals whose branches or stems intersected the plane of the survey transect were counted. The mean radius of the Santa Cruz manzanita individuals in each transect was calculated in order to estimate the area occupied by the individuals counted so that a density could be calculated. Densities for areas mapped by EcoSystems West as high density ranged from 100 to 617 individuals per acre, with a mean of 359 individuals/acre. Densities for areas mapped as low density by EcoSystems West ranged from 18 to 127 individuals per acre, with a mean of 73 individuals/acre. Individual Santa Cruz manzanita shrubs tended to be larger in low-density patches (mean diameter = 25.6 feet) than in high-density patches (mean diameter = 12.5 feet).

5.2.3.2 Impacts to Northern Maritime Chaparral

As noted in the Draft EIR on page 4.4-39 and 40, about 48 acres of northern maritime chaparral presently are identified on the campus. Of this area, up to about 11.7 acres could be permanently removed by development of the campus under the 2005 LRDP (Draft 2005 LRDP, Figure 4.4-5). These 48 acres of northern maritime chaparral are found in five distinct patches on campus, with approximate sizes of 0.8, 3.3, 13.9, and 25 acres. The smallest of these (0.8 acre) could be completely removed by development. The second smallest patch, at the western edge of campus, could be largely removed (up to 2.5 of 3.3 acres). Impacts also could occur at the two largest patches, with 1.2 acres of the 13-acre patch, and 7.3 acres of the 25-acre patch removed. In addition, up to 20 acres mapped as chaparral-mixed forest, and up

to 17.5 acres of dwarf redwoods-mixed chaparral, could be removed by proposed north campus development under the 2005 LRDP.

Specifically, the northwestern proposed housing and recreation area (north of the existing North Remote parking lot) would partially remove and fragment a 7.3-acre continuous patch of northern maritime chaparral. After development, two patches, together totaling roughly 17.7 acres, would remain. Development also would remove about 1.2 acres of a 13.9-acre patch of chaparral near the intersection of Chinquapin, West, and Red Hill roads (Draft EIR, Figure 4.4-5). The proposed campus support development area, to the west of Empire Grade Road, would fragment and/or remove a continuous 2.5-acre patch of northern maritime chaparral.

Construction within the Colleges and the Student Housing and Employee Housing areas along the north campus loop road would remove smaller patches of chaparral (each less than 0.25-acres in size). These are fragmented under existing conditions and would be difficult to maintain even with intensive management.

As one commenter notes, it is possible that the 10-acre threshold might not be met, and yet northern maritime chaparral could be lost through the cumulative loss of several small parcels that are below the mitigation threshold in size. As described above, four of the five pure stands of northern maritime chaparral could be affected by the proposed development. Smaller patches of chaparral within chaparral/forest transition also could be affected. The 10-acre patch size threshold for impacts was selected because of the difficulty of maintaining patches smaller than this size even with active management, and because of the ecological importance of the larger patches in maintaining biodiversity on campus. LRDP Mitigations BIO-1A and –1B would ensure avoidance or mitigation for removal or fragmentation of the two largest patches of chaparral on campus. The mitigation is not based on a threshold of total impacts by acreage, but on impacts to large patches (>10 acres in size), which are ecologically more valuable and which are of a size for which management would be viable. The cumulative acreage loss of small patches of chaparral over the term of the LRDP may exceed 10 acres, but this cumulative impact is not considered significant because the small patches of chaparral that could be lost are less ecologically important and further would be less amenable to long-term preservation through management. As noted below, the threshold for avoidance and compensatory preservation for Santa Cruz manzanita has been lowered, so that mitigation will be applied for any parcel 0.25 acres in size or larger. In both cases, avoidance is still the preferred mitigation.

5.2.3.3 Occurrences of and Impacts to Santa Cruz Manzanita

The CNDBB reports 23 occurrences of Santa Cruz manzanita in Santa Cruz County (CNDDB 2005). Many botanists note that Santa Cruz manzanita is often abundant where it occurs (EcoSystems West 2004; Preston 2005). Large Santa Cruz manzanita populations are known in the Big Basin area, especially on the north side. A population of moderate size is present in the Bonny Doon Ecological Reserve (Parker 2006). These populations, as well as the population in Nisene Marks State Park, currently are protected (CNDDB 2005). In addition, the species occurs in smaller populations in many areas, from Big Basin north to Skyline Blvd. Populations have also been documented along Bonny Doon Road and Empire Grade Road (Parker 2006).

Acreage estimates are available for 13 of the 23 occurrences historically documented in the CNDDB, with population sizes ranging from one to 1,300 individuals[4]. Together, the historical area of all documented occurrences of the species in the County is at least 1,439.2 acres. Since acreage and density have not been reported for 10 of the 23 historically documented occurrences, the reported acreage underestimates the true frequency of the species within the species range, at least historically. Most of the previously surveyed areas have not been revisited since the 1970s. Nonetheless, the area of Santa Cruz manzanita occurrences documented in Santa Cruz County since 1970 is at least 702 acres--and the actual acreage is almost certainly more extensive, based on the historical record.

Thirty-seven acres of Santa Cruz manzanita have been documented on the UC Santa Cruz campus. This, represents about 5 percent of the acreage of this species documented in the County since 1970, or about 2 percent of the at least 1,400 acres previously mapped. This does not take into account the areas where the species was identified in the past, but for which no acreage estimates were recorded.

As noted in the Draft EIR, up to 16.1 acres of Santa Cruz manzanita patches located in proposed development areas and road alignments on the north campus could be impacted by development of the campus under the 2005 LRDP. This represents about 43 percent of the remaining acreage of Santa Cruz manzanita that has been documented as definable patches on the UC Santa Cruz campus. In fact, actual removal is expected to affect less than the maximum potential area of impact for Santa Cruz manzanita, since it is campus practice to consider sensitive species and other environmental issues when siting a project, and to retain natural vegetation among buildings, trails, and roads wherever possible. It is likely that smaller patches and individual specimens and clusters of the plant would remain within developed areas. However, this analysis assumes, as a reasonable "worst case", that all of the Santa Cruz Manzanita acreage mapped within development areas will be affected. Although, under the 2005 LRDP, losses of Santa Cruz manzanita would occur and could represent a substantial part of the total acreage of define patches on the campus, these losses would not jeopardize the viability of the species within its overall range or have a substantial impact on the species as a whole.

5.2.3.4 Mitigation

One commenter noted that Santa Cruz manzanita may be threatened throughout its range by natural succession, due to widespread fire suppression. However, development under the 2005 LRDP will not add significantly to indirect threats to this species from fire suppression, as the affected areas have been subject to fire suppression since the initial development of the University in 1964, if not earlier.

The LRDP EIR includes LRDP Mitigations BIO-1A through -1C, to address impacts to northern maritime chaparral and Santa Cruz manzanita that could result directly from development under the LRDP (through removal or fragmentation), or indirectly, through natural succession as a result of fire suppression on campus.

[4] Some of these occurrences are located in close proximity to one another and may be considered as a single population or location. Therefore, it was noted in the setting section of the Draft EIR that a total of 15-20 occurrences of the species have been documented in the County.

5.2.3.4.1 Avoidance

The preferred mitigation for impacts to northern maritime chaparral and Santa Cruz manzanita is avoidance. Under LRDP Mitigation BIO-1A, the University will avoid removal or fragmentation of any patch of northern maritime chaparral that is 10 acres or more in area, and any patch of Santa Cruz manzanita that is 0.25 acre or more in area. These patch sizes are intended for use as screening criteria, so that the presence of northern maritime chaparral or Santa Cruz manzanita are taken into account in development planning. The assessment of whether patches of these sizes or larger are present on the development site is a required first step to address potential impacts. LRDP Mitigation BIO-1A also requires, as another avoidance measure that a habitat buffer at least 30 feet wide also be preserved between the avoided patch and any adjacent developed area. This buffer may be included within the 100-foot-wide buffer around buildings, which is required for fire safety, providing that the fire buffer is managed through fuel reduction and other strategies compatible with habitat preservation and restoration.

The University acknowledges that it may not be possible to avoid all patches of northern maritime chaparral or Santa Cruz manzanita. LRDP Mitigation BIO-1A requires the University to document avoidance and minimization measures in project-level environmental document and to discuss why avoidance of impacts to northern maritime chaparral and Santa Cruz manzanita is not feasible for a particular project. LRDP Mitigation BIO-1A has been revised in the Final EIR for greater clarity and specificity. Please refer to Volume IV, Chapter 3, Revised Table 2-1 for the full text of revised mitigation measures.

It is recognized that avoidance may not eliminate all impacts to northern maritime chaparral and Santa Cruz manzanita. However, given that development will not completely encompass any defined development area, it is expected that it will be feasible to avoid sufficient areas of chaparral, during development under the 2005 LRDP, to keep impacts below the maximum potential impact described in the Draft EIR. When avoidance is not feasible, impacts would be mitigated by implementation of LRDP Mitigations BIO-1B and -1C, as described below.

5.2.3.4.2 Compensatory Preservation and Management On Campus

In the event that it is determined in project level planning that it is not feasible to avoid removal or fragmentation of patches of northern maritime chaparral or Santa Cruz manzanita, LRDP Mitigation BIO-1B will be implemented to provide for the preservation and management of equivalent or greater acreage than would be removed by the development. LRDP Mitigation BIO-1B has been revised in order to clarify and strengthen this mitigation measure. Under the revised measure, the University will be required to provide compensatory preservation and management as mitigation for the removal of any patch of northern maritime chaparral greater than 10 acres. For Santa Cruz manzanita, compensatory preservation and management will be required under LRDP Mitigation BIO-1B for removal of any patch greater than 0.25 acre in size. In response to comments received on the Draft EIR, LRDP Mitigation BIO-1B was modified to reduce the patch size threshold for compensatory preservation for Santa Cruz manzanita from 2 acres to 0.25 acre, and to set a 10-acre threshold to define a "large" patch of northern maritime chaparral. In the case of northern maritime chaparral, the size threshold reflects the fact that the quality of the sensitive natural community is strongly affected by patch size. Small and discontinuous patches typically do not provide high quality habitat and cannot effectively be managed. With respect to

Santa Cruz manzanita, 0.25 acre was determined by field biologists conducting the most recent studies (Jones & Stokes 2006) to be the smallest patch that could be identified and discretely mapped. The use of this smaller patch size as a threshold for Santa Cruz manzanita impacts reflects that the species is a special status plant. Under these thresholds, impacts to any large patch of northern maritime chaparral, and any impacts to any identifiable discrete patch of Santa Cruz manzanita, will be mitigated. Please refer to Final EIR, Volume IV, *Changes to Draft EIR Text*, Revised Table 2-1 for the revised text of LRDP Mitigation BIO-1B.

As detailed in the revised mitigation measure, removal of any patch of northern maritime chaparral over 10 acres in size shall be mitigated through preservation of northern maritime chaparral elsewhere at a 1:1 ratio. Compensatory preservation ratios (at a minimum of 1:1) also are provided for Santa Cruz manzanita, in Table 4.4-3 of the Draft EIR, based on the density of the stand, such that a higher ratio of compensatory preservation is required if a lower density stand is preserved in compensation for the loss of a higher density stand.

A commenter expressed concern that the University would remove northern maritime chaparral and Santa Cruz manzanita in development areas, and simply protect it in the remaining areas on the campus, in order to mitigate the impact. While the commenter is correct in the assessment that the total acreage of northern maritime chaparral and Santa Cruz manzanita on the campus could be reduced, even with mitigation, the area to be protected would be equivalent or greater in size than the area developed. Further, the patches that are preserved will be managed to enhance habitat quality and to prevent natural succession, such that, unlike unmanaged patches, the preserved patch will be maintained as northern maritime chaparral in perpetuity.

LRDP Mitigation BIO-1B also specifies that a management plan will be developed for each preserved stand. This will include quantitative biological goals, monitoring and management techniques, success criteria, and schedules. The chaparral management plan also will be coordinated with the fire management plan, which will be developed under LRDP Mitigation HAZ-10B. The vegetation management conducted for fire safety, in many cases would be highly consistent with management and enhancement of the chaparral habitat.

Under LRDP Mitigation BIO-1B, the Campus will continue to manage and monitor the preserved patches as dictated by the management plan. Once success criteria have been met, the patch will be given permanent protection and management will continue in order to prevent succession. Permanent preservation would be accomplished through an appropriate mechanism, which might include an LRDP overlay or land use designation (put in place through an LRDP amendment at the time of the designation), a conservation easement or deed restriction, or an MOU with CDFG. If the success criteria are not met at the site initially designated, management and protection of that site will be discontinued, and management strategies will be refined and another site selected for management through consultation with a qualified biologist and the CDFG. The process will continue until a site has been successfully managed and permanently preserved as described in LRDP Mitigation BIO-1B.

By protecting and managing northern maritime chaparral and Santa Cruz manzanita on the campus site to prevent successional loss, and by managing chaparral transition lands on the campus site to enhance

habitat quality, LRDP Mitigations BIO-1B and -1C ensure the continued health of northern maritime chaparral and Santa Cruz manzanita on the campus, thus minimizing the impacts of the 2005 LRDP

If management of preserved chaparral patches under LRDP Mitigation BIO-1B is unsuccessful or only partially successful, as determined by the criteria established in the management plan, the Campus will implement LRDP Mitigation BIO-1C (Restoration or Other Compensation), to restore transitional areas of chaparral on campus, or investigate and implement other options for chaparral restoration or preservation, such as consultation with other local agencies to determine contributions to other local chaparral management efforts off site, as described below.

5.2.3.4.3 Restoration of Transitional Chaparral or Other Compensation

About 22 acres of chaparral-forest transition areas are found on the campus outside of 2005 LRDP development areas. As described above, restoration of chaparral/forest transition land to northern maritime chaparral community may be used to mitigate all or part of the acreage of northern maritime chaparral or Santa Cruz manzanita lost to development. Under LRDP Mitigation BIO-1C, forest/chaparral transition land could be designated for preservation and management as compensation for the loss of chaparral. Management, to be directed by a management plan as described under LRDP Mitigation BIO-1B, would include restoration of the stand to chaparral through removal of mixed hardwood trees and non-native vegetation, and other management strategies that will encourage the regeneration of chaparral species. The goal of management is to maintain or increase the density of chaparral species, and to maintain or increase the density of Santa Cruz manzanita above, at a minimum, the calculated mean density for manzanita as it currently exists on campus in low-density patches (73 individuals/acre).

The importance of fire to northern maritime chaparral and Santa Cruz manzanita is discussed in the Draft EIR on pages 4.4-11, 4.4-17, and 4.4-41. The University recognizes that it may be difficult to maintain northern maritime chaparral and Santa Cruz manzanita without prescribed burns, and that it would be difficult or infeasible to conduct prescribed burns on campus adjacent to development. However, protecting and maintaining northern maritime chaparral and Santa Cruz manzanita occurrences on campus adjacent to those that are removed by development is important, to preserve regional diversity. Therefore, the University will endeavor to preserve and maintain northern maritime chaparral and Santa Cruz manzanita patches on campus. Management techniques would include prescribed burning where it is compatible with public safety. If prescribed burns cannot be conducted safely due to the proximity of development, other management techniques such as pile burning and brush thinning will be employed, as stated on page 4.4-41 of the Draft EIR. Pile burning and brush thinning may be effective restoration techniques. Pile burning may stimulate germination of chaparral species in areas surrounding the burn, because seeds of some chaparral species germinate in response to smoke and ash (Keeley and Fotheringham 1998). Smoke and ash will disperse beyond the immediate area of the pile burn. Brush thinning prior to pile burning in these areas will allow new seedlings to establish.

One commenter noted the increase in non-native plant species along existing fire roads and fuel breaks. While brush thinning and fire breaks associated with chaparral management may increase the risk of non-native plant invasion, monitoring and controlling non-native species in northern maritime chaparral will

minimize this impact. The control of non-native species is included as a management goal in LRDP Mitigation BIO-1B on page 4.4-39 of the Draft EIR.

5.2.3.5 Campus Natural Reserve Lands

Some of the lands that would be preserved under the measures described above currently are designated as Campus Natural Reserve (CNR). Some commenters have stated that protecting these areas should not be considered mitigation, because these areas are already protected. LRDP Mitigation BIO-1B, however, would change the status of such areas. The CNR designation is a designation for teaching and research rather than management of a habitat or species, and is not necessarily permanent. Under LRDP Mitigation BIO-1B or Mitigation BIO-1C, designated lands would be protected under the HAB (Campus Habitat Reserve) designation or another permanent mechanism, and would be managed to prevent succession as described above. Giving the lands this protection and management would effectively maintain the land as chaparral habitat within the Campus Natural Reserve, and thus would minimize the 2005 LRDP's impact on northern maritime chaparral and Santa Cruz manzanita.

5.2.4 Master Response BIO-2. Wetland Impacts

This Master Response addresses Comments LA-6-28, LA-6-32, ORG-6-1, ORG-6-2, ORG-7-18, I-34-7, I-34-13, I-34-14, I-34-37, I-57-2, and I-76-1.

The Draft EIR analyzes impacts to jurisdictional wetlands under LRDP Impact BIO-3. As noted in the Draft EIR on page 4.4-44, direct or indirect impacts to jurisdictional aquatic resources will require permits from the responsible agencies, which may include the U.S. Army Corps of Engineers (ACOE), Central Coast Regional Water Quality Control Board (CCRWQCB), and California Department of Fish and Game (CDFG). The ACOE and CCRWQCB have a policy of not permitting any net loss of wetland acreage or function. Complying with this policy will ensure that the University has a less-than-significant impact to aquatic resources.

A formal delineation of aquatic resources was not conducted because aquatic resources are dynamic and their precise boundaries are likely to change over the 15-year term of the 2005 LRDP. Due to the dynamic nature of aquatic resources, delineations of waters of the U.S. are considered valid to meet requirements under the Clean Water Act for only three to five years from the date of their verification. Therefore, as discussed on page 4.4-43 of the Draft EIR, the University has elected to formally delineate aquatic resources within individual project areas at the time that detailed environmental analyses are conducted for each project.

However, in response to comments related to wetlands, additional analysis was conducted to develop an estimate of potential wetland acreage that is present within areas that would be developed, general descriptions of the locations and types of aquatic resources that could be affected by development under the 2005 LRDP, and a strategy for avoiding, minimizing and mitigating those impacts. While this analysis was done to give a general idea of the extent of potential wetlands, these areas have not been delineated and some of them may not qualify as jurisdictional wetlands. Wetlands mapped during Nolan Associates hydraulic analysis of the north campus area in 2000 were compared to the development zones proposed under the 2005 LRDP to give a rough sense of the level of potential wetland loss associated

with expansion into the north campus area. Because the north campus is the area where the majority of new development would occur and is also an area of campus in which the majority of wetlands on campus are located, this provides a good correlation of potential wetland losses that could occur under the 2005 LRDP. Analysis of wetland features in the north campus showed that out of about 4.7 acres of potential wetlands, about 1.6 acres could be lost as a result of development proposed under the 2005 LRDP and would require mitigation, as discussed in LRDP Impact BIO-3 in the Draft EIR.

Direct impacts to aquatic resources are not anticipated in any watersheds outside the aquatic resource mapping area described above. Indirect impacts to aquatic resources outside the mapping area are discussed in Volume I of the Draft EIR on pages 4-8-29 through 4.8-48, and in Volume III on page 2-68 (LRDP Impact IIP-SW and LRDP Impact HYD-3). Available information on the location and nature of aquatic resources outside the mapping area, collected as part of biological and hydrologic studies to support the 2005 LRDP and the Infrastructure Improvements Project, is adequate to analyze indirect impacts to these resources.

5.2.5 Master Response BIO-3. Shreve Oak

This Master Response addresses Comments LA-6-19, I-29-8, I-34-15, and I-34-34.

The University acknowledges the presence of Shreve oak on campus. The Draft EIR discusses the presence of Shreve oak in northern maritime chaparral on campus on page 4.4-10. Text on page 4.4-9 has been revised to acknowledge the presence of Shreve oak in mixed evergreen forest, as follows:

> Mixed evergreen forest is present along the southern and western edges of the north and upper campus area and in the central campus (Figure 4.4-1). Although coast redwood is present in this community, the dominant tree species are coast live oak (*Quercus agrifolia*), Shreve oak (*Q. parvula* var. *shrevei*), California bay, madrone, and Douglas fir.

However, available data, discussed below, does not show that Shreve oak forest is sufficiently rare or threatened to merit status as a sensitive community.

5.2.5.1 Distribution and Frequency of Occurrence of Shreve Oak

In his treatment of the oak family (*Fagaceae*) in the Jepson Manual (Hickman 1993), Tucker describes a relatively large range for Shreve oak, including western San Francisco bay and the outer South Coast ranges. The most comprehensive study of Shreve oak to date is "A Systematic Study of *Quercus parvula* Greene on Santa Cruz Island and Mainland California" (Nixon 1980). Nixon (1980) also described a relatively large range for Shreve oak and described it as relatively abundant within portions of that range, as follows:

"Large continuous populations occur in the Santa Lucia range of central coastal California (see fig.2), from elevations of 100 meters or less to 1,000 meters or more, where the trees become shrubby and come into contact with Q. wislizenii var. frutescens…

Quercus parvula var. shrevei also extends northward through the San Francisco Bay Area, possibly as far as Mendocino County. Throughout the northern extent of its range, it is in contact and produces hybrids

with Q. agrifolia and Q. wislizenii. The southern limit of Q. parvula var. shrevei is in the Santa Ynez Mountains, above the city of Santa Barbara. Here it exists as one small colony of trees, in close proximity to both Q. wislizenii var. frutescens, and a few trees of Q. wislizenii var. wislizenii."

In a recent article on oak biodiversity in California (Nixon 2002), Nixon again describes a relatively extensive range for Shreve oak "extending within the fog belt from the Santa Lucia Mountains to a few localities north of San Francisco." The *Annotated Checklist of Vascular Plant Species of Santa Cruz County, California* (Morgan et al 2005) describes Shreve oak forest as "the common oak forest in the County." Dodd et al. (2002) also describe Shreve oak as fairly common within a relatively extensive range. Dodd et al. (2002) used a biochemical marker to separate morphologically ambiguous evergreen oak populations. Dodd et al. describe the range of Shreve oak as follows.

> *"We suggest that central coast populations at low elevations, typically occupying redwood forest, should be treated as Shreve oak. This region may extend as far north as the San Francisco Bay. However, it seems likely that Shreve oak and interior live oak are poorly differentiated, probably from a recent ancestor, and that in the northern Coast Ranges, a complex mix of the two taxa, along with hybrids and introgressants, exists, probably varying in proportions according to ecological preferences. The Shreve oak form gradually falls out eastward to the Sierra Nevada, probably as summer drought limits its success."*

Descriptions of the species' range and frequency of occurrence in these studies all support a conclusion that Shreve oak has a relatively wide distribution along the coast of northern California and is relatively common within its range.

5.2.5.2 Threats to Shreve Oak

Shreve oak forest, like other oak forest and woodlands, is threatened by development. In addition, Shreve oak, like coast live oak, California black oak (*Quercus kelloggii*), and tanoak (*Lithocarpus densiflorus*), is threatened by Sudden Oak Death (SOD) disease (Dodd *et al.* 2002). SOD is a significant threat to these species, and hygienic measures should be taken to prevent the spread of the disease. However, the threat of SOD has not led to the designation of all forms of California black oak or coast live oak woodlands and forest as sensitive communities (CDFG 2003). The threat of SOD is not sufficient at this time to merit the designation of Shreve oak forest as a sensitive community.

Removal of Shreve oak on campus and the increase in campus development is not expected to substantially change the risk of SOD infecting the remaining Shreve oak individuals.

5.2.5.3 Conclusion

The University acknowledges that development under the 2005 LRDP will result in the loss of Shreve oak. The revised description of mixed evergreen forest and the Draft EIR's description of northern maritime chaparral discuss the presence of Shreve oak. The impact to Shreve oak is therefore analyzed as part of the impact to mixed evergreen forests and northern maritime chaparral. Because Shreve oak is not a sensitive community, the loss of Shreve oak and the mixed evergreen forest within which it is found is not considered a significant impact.

5.2.6 Master Response BIO-4. Coastal Prairie

This Master Response addresses Comments LA-2-60, LA-6-21, I-34-5, I-34-6, and I-34-36.

The definition of coastal prairie used in the Draft EIR is based on Holland's 1986 definition of coastal terrace prairie, as follows.

> *"Coastal terrace prairie is typically comprised of a dense, tall grassland dominated by both sod- and tussock-forming native perennial grasses. It is naturally patchy in occurrence and variable in composition, reflecting differences in slope aspect, soil texture, and moisture availability. This vegetation community occurs on sandy loam soils of marine terraces near the coast and is restricted to cooler, more mesic sites within the zone of fog incursion. Although coastal terrace prairie consists of many of the same native species that comprise valley/foothill needlegrass grassland, annual species are less important in community structure. Coastal terrace prairie is distributed from Santa Cruz County to Oregon."*

Buck's description of coastal prairie in his vegetation mapping of UC Santa Cruz in 1986 is consistent with the definition used by Holland, especially given that Holland recognizes significant variability in coastal prairie composition. As discussed on pages 4.4-11 and 12 of the Draft EIR, areas mapped as coastal prairie on the UC Santa Cruz campus are mesic grasslands, with a diverse assemblage of native perennials, including coyote thistle (*Eryngium armatum*), white hyacinth (*Triteleia hyacinthina*), dwarf brodiaea (*Brodiaea terrestris*), Kellogg's yampah (*Perideridia kelloggii*), coast trefoil (*Lotus formosissimus*), and Olney's sedge (*Carex gynodynama*). Native perennial grasses, especially California oatgrass (*Danthonia californica*), are prominent in coastal prairie on campus. Pacific panic grass (*Panicum acuminatum*) is abundant in coastal prairie in Marshall Field.

Text on page 4.4-12 of the Draft EIR has been revised to clarify that higher relative cover of native grasses and lower relative cover of non-natives was one factor in mapping coastal prairie. Please refer to Final EIR, Volume IV, Chapter 3, *Changes to Draft EIR Text*.

Potential impacts to coastal prairie from development under the 2005 LRDP are shown in Figure 4-4.5 of the Draft EIR. This figure shows that up to 1.5 acres of coastal prairie on the eastern edge of Crown Meadow could be removed by new development north of the existing Crown/Merrill Apartments, as discussed on page 4.4-43 of the Draft EIR. All impacts to identified coastal prairie are considered, without regard to patch size.

Areas of coastal prairie identified, as potential mitigation sites in the Draft EIR are not currently mitigation for impacts to coastal prairie associated with other projects, but are within Campus Habitat Reserve areas that do include mitigation for other previous campus projects.

Additionally, the University will utilize the most current and thorough campus vegetation map in its planning and environmental analysis. If new areas of coastal prairie are identified on campus, as part of the rapid vegetation assessment that is currently underway, these areas would be taken into account in future project level EIRs.

No areas of coastal prairie exist on campus within the Coastal Zone (the portion of the campus west of Empire Grade Road) and thus no ESHA are identified. The California State Water Resources Control Board does not designate sensitive biological communities.

5.2.7 Master Response BIO-5. Wildlife Movement

This Master Response addresses Comments LA-2-65, LA-6-17, LA-6-24, ORG-1-7, ORG-7-20, OPA-4-7, I-5-13, I-29-2, I-29-3, I-29-19, I-31-1, I-34-25, PH-11-5, PH-13-6, PH-46-8, and PH-46-9.

Connectivity and habitat fragmentation are addressed in the assessment of movement corridors in the Draft EIR and are considered for a wide range of species representative of differing home ranges and movement patterns.

The analysis considered both north/south and east/west movement of species and found that the project would have no significant impact on wildlife movement. The analysis took into consideration the best available information on wildlife corridor function, as cited in the Draft EIR, including both primary and gray literature (i.e., literature not found in traditional peer-reviewed publications, such as government agency monographs, symposium proceedings, and unpublished reports), as appropriate. The Draft EIR evaluates potential impacts to movement through a hypothetical "built out" corridor (i.e., a corridor that has structures built to the exact edge of the corridor, along the entire corridor). Thus, because projects built under the 2005 LRDP would not be designed and constructed in this fashion, this analysis is more protective of movement than the anticipated impact reasonably expected to occur under the 2005 LRDP. The impact of increased population and development has been evaluated in a reasonable worst-case scenario that will protect against impacts to movement that can be reasonably anticipated under the 2005 LRDP.

A figure showing wildlife movement through UC Santa Cruz can be found in EcoSystems West (2004) and is available to the public through UC Santa Cruz Physical Planning and Construction (1156 High Street, Barn G, Santa Cruz, CA 95064). The movement corridors identified in Ecosystems West 2004 are discussed and referenced on page 4.4-64 of the Draft EIR. The figure was referenced and not included in the Draft EIR because the figure did not provide any new information.

An assessment of the movement of every species present was not considered necessary. The list of six species under Section 4.4.1.11 *Wildlife Movement* was not meant to provide a complete list of all wildlife species that move through campus. The list provides a representative sample of common species with large home ranges that would likely come into contact with new development and the new loop road. This list also represents species whose movements are most likely to be affected by development because of their large body size, large home ranges, and, in some cases, sensitivity to human disturbance. It is safe to infer that species with lesser movement needs and sensitivities will suffer impacts of lesser magnitude than the potentially significant impacts identified here.

Because raccoons co-occur with humans (as stated by one commenter) they will almost certainly come into contact with new development. Potential impacts to raccoons are therefore addressed in this section in the same level of detail as for the other common species listed.

The effects of habitat fragmentation are addressed on a species-by-species basis. In the case of the San Francisco dusky-footed woodrat, studies by Bankie (2005) describe the species' small home range and the densities of the species within the specific habitats that would be affect by development proposed under the 2005 LRDP. The analysis in the Draft EIR found that roughly three quarters of all woodrat nests on campus would be unaffected by the proposed development. Given the small home range of the species, it

is unlikely that the remaining species habitat would be degraded by habitat fragmentation within the north campus. In the proposed land use plan (Draft EIR Figure 3-5), open areas remain around and between development areas, and several home ranges for the woodrat would remain.

The home range of the American badger varies depending on the season and habitat quality. The American badger is not a common species within the study area, and therefore will be less likely than the other species discussed in the Draft EIR to come in contact with new development under the 2005 LRDP. Also, given that the habitat requirements of the badger are annual/ruderal grasslands with sparse scrub/shrub, it is unlikely that the badger would migrate up drainages into the north campus areas where the majority of the new development under the 2005 LRDP would take place. Therefore, this species is not highly relevant for assessing the impacts of 2005 LRDP development on wildlife movement at UC Santa Cruz.

5.2.8 Master Response BIO-6. Karst Invertebrates

This Master Response addresses Comments LA-6-18, I-29-28, I-34-34, I-62-2, and PH-46-7.

As discussed on page 4.4-21 of the Draft EIR, four endemic species (Santa Cruz telemid spider, Dollof cave spider, Empire Cave psuedoscorpion, and the Mackenzie's cave amphipod) found in karst caves on or near the campus qualify as special status species under CEQA because they are designated as federal species of special concern. Potential impacts to these four species are evaluated in the Draft EIR. No other species occupying the caves are designated as special status species. The karst system does not qualify as a Sensitive Natural Community under CEQA Guidelines, which define sensitive natural communities as "any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS." Karst habitat is not identified as a sensitive natural community in any such local or regional plans, policies, and regulations or by the CDFG or USFWS. A full analysis of potential impacts to the habitat for the four listed endemic karst species is included under LRDP Impact BIO-8 in the Draft EIR (pages 4.4-50 through 4.4-54).

The Draft EIR, pages 4.4-21 and –22, explains that although all four special status species have been observed in Empire Cave, and the Dollof cave spider is known to occur in Dolloff Cave, the special status species have not been observed in other caves even though other caves in the vicinity of the campus have been investigated. The species have not been observed in other karst features such as fissures and sinkholes, which are largely inaccessible to investigators. The Draft EIR conservatively notes that because of the presence of subterranean connections in the marble, the species could potentially occur in other karst features. However, studies conducted in Texas of the characteristics of occupied karst habitat show that karst invertebrates are found in karst features that are more than 6.6 feet wide and 3.3 feet high, and the karst species likely do not inhabit small fractures and features within 4.9 feet of the surface (Veni and Reddell 2002). The 2002 Veni and Reddell study is based on analysis of habitat use in Texas karst areas. Given the climatic differences between Texas and Santa Cruz, the depth-from-surface criterion likely underestimates near-surface habitat utilization in the Santa Cruz area. Hence the depth-from-surface criterion has been omitted in the Final EIR (see Final EIR, Volume IV, *Changes to Draft EIR Text)*. However, the morphologies of karst in Texas and Santa Cruz are not dissimilar. Thus, the void size comparison is useful here.

As discussed in the Draft EIR, the proposed project would not directly affect any known occupied habitat because the project involves no improvements in or near the two caves that are known to support the four special-status species. With respect to the rest of the potential habitat, as explained in the Draft EIR, potential impacts to habitat due to pressure grouting is considered unlikely, because pressure grouting does not fill surface fractures and fissures in the karst. UC Santa Cruz does not allow construction to occur over, near or at the surface voids or fractures because these features present extreme building and safety hazards. Construction does occur on soils that overlay voids, fractures, or other karst features. As discussed in the Draft EIR at pages 4.4-51 and 4.4-52, grouting is done to densify and stabilize the soft soil (associated with dolines) above the marble bedrock. Often as much as 60 feet of soft soil must be stabilized using grout. UC Santa Cruz conducts closely-spaced borings in order to avoid grouting into voids. Extreme care is taken not to pump grout into bedrock voids, as grouting large voids is inefficient and expensive. Boring holes that are drilled for grouting do go down to the marble and it is possible that grout enters voids in some instances. However, these subsurface voids are under soils at least 5 feet below ground surface, and in some instances, several tens of feet below ground surface. Therefore the voids that could be filled with grout are not open to the air and would not be suitable habitat. Hence, because suitable habitat for the species is unlikely to be affected at any depth from the surface, impacts are considered less than significant and mitigation beyond what is identified in the Draft EIR is not necessary.

As discussed on page 4.4-53 in the Draft EIR, indirect impacts on occupied karst invertebrate habitat could occur as the result of increased human visits to caves, which could potentially affect occupied karst habitat. In addition to LRDP Mitigation BIO-8A, which would involve discouraging human visits to nearby caves by signage and public education, the University will implement a new mitigation, LRDP Mitigation BIO-8B, under which the Campus will consult with CDFG to design and construct a barrier to restrict access to Empire Cave, to address this impact. Please refer to Final EIR, Volume IV, Chapter 3, *Changes to Draft EIR Text*, Revised Table 2-1, for the text of this mitigation measure.

The Draft EIR also evaluates the potential for increased runoff from the campus to enter the cave system and affect the known occupied habitat of the species by flooding the caves. Drainage effects on the caves are discussed on pages 4.8-41 through –43 of the Draft EIR. Four caves are located within Cave Gulch. Only two of the four caves (Empire Cave and Stump Cave), by virtue of their location on the eastern wall of Empire Gulch, could be affected by surface water from the campus that enters and flows through the karst system. As discussed below, only one new area that would be developed within the Cave Gulch watershed under the 2005 LRDP would contribute to water that flows through Empire and Stump caves. LRDP Mitigation HYD-3C specifies that design measures be included in each development such that peak flow rates from 2-, 5- and 10-year storms do not exceed the peak flow rates from comparable pre-development storms, and that post-development peak flows from a 25-year storm would be reduced to the pre-development peak flow from a 10-year event. LRDP Mitigation HYD-3D specifies that measures be incorporated into project designs to maximize infiltration of runoff and minimize the increase in volume of storm water runoff discharged from the site. Although there may be some small or occasional increases in runoff, with the implementation of these measures, the frequency and volume of events leading to high water in the caves will not be increased.

The Draft EIR also evaluates the potential for increased runoff from the campus to enter the cave system and affect the known occupied habitat of the species by causing changes in water quality. As explained on revised page 4.8-42, the only new development that would result in runoff that could affect the caves is the employee housing area on the north campus. Although new roads and parking would be associated with this housing area, these are not expected to result in substantial impacts to runoff water quality. Studies of urban pollutant concentrations by land use type (single-family, multi-family residential, commercial, industrial, highway) show that urban runoff from residential areas generally has lower concentrations of total suspended solids, lead, and zinc compared to runoff from commercial and industrial areas, while other pollutant concentrations are generally similar to those in runoff from commercial and industrial areas (SFEI 2000). Residential streets have lower pollutant concentrations for practically all pollutants compared to commercial streets (New York State Storm Water Management Design Manual 2003). Thus, due to the type and density of this use, the concentrations of pollutants in the runoff from these areas within the Cave Gulch watershed would not be high; therefore, the water that would enter the karst system and then flow through these caves would not be highly polluted. Also, LRDP Mitigation HYD-3D will maintain high levels of runoff infiltration, and infiltration through soil is effective in removing pollutants in urban runoff. Furthermore, as a NPDES Phase II community, the Campus is required to implement the Storm Water Management Program (SWMP), which is designed to reduce water quality and hydro-modification impacts of new development on the campus to the maximum extent practicable. All existing and new campus facilities within the Cave Gulch watershed would be covered by the SWMP. Therefore, the water quality in the karst system would not significantly deteriorate compared to existing conditions, and in fact should improve on account of enhanced urban runoff controls.

Some commenters expressed concern that since the Draft EIR concludes that LRDP Impact HYD-3 related to discharge of sediment into campus creeks would be significant and unavoidable, the sediment could adversely affect water quality in the caves. The analysis of LRDP Impact HYD-3 on page 4.8-32 is focused on erosion and sedimentation impacts from the development of additional impervious surfaces within the Cave Gulch watershed. The Campus would implement revised LRDP Mitigations HYD-3B through -3E in conjunction with each new development project within the watershed to minimize increases in runoff in the system. That impact was found to be significant and unavoidable because, as explained in Master Response HYDRO-1 below, despite the implementation of these mitigation measures, it is possible that some future project may not be able to avoid all increases in storm water runoff. As a result, it is possible that there would be some increased discharge, and that this could lead to erosion and sedimentation within Cave Gulch. However, although some small increase cannot be completely ruled out, with the implementation of the mitigation measures included in the EIR, increased erosion and sedimentation generally is not expected to occur. Any increase in erosion and sedimentation would be small. Any changes in water quality (turbidity) would be within the natural variability of the turbidity that results due to storm activity. This minor potential increase in turbidity is not considered a significant impact on the cave system or the karst invertebrates.

5.2.9 Master Response HYDRO-1. LRDP Impact HYD-3

This Master Response addresses Comments SA-3-2, LA-3-11, LA-6-49, LA-6-50, LA-6-54, LA-6-55, LA-6-56, LA-9-23, LA-9-60, ORG-8-7, I-34-47, I-37-2, I-37-9, I-37-14, I-61-3, I-74-1, I-88-1, and I-88-8.

As discussed in the Draft EIR, the 2005 LRDP is a land use plan to guide the future growth of the campus, and therefore provides information on general areas of the campus where future buildings, facilities and infrastructure would be built. The details of future projects that would be built within each watershed are not yet available, and the precise increase in impervious surfaces under the 2005 LRDP is not known, as it will depend on individual project design. For purposes of the program-level analysis in this EIR, the hydrologic analysis presented in Appendix D2 is based on the conservative assumption that 70 percent of each proposed new development area under the 2005 LRDP would be impervious. In areas where the future development would be infill development, impervious areas would increase from 60 percent to 70 percent. Utilizing this information, the EIR estimates the increased runoff that would result from increases in impervious surfaces within each of the major campus watersheds for a 2-year storm and a 25-year storm. Based on the estimated increase in runoff in each watershed, the analysis in the EIR assesses whether the increase would be large enough to result in erosion and sedimentation impacts. The type of analysis included in the EIR is appropriate for a program-level EIR; describing detailed changes in the hydrograph of any stream on the campus is not possible at this time because the analysis requires details of future projects that would be built within the watersheds.

The Draft EIR concludes that increased runoff from the addition of impervious surfaces within some of the watersheds could add to existing erosion problems that are present in those watersheds. Accordingly, the Draft EIR proposes mitigation measures (revised LRDP Mitigations HYD-3A through -3E), which would reduce the impact to a less-than-significant level if they could be implemented for all future development projects under all conditions. Where conditions at the project site allow for it (gentle slopes, permeable soil, etc.), pursuant to LRDP Mitigation HYD-3D, natural and engineered infiltration and storage techniques would be used to ensure that the volume of storm water runoff does not exceed pre-project conditions. The mitigation measures would be implemented close to where the runoff is generated whenever possible. In addition, if project-specific review indicates that the project could increase runoff volumes in an impacted watershed, the Campus would consider diverting some or all of the runoff generated at a project site from one watershed to another. Any such diversion would be implemented only after a detailed evaluation showed that the receiving drainage could accommodate the diverted flows without increasing the potential for flooding or erosion.

The reason that the EIR concludes that the impact could be significant and unavoidable despite implementation of these mitigation measures is that project-specific data are not available at this time for all future projects and it cannot be determined whether, for all future projects in the affected watersheds, feasible design measures will be available that would decrease the volume of flow to the extent needed to avoid all increases in erosion. Some of the site constraints that could limit the feasibility of such measures are impermeable soils, insufficient space on or near the project site for infiltration of runoff, and the potential for infiltrated water to affect the stability of soils in some areas underlain by karst. Project-specific environmental review of individual projects will address specific control measures and their feasibility.

According to LRDP Mitigation HYD-3C, each project developed under the 2005 LRDP will include design measures to control peak flows in order to maintain post-development peak flows for the 2-, 5-, and 10-year events at pre-development levels, and to reduce the peak flow from a 25-year event to the pre-project 10-year flow. Note that this mitigation measure continues an existing campus standard. Revised LRDP Mitigation HYD-3D requires that future projects maximize infiltration and reduce the volume of new runoff to the maximum extent practicable.

5.2.10 Master Response LU-1. Consistency with Local Plans and Policies

Comments LA-2-34, LA-2-90, LA-3-16, LA-6-59, LA-9-34, and LA-10-3 concern the Draft EIR evaluation of the consistency of the 2005 LRDP with local plans and policies. The comments question the stated University policy to seek consistency with local plans and policies, where feasible; request a more comprehensive analysis of the consistency of the 2005 LRDP with all relevant environmental policies of the City and County general plans; and indicate that the City's General Plan should be considered an "applicable plan" within the meaning of the CEQA Guidelines.

The potential land use impact of development under the 2005 LRDP related to conflicts with applicable land use plans, policies, or regulations is discussed on Draft EIR pages 4.9-9 through 4.9-10 (Volume II). The analysis indicates that the proposed 2005 LRDP, if adopted, would become the applicable land use plan for the campus and that the University is the agency with land use jurisdiction over campus projects. Therefore, campus development that is consistent with the 2005 LRDP would have no land use impact related to the CEQA standard of significance that addresses conflicts with applicable land use plans, policies, or regulations of an agency with jurisdiction over the project.

The City and County general plans are not "applicable plans" within the meaning of CEQA Guidelines section 15125(d). This section requires an EIR to "discuss any inconsistencies between the proposed project and applicable general plans and regional plans." However, what constitutes an "applicable plan" is further defined by Appendix G (IX)(b) of the CEQA Guidelines, which indicates that a significant impact would occur if a project would "conflict with any applicable plan, policy, or regulation of an agency with jurisdiction over the project…. adopted for the purpose of avoiding or mitigating an environmental effect." As indicated above and in the Draft EIR, the proposed 2005 LRDP, if adopted, would become the applicable land use plan for the campus, because the University is the agency with land use jurisdiction over campus projects.

Because the proposed 2005 LRDP uses are within campus boundaries on land not subject to the City or County land use plans and policies or the jurisdiction of these local agencies, their land use plans are not the applicable plans with respect to Campus actions. Although these are not applicable land use plans, the University reviewed the City and County of Santa Cruz land use plans and policies for information purposes and to facilitate coordinating campus projects with the beneficial planning efforts of the City of Santa Cruz and the County of Santa Cruz. Those policies that relate to potential environmental impacts of University activities on off-campus lands were identified in the EIR for the reasons noted above. New text has been added to Draft EIR page 4.9-6 to clarify that only those policies that relate to potential environmental impacts of University activities on off-campus lands are identified. Text has also been revised on Draft EIR page 4.9-10 to clarify that the analysis of consistency with local plans and policies is

provided for information purposes. The University does not have a formal policy to seek consistency with local plans and policies, and therefore the text on Draft EIR page 4.1-7 has been revised to be consistent with the language used in Section 4.9 Land Use (Draft EIR Volume I, page 4.9-10). Please refer to Final EIR, Volume IV, Chapter 3, *Changes to Draft EIR Text.*

5.2.11 Master Response POP-1. Impact on Regional Housing Supply

This Master Response addresses Comments LA-2-12, LA-2-14, LA-2-101, LA-2-105, LA-2-114, LA-3-23, LA-3-24, LA-3-25, LA-6-5, LA-6-63, LA-6-64, LA-6-70, LA-9-45, LA-9-47, LA-10-10, ORG-7-22, I-45-91, I-49-2, I-80-7, PH-4-1, PH-4-2, PH-5-4, PH-19-1, and PH-36-1.

The Draft EIR (LRDP Impact POP-3) evaluates whether the demand for off-campus housing that stems from campus growth under the 2005 LRDP in conjunction with the increased demand due to other growth in the study area would exceed the projected regional housing supply. The analysis concludes that the cumulative demand would exceed the projected supply, and the project's contribution to this cumulative impact would be cumulatively considerable (Draft EIR, page 4.11-26). Note that the Campus proposes to recommend to The Regents the adoption of the Reduced Enrollment Growth Alternative previously analyzed in the Draft EIR and identified as the Environmentally Superior Alternative, as the new LRDP for the campus. The Final Draft 2005 LRDP (September 2006) has been revised to reflect this change. The Final Draft 2005 LRDP includes a total enrollment projection of 19,500 students and a total of 5,074 employees in 2020. Under this revised project, the project's contribution to cumulative housing impacts is reduced relative to the project as originally proposed. For more information on this, please refer to Final EIR, Volume IV, Chapter 2, *Project Refinements*. The information presented below in this master response applies equally to the Draft 2005 LRDP and the Final Draft 2005 LRDP.

5.2.11.1 Evaluation of Impact on Regional Housing Resources

To conduct the housing analysis, the Draft EIR uses the projected number of on-campus housing units for both students and employees, and assumes that these units will be built and fully occupied. In addition, the analysis assumes that those new students and employees who cannot be accommodated by this new on-campus housing would seek off-campus housing in the study area or would commute to the campus from outside the study area. The purpose of the EIR is to provide environmental review of the 2005 LRDP as it is proposed. Therefore, the Draft EIR evaluates the full number of units that could be constructed under the 2005 LRDP, which then can be built as warranted by demand and as allowed by funding and other considerations.

The LRDP is not a mandate to construct housing. Rather, it is a plan to guide the systematic development of the campus if enrollment does in fact increase as predicted. Should the projected enrollment growth occur, and should there be a commensurate increase in demand for housing on campus, the University will construct new housing on the campus. Additional information with respect to the planned housing for students and employees is presented below.

5.2.11.2 Student Housing

Based on a detailed evaluation of the student housing preferences and historic residence patterns at the Santa Cruz campus[5] (Sedway Group 2003) and other information gathered by the campus, the University has determined that at most 50 percent of the undergraduate students and 25 percent of the graduate students would choose to live on the campus. Therefore, the University is no longer pursuing the higher on-campus student housing goals from the 1988 LRDP, which have not proven to be supported by demand (Also refer to Master Response ALT-5 regarding on-campus housing demand). Instead the University has prepared a land use plan that includes an adequate amount of land to construct enough additional housing units so that in 2020, 50 percent of the undergraduate and 25 percent of the graduate students can be housed on campus.

It is the policy of the Colleges and University Housing Services (CUHS) to provide new housing on campus in response to evidence of demand. Since UC housing is a self-supporting enterprise, decisions to provide more housing on campus are based on demand and financial feasibility. As explained on page 4.11-15 of the Draft EIR, limited housing growth is projected in the study area communities, especially the City of Santa Cruz, through 2020. In light of this limited growth in off-campus housing, it is reasonable to assume that there will be a high demand for housing on campus and that there would be sufficient demand to enable the University to construct the projected number of beds, and the housing targets of the 2005 LRDP would be met. The Draft EIR acknowledges that in the event that the projected number of on-campus student beds were not constructed by 2020, more of the students would seek housing off campus and the impact on regional housing resources would be greater. However, that scenario is not the proposed project.

Commenters argue that in past years, campus housing has not been fully occupied because off-campus housing costs are lower than the cost of on-campus housing. Therefore, these commenters conclude that it is not reasonable to assume that all of the additional housing that is built on campus will be fully occupied because of the higher relative costs of on-campus housing. Numerous factors play a role in the decision by any individual as to where he or she would reside, including the cost of housing, number and types of units available, desire to live close to work or school, availability of other amenities, lifestyle choices, etc. Additional factors that influence on-campus demand for student housing include limited access and eligibility for on-campus parking, upper-class student preferences to be housed with students from other colleges, limited apartment accommodations in some colleges, and limited single room housing for students who desire single room accommodations. The Sedway study conducted for the Campus in 2003 indicates that cost is a significant factor in housing choice for upper-division students and that 57 percent of students would prefer to live on campus if all other factors, including cost, were equal. The same study also found that 20 percent of students paid higher rents off campus than they would have paid for similar accommodations on campus.

The Draft EIR acknowledges (page 4.11-9) that availability and cost of housing in the City of Santa Cruz and other communities has influenced occupancy levels of on-campus housing, and that in some years campus-housing supply has exceeded the demand. For instance, in Fall 2004 the occupancy rate of on-campus and off-campus student housing was about 91 percent of design capacity. If only on-campus

[5] For more information on this study, please refer to Master Response ALT-5, Increased On-Campus Housing Alternative.

housing is considered, the occupancy was 93 percent. Data provided by the CUHS for the last 15 years show that on-campus housing has been fully occupied in most years, except in those years when more off-campus housing became available and rents decreased in the city due to economic downturn, and when the Campus also had created additional housing by converting student lounges into bed spaces. Note that some beds are intentionally left open for visitors.

Full occupancy of projected on-campus student housing in 2020 is not an unreasonable assumption for three reasons. First, currently about 44 percent of all students, including 48 percent of all undergraduates, live on campus. A target of housing 50 percent of undergraduate students on campus by 2020 appears to be achievable. Second, historically, the Campus has experienced high occupancy levels, especially in times when the local economy is flourishing and the demand for housing by non-UC persons is high. The AMBAG forecasts show high growth in local employment through 2020, which would increase demand for housing by others. Third, as stated in the Draft EIR, because very limited housing growth (1,684 new housing units according to AMBAG forecasts) is projected for the City of Santa Cruz between 2005 and 2020, the availability of housing in the City will be extremely limited in the future. Other local communities also project limited housing growth. In light of the limited supply of housing off-campus, students will be willing to pay higher rents for on-campus housing, and there would be a demand for at least the number of student beds planned by the Campus. Therefore, the Campus expects that the planned on-campus student housing would be fully occupied.

As explained in the Draft EIR, UC housing is a self-supporting enterprise, which does not receive state funds. Instead UC housing must pay for itself through rents and charges to the users of the housing. For this reason, University-financed housing is not constructed on UC campuses unless the Campus can adequately document demand and financial feasibility. Further, the University provides various levels of services that also must be supported by housing fees. Finally, as new housing is built, housing prices must accommodate the cost of debt from housing construction. University housing is not operated on a for-profit basis. Housing prices are set to cover the overall development and operating expense. The overall costs are spread among all the rental units as a way of equalizing the burden among all residents. All funding derived from student residential fees is solely used in support of housing operations, facility maintenance and future expansion. Also see Master Response ALT-5 for cost of on-campus housing.

5.2.11.3 Employee Housing

The Draft EIR evaluates impacts associated with the construction of 125 on-campus housing units for faculty and staff. With respect to employee housing, new on-campus housing has always been offered to faculty and staff at below market rates. This practice would continue in the future, and will make the on-campus housing relatively affordable compared to similar new housing in the City of Santa Cruz, especially in the City's west side. Because of below market prices and the advantages of living close to work, it is expected that on-campus employee housing will continue to be in high demand in the future. In light of the anticipated demand, it is reasonable to expect that the on-campus employee housing projected in the LRDP EIR will be built during the next 15 years.

5.2.11.4 Mitigation for Off-Campus Housing Impact

Some commenters have requested that more on-campus housing be provided to reduce off-campus housing and traffic impacts. This issue is addressed in Master Response ALT-5. Other commenters suggested that enrollment growth be phased to track closely with the construction of housing on campus, and also requested that additional mitigation be proposed by the Campus to address the project's impact on off-campus housing.

Enrollment increases cannot be tied to the provision of on-campus housing. The Campus cannot base enrollment levels on the amount of housing available on the campus, because this would conflict with the mission of the University, which is to provide adequate access to higher education to the state's population. The University cannot guarantee that a certain number of housing units will be constructed. However, the University has planned for student and employee housing as described in the Final Draft 2005 LRDP and is prepared to develop more student and employee housing based on continued demand and financial feasibility. The University will continue to pursue all financial and construction mechanisms that facilitate the development of employee housing inventory and increase affordability levels for employee buyers.

In addition, the University has revised LRDP Mitigation POP-3 to include three specific mitigation measures. First, the Campus will monitor demand for student housing on an annual basis and will ensure that the University provides a sufficient number of student beds to accommodate 50 percent of undergraduate and 25 percent of graduate students enrolled on campus at any given time, consistent with demand and financial feasibility. Second, the Campus will fund and conduct a study to identify ways in which the University can collaborate with other large employers, the City of Santa Cruz and the County to identify means of providing better access to housing in the area. Third, the University will also consult with the City and County of Santa Cruz on data needs and future joint projects and fund and conduct a market analysis of the local housing market which would assist the City, County and the University in planning for new housing. The full text of these expanded and improved mitigation measures (LRDP Mitigations POP-3A through -3C) is presented in Chapter 3, Revised Table 2-1 of Volume IV of the Final EIR.

5.2.12 Master Response TRAFFIC-1. Traffic Standards of Significance

This Master Response addresses Comments SA-2-2, SA-8-3, SA-8-4, RA-1-13, RA-1-16, RA-1-18, LA-2-144, LA-2-155, LA-2-228, LA-4-7, LA-6-90, LA-9-70, LA-9-71, LA-14-3, LA-15-7, ORG-7-23, I-84-3, I-84-15, I-89-1, and PH-39-2.

The Draft EIR uses the City of Santa Cruz standards of significance to evaluate operational traffic impacts of the 2005 LRDP. Before commencing the traffic analysis for the LRDP EIR, the University's traffic consultant presented to both the City of Santa Cruz and Caltrans a memo that outlined the Campus's proposed standards of significance, which are based on the City's and Caltrans current standards. No comments were received from Caltrans. The City stated that it would examine its standards of significance in conjunction with the preparation of the General Plan Update but that it was not yet ready to revise the standards. Therefore, the University used the City's current standards in the

2005 LRDP Draft EIR and the RDEIR. Under these standards, the project's traffic impact would be significant if the project meets one of the following conditions:

- The peak hour level of service (LOS) 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 by more than three percent, or
- The project increases the traffic volume by more than three 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 with the addition of project-generated traffic and the project increases the traffic volume by more than three percent

Where there are two criteria in a standard of significance, the intersection must meet both criteria for the impact to be considered significant. The standards are applied as follows. First, the intersection's projected level of service is calculated. If the intersection exceeds the level of service threshold (i.e., changes from a LOS D to a LOS E or F, or operates at a LOS E or F under future cumulative conditions with project traffic), then the contribution of project traffic is calculated. The Draft EIR only assesses the project's contribution to the traffic at the intersection if the first test, the level of service threshold, is exceeded.

CEQA supports the use of established level of service standards as a method of determining significant impacts (Appendix G, Environmental Checklist Form, CEQA Guidelines, 1999). Note that neither the City of Santa Cruz nor Caltrans has identified criteria for a significant impact when a project changes a level of service from one acceptable grade (LOS A, B, or C) to another acceptable grade. Most jurisdictions, including Caltrans, do not consider a change in level of service from LOS A to LOS C or to LOS D to be a significant impact, because all of these levels of service represent "below capacity" operations. It is only when an intersection or facility is approaching its capacity (i.e., when the level of service declines to LOS E) that the impact typically is determined to be significant.

5.2.12.1 Level of Service Standards for On-Campus Intersections

As the lead agency for the LRDP EIR, the University has the authority to establish the standards of significance it will use to evaluate impacts, including traffic levels of service standards. Level of service standards for internal UC Santa Cruz intersections have been established through a combination of past LRDP policies/practices and County General Plan policies. The Campus uses LOS E as an acceptable LOS for intersections on the central campus, and LOS D as an acceptable LOS for intersections on the lower campus. The on-campus level of service standards are related to the specific modal priorities for different parts of the campus, and to the standards of Santa Cruz County. The lower campus is accessed via Empire Grade Road and Coolidge Drive, both of which are County roads. The County's level of service standards are LOS C for unconstrained roadways and LOS D for constrained roadways (roadways for which it is infeasible or not cost-effective to add capacity due to topography, natural resources, historic features, and cost-effectiveness). The central and northern campus roadways are under the jurisdiction of the Campus and are areas where pedestrian, bicycle and transit modes of transportation are a higher priority than vehicles. In these parts of the campus, roadways are significantly constrained in

width and grade by topography and natural resources. For this part of the campus, the Campus has established a lower level of service standard for vehicles (LOS E), as one means of ensuring that internal campus roadways do not become too vehicle-oriented and of minimizing the extent to which roadways impact the campus' natural resources. The University's (and City of Santa Cruz's standards discussed below) are consistent with those of other jurisdictions throughout the state.

5.2.12.2 Level of Service Standards/Impact Criteria for City of Santa Cruz Intersections

The City of Santa Cruz does not have an adopted level of service standard in its General Plan, but has historically used LOS D as its standard of significance for purposes of environmental review. The City General Plan, recent environmental documents prepared by the City of Santa Cruz, and standard engineering practice provide a basis for this standard. General Plan Policy 5.1.2 calls for maintaining congestion management intersections[6] at a LOS not less than D. The EIR for the General Plan used the LOS D criterion to identify a significant adverse impact. Consistent with the City's historic use of LOS D as a threshold for significant impacts, the Draft LRDP EIR uses LOS D as an acceptable LOS for city intersections. The City of Santa Cruz' level of service standards do not vary with the seasons. The City applies these threshold of significance to summer conditions in the same manner they are applied to fall and spring conditions.

The City has also historically used the three percent traffic contribution by the project to intersection volumes as a criterion in the threshold of significance. The use of this criterion in the Draft EIR is consistent with recent environmental documents prepared for the City of Santa Cruz. During the preparation of the Draft LRDP EIR, a City consultant preparing an update to the City's thresholds of significance indicated that the City had elected to continue using the current thresholds of significance including the three percent project contribution to cumulative traffic volumes (City of Santa Cruz undated).

The City's significance criteria for unsignalized intersections includes the three percent contribution criterion and the use of Caltrans's warrants for traffic signals when considering whether increased traffic would significantly affect an unsignalized intersection, as discussed in Caltrans' Guide for the Preparation of Traffic Impact Studies (page 5). If a project would trigger the need for a traffic signal, the impact would be identified as significant. Many unsignalized intersections operate with high delays during peak hours, but installation of a traffic signal is neither warranted nor desirable. Caltrans will not support the installation of a traffic signal that does not meet warrants. The significance criteria need to reflect this to avoid excessive and unwarranted installation of traffic signals. Because there are few options for increasing the capacity of an unsignalized intersection other than installing a signal, the impact of traffic increases at intersections are considered to be less than significant until they reach a level at which a signal would be warranted.

[6] Congestion management intersections are those that are identified by the local congestion management agency (CMA) in a congestion management plan (CMP). Currently, there is no CMA for the Santa Cruz area and no intersection in the city or the county is identified as a CMP intersection.

5.2.12.3 Level of Service Standards/Impact Criteria for County Intersections

According to the County General Plan (Policy 3.12.1), proposed development projects that would cause traffic operations at an intersection or on an uninterrupted highway segment to fall below LOS D during the weekday peak hour will be required to mitigate their traffic impacts. Proposed development projects that would add traffic at intersections or on highway segments that are operating at LOS E or F under existing conditions also are required to mitigate any traffic volume resulting in an increase of 1 percent or more in the volume/capacity ratio of the sum of all critical movements. Under County policy, new projects will not be approved until additional capacity is provided, or an overriding finding of public necessity and/or benefit is provided for the project. The Campus notes that County policies identify LOS C as an acceptable standard for unconstrained roadways and accept LOS D on roadways with constraints.

5.2.12.4 Caltrans Level of Service Criteria

Caltrans facilities in the study area include Highway 17 and Highway 1 (which in the City's Westside is also known as Mission Street). The Caltrans "Guide for the Preparation of Traffic Impact Studies" does not provide criteria for identifying significant impacts but does include level of service objectives for state highway facilities. The Draft EIR (page 4.14-4) includes the following statement, which recognizes Caltrans's level of service objectives:

> "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities. However, Caltrans acknowledges 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 appropriate target LOS, the existing level of service should be maintained (Caltrans 2002)."

As noted above, prior to performing the traffic analyses for the 2005 LRDP EIR, the University's traffic consultant presented to both the City of Santa Cruz and Caltrans a memo that outlined the University's proposed standards of significance, which are based on the standards currently in use by the City for city streets and for Mission Street (Highway 1), which is a joint facility of the City and Caltrans. Based on the state's actions with regard to past projects, Caltrans has historically acceded to the use of the City's thresholds of significance for Mission Street. However, the Draft EIR includes the following footnote:

> "Caltrans has questioned the application of the City's standards to Mission Street (Highway 1) intersections in its comments on the Shaffer Road/Pacific Shores Apartments Draft EIR prepared for the City (2001). The City defended its standards in its responses to comments in the Final EIR. UC Santa Cruz contacted both parties and attempted to resolve the discrepancy in approach, but did not succeed. This report, therefore, uses the City threshold (as has been the historic practice in University planning documents) (UC Santa Cruz Marine Science Campus Coastal LRDP Draft EIR 2003)."

With respect to the freeway facilities (Highway 17 and Highway 1 east of the Fishhook), as discussed in the RDEIR, according to Caltrans guidance (Caltrans 2002, page 1), for an existing State highway facility operating at less than the appropriate target LOS (i.e., currently operating at LOS E or F) under baseline conditions (that is, without the project under existing and future conditions), the impact of the project

would be significant if the existing measure of effectiveness would be diminished as a result of the project. The measure of effectiveness that was used in the highway analysis in the RDEIR is density in passenger cars/mile/lane.

Under this standard of significance, a significant impact for a freeway facility would occur if the project caused a change from a LOS D or better to a LOS E or worse, or if the project would result in an increase in density for a facility that was already operating at LOS E or F under existing conditions. The threshold used in the RDEIR for an increase in the density (applied only to facilities already operating at LOS E or F) is the smallest measurable increase (1.0 passenger car/mile/lane). Note that the increase in density threshold was not intended to be applied to levels of service better than LOS E. The Draft EIR analysis uses LOS D as the appropriate target level of service for the analysis of the study freeway facilities because (1) this objective was consistent with the level of service used for other facilities studied, including Mission Street (SR 1), and (2) Caltrans's Transportation Route Concept Report (20-year long-range planning vision document) for Highway 1 established goals of LOS D or better (Transportation Concept Report for State Route 1 in District 5, page viii), and LOS E for Highway 17 in year 2025 (Transportation Concept Report for State Route 17 in District 5, page 18).

For ramp junctions operating at LOS F without the project, the RDEIR identifies a significant impact if the project would result in an increase in roadway traffic volume such that there is a 1.0 passenger cars/mile/lane increase in density, not a project contribution of more than three percent. The three percent contribution example was provided in the RDEIR to put the measure of effectiveness into context. In the example presented in the RDEIR when the measure of effectiveness was changed by 1.0 passenger cars/mile/lane on a road segment operating at the threshold for LOS E (35 passenger cars/mile/lane), the addition of one passenger car/mile/lane represents a traffic volume increase of about three percent. As another example, when a change in density of 1.0 is compared to a density of 44-passenger cars/mile/lane (the density that defines LOS F), the percent change in traffic volume is two percent. The change in density of 1.0 passenger car/mile/lane is conservative because it is the smallest measurable increment the project could add to the performance measure.

5.2.13 Master Response TRAFFIC-2. Impacts on Empire Grade Road

This Master Response addresses Comments LA-2-93, LA-6-79, LA-6-80, LA-6-81, LA-8-8, I-10-2, I-10-5, I-43-1, I-45-36, I-45-37, I-45-39, I-45-40, I-45-37, I-48-3, I-48-4, I-52-1, and PH-25-5.

The Draft EIR evaluates the potential traffic impacts of the 2005 LRDP on Empire Grade Road and the analysis concludes that the proposed project would not result in significant impacts related to either traffic capacity or potential hazards.

5.2.13.1 Traffic Capacity/Operational Impacts on Empire Grade Road

The Draft EIR evaluates the traffic capacity of Empire Grade Road and considers the effect of new traffic added to the Empire Grade Road/northern campus entrance intersection south of the Cave Gulch neighborhood as well as new traffic added to Empire Grade Road from the existing Heller Drive entrance.

5.2.13.2 Roadway Capacity

Traffic along Empire Grade Road between Bay Street and north campus entrance would increase as a result of the implementation of the 2005 LRDP. Between Bay Street and Heller Drive, 187 to 244 peak hour trips would be added to Empire Grade Road, whereas between Heller Drive and north campus entrance 54 to 69 peak hour trips would be added under the LRDP. These estimates include traffic associated with the new campus employees and students living north of the campus in Felton and Bonny Doon. According to the Draft EIR, the projected increase in traffic on Empire Grade Road (from the north campus entrance north to Bonny Doon/Felton area) at full implementation of the 2005 LRDP is 13 trips in the AM peak hour and 18 trips in the PM peak hour (from Figures 4.14-10a and 4.14-10c of the Draft EIR. This amount to about one car added every 30 to 40 seconds during the peak hour. Even when added to existing and future non-university related traffic, this level of increase is well below the capacity of Empire Grade Road.

Some LRDP-related traffic on Empire Grade Road would be associated with the development of the campus support area to the south of the Cave Gulch neighborhood. Truck traffic associated with storage of grounds maintenance materials could include an average of about 12 round trips per week between the campus support area and various parts of the campus in a 5-ton dump truck. Before the north entrance/Cave Gulch bridge is built, these truck trips would travel on Empire Grade Road to access other parts of the campus via the campus's west or main entrance. However, once the Cave Gulch bridge is built, these internal campus truck trips would travel on the north loop road, not on Empire Grade Road. Currently, there are about eight delivery truck round trips per year to the campus from Felton Quarry, which is located north of the proposed new north entrance on Empire Grade Road. Under existing conditions, these trucks travel down Empire Grade Road to the campus's west or main entrance. At full development under the 2005 LRDP, delivery trucks from Felton Quarry would make about 16 round trips per year to the potential campus support area on Empire Grade Road, from the north and would stop at the north entrance rather than continuing down on Empire Grade Road south of the new entrance. The only regular truck trips that would use the steep segment of Empire Grade Road to access the potential new campus support area would be deliveries of redwood mulch made by trucks traveling from Santa Cruz. Currently, about six round trips per year are made to deliver redwood mulch. Under the 2005 LRDP, this is projected to increase to 12 truck round trips per year (about one truck round trip per month on average).

Given that most of the proposed development under the 2005 LRDP would be infill, construction trucks associated with new building projects would use Heller Drive to access construction sites in the western half of the campus and would not use Empire Grade Road above Heller Drive. Furthermore, the northern portions of the campus would not be accessible from Empire Grade Road unless and until the Cave Gulch bridge and the north loop road are constructed. The addition of about 12 to 16 new truck round trips per year to the segment of Empire Grade Road between Heller Drive and the new north entrance would not cause any significant impacts. It is anticipated that subsequent to the construction of the envisioned Cave Gulch bridge, some truck traffic could use Empire Grade Road to access construction sites along the new north loop road, since Empire Grade Road route is a designated truck route. Any construction traffic would be short term and temporary in nature, and would be expected to be shared between this external access route and internal campus roads. Construction traffic along the Empire Grade Road truck route

between the Heller Drive intersection and the new north entrance would be analyzed in conjunction with any specific future proposed project that would use this access route, and if construction traffic impacts are identified, mitigation measures would be incorporated into the project in conjunction with the environmental review.

The traffic that would be added to Empire Grade Road following construction of the north campus connection under the 2005 LRDP (including a small number of heavy vehicles) is well within the capacity of the roadway.

5.2.13.3 New Intersection Traffic Operations

The Draft EIR evaluated the level of service (LOS) at the new Empire Grade Road/North Entrance intersection (see Intersection 42 in Table 4.14-15 on page 4.14-41). To conduct this evaluation, baseline data for the proposed intersection was obtained from traffic counts conducted on Empire Grade Road near Heller Drive. Because there are no existing major intersections between Heller Drive and the location of the proposed intersection, these traffic counts also reflect existing conditions for Empire Grade Road between Heller Drive and the proposed new intersection. Note that the Draft EIR does not evaluate a baseline scenario for this intersection in the absence of project-related traffic because the intersection is part of the proposed project and would exist only with the project. Although there is no baseline condition to compare to, the determination that there is no significant impact is based on the finding that the intersection would operate at acceptable levels of service if constructed as proposed.

Year 2020 without Project traffic volumes were developed by applying growth rates derived from the AMBAG model to existing traffic counts on Empire Grade Road. Year 2020 with Project traffic volumes were developed by assigning estimates of project traffic to the proposed campus road. This traffic included traffic generated by growth in population in the north campus area, a re-distribution of some existing traffic to utilize the new north entrance to travel north on Empire Grade Road, and traffic generated by the envisioned campus support area. The methodology to develop future traffic projections is consistent with the projections for other study locations (see page 4.14-34 of the Draft EIR for a description of the method).

The 2000 Highway Capacity Manual operations methodology for stop-controlled intersections was used to evaluate the LOS of the proposed new intersection. The analysis shows that the new intersection would operate at a LOS B in 2020. The conclusion that there would be no significant impact is based on the evaluation of the proposed new intersection showing that it would operate at a LOS B for campus-related traffic (traffic turning into and out of the proposed intersection). Since the threshold of significance for County roads with contains (such as topography) is LOS D, the impact would be less than significant. Because the north entrance road would be stop-sign controlled, non-campus related traffic on Empire Grade Road would continue to travel through the intersection unimpeded and would not experience any delay.

5.2.13.4 Evaluation of Traffic Hazards

In conjunction with the preparation of the 2005 LRDP, the University examined the potential for hazards associated with the construction of a new intersection on Empire Grade Road (e.g., sight distance, design

speeds, etc.). The new intersection would be located on a relatively straight and flat segment of Empire Grade Road. With cutting back of embankments and clearing of vegetation, which would be included in the design of the intersection, the location would allow for adequate sight distance. The design of the new access would also include some repaving and limited widening of shoulders in the area of the new intersection to improve edge conditions. Accident records were not reviewed because the project does not propose any change to the existing roadway except the addition of an intersection, and past accidents are not relevant to the evaluation of a proposed new intersection. The evaluation concluded that the new intersection would not increase traffic hazards along Empire Grade Road.

Empire Grade Road between Heller Drive and the new North Entrance was also examined by a licensed traffic engineer. According to this evaluation, Empire Grade Road between the new north entrance and Heller Drive (posted speed limit, lane width, curvature, grades, and sight distance) appears to be a safely designed roadway with no obvious hazardous or poorly designed or maintained locations. The existing roadway would be adequate to serve the projected increase in traffic volume including a small number of heavy vehicles projected to access the campus support area.

As noted earlier, the proposed development of the campus support area would add a minimal number of trucks to Empire Grade Road (about 12 to 16 truck round trips per year, and thus would not be expected to increase hazards to bicyclists on Empire Grade Road. The small amount of truck traffic added to Empire Grade Road as a result of the development of the north entrance road, would not change existing conditions for bicyclists, and truck traffic itself does not warrant improvements to the existing shoulders because the existing design is adequate to accommodate truck traffic, as evidenced by the fact that the roadway is a designated truck route. It is important to note that the proposed north entrance to the campus, along with Heller Drive, would provide an alternative route for bicyclists to bypass the steep section of Empire Grade Road between the envisioned north entrance and Heller Drive intersection. Further, the 2005 LRDP envisions improvements to the bike routes on campus that would be expected to make the route through campus preferable to the Empire Grade Road route for bicycle traffic between the Heller Drive and the new north entrance intersections.

5.2.13.5 Other Environmental Impacts

Other than localized modifications to Empire Grade Road to safely accommodate the envisioned new intersection, the project does not involve any changes to the existing Empire Grade Road. Because the traffic analysis determined that no widening of Empire Grade Road between Heller Drive and the envisioned new north entrance was needed, there would be no potential for impacts to biological resources and the Cave Gulch cave system.

There are no noise-sensitive receptors (residences, schools, etc) currently present or likely to be established along Empire Grade Road between Heller Drive and the new north entrance at Cave Gulch. Therefore, the increase in traffic noise is not an issue for this roadway segment. The Santa Cruz Waldorf School on Empire Grade Road is located north of the envisioned new entrance and would not be affected by the additional traffic on Empire Grade Road south of the new entrance.

Lastly, as explained above, the proposed LRDP would add only a small number of new daily vehicle trips and about 12 to 16 truck trips per year to the steep portion of Empire Grade Road between Heller Drive

and the north entrance. The vehicle loads added by the project would not impose significant weight or wear on the roadway or contribute to any road problems that may exist.

5.2.14 Master Response TRAFFIC-3. Eastern Access

This Master Response addresses Comments LA-6-100, I-21-10, I-21-11, I-40-5, I-43-1, I-84-11, I-96-1, I-96-2, I-96-3, I-96-4, and I-96-5.

The University did not recommend the Eastern Access as part of the proposed 2005 LRDP. The Eastern Access was evaluated in the Draft EIR as a potential means of mitigating LRDP traffic impacts (2005 LRDP Draft EIR, pages 4.14-49 to -51). The Draft EIR assessed the efficacy of the Eastern Access in mitigating traffic impacts on city streets and regional roadways, and the feasibility of implementing the access. The Draft EIR evaluated two options for Eastern Access operation: (1) as a roadway available for general access, and (2) as an exclusive transit way. Under both options, the Eastern Access would extend from a terminus near Encinal Street to Glenn Coolidge Drive on the campus. The analysis found that while development of this route would provide some benefits to traffic on the Mission Street corridor under either operating option, it would not resolve all of the current and projected problems under either option. Therefore, it was not recommended as a mitigation measure.

As a general roadway, the Eastern Access would primarily serve traffic accessing the campus from Highways 1 and 17, and some traffic from the east side of Santa Cruz. It would not fully mitigate the traffic impacts of the proposed 2005 LRDP, particularly on High and Mission Streets. The estimated diversion of campus traffic to the Eastern Access roadway was determined using the AMBAG travel demand-forecasting model. The traffic consultant isolated the University's trips within the model's network and added the Eastern Access to the road network. The resulting proportion of University traffic using the Eastern Access as a general roadway was applied to the University's total trip generation (existing plus 2005 LRDP growth). The model assigns University traffic based on travel time or distance between origins and destinations, accounting for increases in travel time due to congestion. The trips modeled using the Eastern Access are trips for which the Eastern Access would be a faster route to the campus (generally those trips approaching from the highway system, the Felton area, or parts of the east side of Santa Cruz). The techniques described above are reasonable methodologies for estimating the potential diversion of traffic to the Eastern Access.

As part of the evaluation of the Eastern Access scenario, the Draft EIR estimated the changes in intersection LOS, including the intersection of Highway 1/Highway 9. The Draft EIR uses an analysis methodology for the intersection of Highway 1/Highway 9 under the Eastern Access alternative scenario that is consistent with the level of analysis used for other study intersections. With implementation of the Eastern Access general roadway alternative, Highway 1/Highway 9 intersection would experience a net PM peak hour increase in traffic of about 300 trips, because University traffic to and from the east side of Santa Cruz that would not normally pass through the intersection would be diverted to this intersection en route to the east end of the Eastern Access. This increase aside, the cause of the increased delay would be due primarily to a shift in traffic from higher capacity through lanes to lower capacity turning movements. For example, outbound from the campus, the Eastern Access would reduce the northbound through movement on Highway 1 at the intersection with Highway 9 (in the PM peak hour) by nearly 400 vehicles, and would add nearly 500 vehicles to the left turn lane from Highway 9 onto Highway 1. This

movement already requires a dual left turn lane to accommodate current traffic demand. These two lanes would become over-saturated with the additional traffic from the Eastern Access route. The additional traffic added to left turns from Highway 9 to Highway 1 would require a greater proportion of the traffic signal's time to accommodate the increased demand. However, there is limited overall traffic signal time available for other movements. Even with the signal timing optimized, the projected left turn volume would exceed the left turn capacity in the PM peak hour, making this delay difficult to mitigate without the addition of a third left turn lane or grade-separation.

Comments indicated that the State would implement improvements to the Highway 1/Highway 9 intersection as part of the ongoing construction of Highway 1. The current Highway 1/17 Merge Lane project under construction does not include any improvements at the Highway 9/River Street/Highway 1 intersection, nor are there any planned or funded improvement projects identified for this segment of Highway 1. The cost of improvements necessary at this intersection and approaching roads to accommodate the Eastern Access (in addition to the cost of constructing the Eastern Access) would be significant, and would render the mitigation infeasible in light of the marginal benefits that the Eastern Access would provide. Additionally, creating an Eastern Access as a general vehicular roadway through Pogonip, a City park, has not been considered an acceptable solution to the City of Santa Cruz.

Similar to the general roadway alternative, as an exclusive transitway, Eastern Access primarily would serve park and ride travel and transit vehicles approaching the campus from Highways 1 and 17. For the Eastern Access transitway alternative, the amount of diverted traffic assumed a 450-space parking structure at the east end of the transitway. The trip generation of this parking facility was based on the existing trip generation of the East Remote parking lot on campus. The East Remote parking lot has similar characteristics to an envisioned Eastern Access "park and ride" lot, in that it is a remote location that is served by transit, which provides access to the campus core. The analysis showed that the transitway alternative would provide less of a traffic reduction benefit than the general access roadway, and would also not mitigate significant impacts at many of the intersections in the city.

Given the marginal benefits of either Eastern Access alternative and the long term opposition to building a road through parkland, the Eastern Access was not adopted as mitigation in the LRDP EIR. Should the Eastern Access be proposed in future, it would require a separate environmental impact report and would evaluate alternatives and mitigation measures in more depth.

The "Keeley Accord" in the City's Master Transportation Study – Joint UC/City statement regarding the Eastern Access states that the University will not unilaterally pursue an Eastern Access nor will one be considered in the upcoming General Plan through its planning horizon (2020).

> "While UC Santa Cruz is not in a position to relinquish the option in the future to pursue development of an eastern access to campus, it is not the present intention of UC Santa Cruz to pursue unilaterally such an access during the planning horizon contemplated by the transportation master plan. The jointly-funded transportation master plan, therefore will not include a discussion or consideration of an eastern access as part of any combination of solutions to traffic issues in the City's next update of the transportation element of the City's General Plan, but should include discussion of other possible alternative access routes for the future. UC Santa Cruz preserves its right to study alternative access routes to the campus, including an eastern access. While the City Council has not yet established a planning period for the Transportation Master Plan and

> the next General Plan, it is expected to be 2015 or 2020. Nothing in this agreement shall be construed as the City's admission or acknowledgement that UC Santa Cruz has a legally cognizable or contractually enforceable option right to develop an eastern access across the Pogonip property."

Although, early in the history of the campus, there was an agreement on the part of the City and the County to construct an Eastern Access to the Campus, City and County support for this project subsequently was withdrawn. The access is outside of the authority of the University to construct. For that reason, it is not a feasible mitigation measure.

5.2.15 Master Response UTIL-1. Impacts on Regional Water Supply

This Master Response addresses all or a portion of the following comments: LA-2-160 through LA-2-165; LA-2-167; LA-2-169 through LA-2-174; LA-3-28 through LA-3-33; LA-5-1 through LA-5-3; LA-6-3; LA-6-105 through LA-6-108; LA-6-111 and -112; LA-9-93 through LA-9-122; LA-10-13 through LA-10-18; I-15-2; I-37-17; I-24-1 through I-24-4; I-37-16 and I-37-17; I-80-12; PH-3-1 through PH-3-5; and PH-4-2.

This master response summarizes all available information with respect to the current and projected supply of and demand for water in the study area. After the publication of the Draft EIR, the City published its Draft 2005 Urban Water Management Plan ("UWMP"), the City's most recent document related to water supply and demand. The Draft UWMP was prepared by the City pursuant to the Urban Water Management Planning Act, which is a part of the California Water Code. This act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and to update it every five years. The purpose of the UWMP is to provide the City of Santa Cruz Water Department with a framework for carrying out its long-term planning responsibilities and for reporting its strategies to meet future water challenges to both the State of California and to its water service area customers. The City's previous UWMP, dated 2000, was discussed in the LRDP Draft EIR. The 2005 update provides new information, which has been added to Draft EIR page 4.15-6 (see Final EIR Volume IV, Chapter 3, *Changes to Draft EIR Text*) and is discussed in the Master Response below. The UWMP is separate and distinct from the City's Integrated Water Plan (IWP). The IWP is the City's principal water planning document and was adopted by the City in November 2005 following the completion of environmental review in compliance with CEQA. The focus of the IWP is to identify water supply problems facing the City and to develop a solution to those problems.

5.2.15.1 Analysis of Water Supply

5.2.15.1.1 City of Santa Cruz Water Supply System

As discussed on page 4.15-3 of the Draft EIR, the Santa Cruz Water Department (SCWD) provides water to approximately 90,000 customers in the city of Santa Cruz, the UC Santa Cruz campus, a portion of the unincorporated area of Santa Cruz County, and a small portion of the City of Capitola (Gary Fiske & Associates 2003). The SCWD water service area is approximately 30 square miles in size (City of Santa Cruz 2001). The City currently has four water supply sources:

- Diversions from three North Coast streams (Reggiardo Creek, Laguna Creek, and Majors Creek) and one natural spring (Liddell Spring)
- San Lorenzo River
- Loch Lomond Reservoir
- Live Oak (Beltz) Wells

As stated in the Draft EIR, on average, about 75 percent of the City's annual water supply needs are met by North Coast surface diversions and the San Lorenzo River. Water is diverted from the San Lorenzo River at Tait Street and at the Felton Diversion Station. Water from the Felton Diversion is pumped to Loch Lomond Reservoir, located on Newell Creek near the community of Ben Lomond. That reservoir also captures and stores runoff from the Newell Creek watershed. Water stored in the Loch Lomond Reservoir is used mainly in the summer and fall months when the flows in the coastal streams and rivers drop off. This stored water accounts for about 20 percent of the City's annual supply. The remaining 5 percent is produced from the Live Oak Wells, which draw from the Purisima formation in the southeastern portion of the City's water service area. According to the City's Draft 2005 UWMP, over the last 5 years about 32 percent of the water produced in the SCWD service area 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 Oaks wells. This is reflective of the manner in which water is obtained in normal water years and during the majority of the year. During drier years and summer months, more water is obtained from Loch Lomond and the groundwater wells. As explained in the City's Draft 2005 UWMP, 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.

The system 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 (City of Santa Cruz 2001). The SCWD shares the San Lorenzo River watershed as the primary source for drinking water supply with three other water districts, several private water companies and individual property owners (City of Santa Cruz 2006). Similarly, 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 City operates two water treatment facilities – the Graham Hill Water Treatment Plant (GHWTP) and the Live Oak Water Treatment Plant (LOWTP). All surface water is treated at the GHWTP, which currently has a capacity of about 20 million gallons per day (mgd). Raw water from the North Coast diversions is delivered to this plant via the North Coast Transmission Main and raw water from Loch Lomond is conveyed to the treatment plant by the Newell Creek pipeline. The bulk of the treated water from the GHWTP is pumped into the Bay Street Reservoir and then distributed via the distribution system, although some of the water from GHWTP is also pumped directly into the distribution system. The LOWTP treats groundwater from the Live Oaks wells and has a capacity of 2 mgd. Treated water from this plant is pumped directly into the distribution system (City of Santa Cruz 2006).

According to the City, the net water volume that is produced at the two treatment plants and distributed to the users is about 6 percent less than the gross water volume produced at the sources. This is because of losses from leakage on the Coast Transmission Main, raw water sales, turnouts, and maintenance. Net water production has averaged about 3.9 billion gallons per year in the last five years (City of Santa Cruz 2006).

The Draft 2005 UWMP describes the City's projected water supply for the period 2005 through 2030. Table 3-4 in the draft plan shows that the City expects the supply from the North Coast sources to increase over current levels by about 100 million gallons per year, mainly because the City is planning to address the loss of raw water due to leakage on the North Coast Transmission Main. The volume of water that will be available from the San Lorenzo River and Loch Lomond Reservoir is expected to remain at current levels. The draft plan acknowledges that desalination may be another source of new water but does not identify the volume of water that would be available from that source. The draft plan finds that the total supply (without desalination) will increase from about 4.31 billion gallons per year in 2005 to about 4.39 billion gallons by 2020 and about 4.42 billion gallons by 2030 (City of Santa Cruz 2006).

The Draft 2005 UWMP notes that certain conditions could affect the City's water supply at the source. The City has commenced a federal Endangered Species Act Section 10 permit process to address the effect of water diversions from the North Coast streams on listed fish species. This may result in changes in the City's operation and management activities and the timing and use of this existing supply source, but the exact effect on supply is not known at this time. The City is also in the process of applying to the SWRCB to rectify a historical technical deficiency in the Newell Creek water rights. The current water rights allow only for diversion to storage in Loch Lomond and not for direct diversion. The City's application requests that the water rights be amended to allow for direct diversion, consistent with historic practice. This would bring the current operations into conformance with the water rights. If this deficiency is not approved by the SWRCB, this existing water supply would be unavailable as a source for the City under certain conditions (2005 UWMP). The proposed direct diversion rights are limited to the same volume of water as the existing rights.

The City also is applying for a time extension of the Felton Diversion water rights. If approved, this time 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 historically diverted. 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. Lastly, due to the state of the groundwater basin and potential problems of seawater intrusion, production of groundwater from the Purisima aquifer may be compromised.

Any or all of these factors could ultimately lead to a reduction in the existing and future water supplies, according to the City's Draft 2005 UWMP. For example, if the time extension of the Felton Diversion water rights is not approved, the additional water from this source under the City's existing water rights would not be available. According to the Draft 2005 UWMP, the City expects to need the full amount in the future, as it is critical to meeting the projected future demand. However, the City is actively working

with the resource agencies and the SWRCB to resolve these issues related to surface water sources so that supplies are maintained.

The City is also working with the other regional users of groundwater collectively to address the groundwater problem. The City has taken competing groundwater interests and the state of the groundwater basin into account in its water supply planning. According to the IWP, the City would withdraw an additional 1 mgd from the Live Oak wells only in drought years and no water during normal years. The City obtains only a small proportion of its annual water supply from the groundwater basin, and is planning to obtain water from a desalination plant rather than groundwater under drought conditions. Therefore, whether or not the 2005 LRDP is approved, the City's future water supply will not be substantially affected by the activities of the adjacent water districts.

The Draft 2005 UWMP also notes that the GHWTP cannot at this time operate at its original design capacity because of state and federal drinking water quality regulations, and that new regulations (including those related to removal of cryptosporidium) will require improvements at the plant or there will be further reductions in operating capacity. The City is conducting an evaluation of alternatives to meet the water quality and service goals for the GHWTP and for the distribution and storage system.

As stated in the Draft 2005 UWMP, the City's primary water management problem is the lack of adequate water supply during droughts (City of Santa Cruz 2006). Because the City's supply depends heavily on rainfall that occurs within the watersheds located in Santa Cruz County, during periods of drought the City's water system lacks sufficient water to meet existing demand (Draft EIR page 4.15-4). The shortfall in supply during drought periods is expected to worsen as the demand in the service area increases with growth. To address this shortfall, the City prepared the IWP, the focus of which was to identify potential supplemental water sources to address near-term drought year shortages and to provide a reliable supply for long-term needs. The IWP identified seawater desalination as the only feasible alternative for a backup water source in times of drought. The adopted IWP also includes an option under which the desalination plant would be constructed and operated in cooperation with the SqCWD so that SqCWD can use some of the plant's capacity when the City does not need it (City of Santa Cruz 2006). The desalination plant will be built with the capacity to produce 2.5 million gallons of water per day initially, with the potential to expand it to 4.5 mgd in the future as needed.

5.2.15.1.2 Other Water Purveyors in the Study Area

The 2005 LRDP Draft EIR describes the other water districts within the study area on pages 4.15-6 and 4.15-7. While Scotts Valley and San Lorenzo Valley water districts depend on other groundwater basins, both the SqCWD and the City withdraw water from the Purisima formation, as noted above. About two-thirds of SqCWD's annual water production comes from this formation, whereas about 4 to 5 percent of the City's supply comes from the Purisima formation (Draft EIR pages 4.14-7 and 4.15-3, respectively). The remainder of SqCWD's water supply comes from the Aromas aquifer. According to the Integrated Resources Plan (IRP) prepared by SqCWD, groundwater pumped by the SqCWD under current conditions from both aquifers exceeds sustainable groundwater yield by about 600 acre-feet per year. Therefore, the SqCWD is planning to secure an alternative water source so that it can not only meet the projected demand for water in its service area but can also reduce current pumping to a level that would allow for the recovery of local groundwater levels (SqCWD 2006). The SqCWD has examined a number

of options for securing more water; the development of a regional seawater desalination facility with the City of Santa Cruz is a key component of its preferred alternative under its IRP (SqCWD 2006). SqCWD and the City of Santa Cruz are working cooperatively to address water supply issues in the area. In the IWP Program EIR (PEIR), the City examined potential environmental impacts from a scenario in which the desalination plant would be operated on a more regular basis (i.e., not just under drought conditions) so that potable water from the plant could be supplied to the SqCWD in normal water years. That alternative was adopted by the City following completion of the environmental review process. Additional information about the conditions of the SqCWD's groundwater supplies has been added to the discussion on page 4.15-7 in Section 4.15, Volume II.

5.2.15.2 Analysis of Water Demand

5.2.15.2.1 City Of Santa Cruz System-Wide Water Demand Projections

As discussed in the Draft EIR, as of 2005, the total system demand was about 3.9 billion gallons per year. In 1998, under contract to the City, Maddaus Water Management (Maddaus) prepared a long-range water demand forecast for the City's service area. The forecast used population and employment projections prepared by AMBAG in 1997. The water demand estimates prepared by Maddaus were used in preparing the 2000 Urban Water Management Plan and also the IWP, although at the time that the IWP was prepared in 2003 it became apparent that actual water usage levels were substantially lower than predicted in the Maddaus study. The likely sources of the difference between the forecasts and actual usage are lower-than-anticipated population growth, declines in the industrial and commercial sectors, improved low-flow fixtures, and implementation of aggressive water conservation programs. Therefore the IWP and the IWP PEIR utilized 1998 water demand forecasts prepared by Maddaus, with downward adjustments applied to near-term demand estimates (2005 through 2015) but not to the long term forecasts (2015 through 2030). The LRDP Draft EIR used the same water demand forecasts that the City used in the preparation of its recent water planning documents.

There are a number of reasons why it was not necessary for the University to prepare revised water demand forecasts for the City's service area. As discussed in the 2005 LRDP Draft EIR (page 4.15-6), the 1997 AMBAG forecasts, on which the 1998 Maddaus water demand estimates are based, project a larger population in the City of Santa Cruz than the more recent 2004 AMBAG forecasts. Therefore, the 1998 water demand forecasts are conservative (i.e., they overestimate the demand) and were appropriately used by the City for purposes of long term water planning and by the University for evaluation of impacts. The City of Santa Cruz also received comments on the Draft PEIR for its IWP that questioned the appropriateness of the 1998 water demand forecasts. In response, the City determined that there was no need to prepare new demand forecasts for the IWP PEIR (IWP Final PEIR, October 2005, page 2-8). Furthermore, as discussed in Section 5.2.15.2.2 below, the water demand forecast for UC Santa Cruz included in the City's 1998 water demand forecasts is higher than the demand projected by the Campus under the Draft 2005 LRDP and the Final Draft 2005 LRDP. Lastly, it would be speculative for the University to prepare water demand forecasts for the rest of the service area at this time when the City is in the process of updating its General Plan. It is unknown how the City's updated General Plan, when it is adopted in the future, will correspond to the 2004 AMBAG projections.

In other words, the University finds that, although the City's 1998 water demand projections for 2020 are potentially high, the use of these projections by the University to evaluate impacts of its future growth is appropriate because the projections are conservative (that is, they do not understate potential demand) and they were adopted and used by the City in its recent water planning program.

As noted above, since the publication of the Draft EIR, the City has published its Draft 2005 UWMP, which is the City's most recent document related to water supply and demand. The Draft 2005 UWMP also discusses the demand forecasts prepared by Maddaus and notes that, as of 2005, the actual system-wide demand for 2005 is about 20 percent less than the level predicted in the Maddaus demand forecasts. In light of this, the plan presents two future demand scenarios for the service area through 2020. Both scenarios use the 2005 water demand levels as the baseline. The first scenario assumes that water usage 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 and water usage at the campus will grow at the rate projected in the 2005 LRDP Draft EIR. The second scenario assumes a lower growth rate of about 0.4 percent for the three major user groups and that the campus water increase will be half that projected in the 2005 LRDP Draft EIR. Both demand estimates are then adjusted downward to account for 200 million gallons of conservation savings. The plan shows that under the lower growth scenario, the total cumulative water demand would remain steady at the current level of about 3.9 billion gallons a year and under the higher growth scenario it would increase to about 4.2 billion gallons by 2020 (City of Santa Cruz 2006).

If the projected annual demand under the higher of the two scenarios is compared to the projected available supply, the comparison shows that in normal water years, the existing water supply system is capable of meeting the community's total annual water needs through 2020 (City of Santa Cruz 2006).

5.2.15.2.2 On-Campus Water Demand Projections

As referenced in the Draft EIR (page 4.15-18), an estimate of the increased demand for water on the main campus under the Draft 2005 LRDP was prepared by Arup (2005). The memo produced by Arup documenting how the estimate was developed is included in this Final EIR in Volume IV, Appendix B. The demand estimate was based on additional building square footage, additional acreage that would need irrigation, and additional student beds and faculty housing that would be added to the campus under the proposed LRDP by 2020. To prepare the estimate, all existing water use areas on the campus were classified into eight water demand categories: landscape irrigation, office/classroom, science labs, library, athletics, housing, mechanical/cooling, and other. For each of these categories, a water usage factor was developed based on 2003 water usage data. As a first step, a projected water demand was then calculated assuming the same water factor would apply to new development. However, the water factor for existing buildings is based on a mix of older buildings with less efficient fixtures, older buildings that have been retrofitted with more efficient fixtures, and newer buildings that meet current standards for efficiency. Because all new buildings would be constructed to the current standard, the projected demand was adjusted accordingly. The demand estimate for the campus as a whole is based on the assumption that, at a minimum, all of the campus's existing water conservation programs would continue and would apply to both the new space built on the campus and the new areas brought under irrigation. It is reasonable to expect that additional savings potentially could be achieved in the future as new conservation technologies become available and are employed on the campus.

As noted above, building space was used in the calculation of water demand for buildings other than housing, because water usage in some of the demand categories such as mechanical/cooling is driven by the amount of space and not by the number of persons. One of the objectives of the 2005 LRDP is to build space to reduce the overcrowding that currently exists in several buildings on the campus. Water use in academic, administrative and support buildings reflects a combination of building mechanical, cooling and laboratory uses, which increase with the square footage, and personal water use in bathrooms, which increases with population. Using square footage to estimate the future water demand in these types of buildings is conservative because the 2005 LRDP plans for square footage to increase at a greater rate than population. For housing, the demand projections were based on the number of bed spaces that would be constructed. As a result, on a percentage basis, the projected increase in annual water demand is greater than the increase in campus population or the increase in on-campus housing. Additionally, as noted above, the 2003 water usage was used to derive water usage factors for the water demand categories. Campus water usage in 2003 was unusually high (203 million gallons compared to 177 million gallons in 2000 and 189.5 million gallons in 2004). As a result, the 2020 water demand estimates prepared by Arup for the Draft 2005 LRDP are conservatively high.

The incremental water due to expanded summer programs under the Draft 2005 LRDP and the volume of water that would be used at 2300 Delaware Avenue were estimated and reported in the Draft EIR and were included in the total incremental annual demand estimated for the main campus (see Draft EIR, page 4.15-18). The total projected UC Santa Cruz annual water demand reported in the Draft EIR of 399.4 million gallons per year also includes the Marine Science Campus annual water demand (see Table 4.15-3 on Draft EIR, page 4.15-34).

It should be noted that the Campus now proposes to recommend to The Regents the adoption of the Final Draft 2005 LRDP (September 2006) which is the Reduced Enrollment Growth Alternative previously analyzed in the Draft EIR. Under the Final Draft 2005 LRDP, both enrollment growth and new building space development would be about 22 percent less than under the Draft 2005 LRDP (January 2005). Therefore, under the Final Draft 2005 LRDP, the total demand for water would be lower than previously estimated for the main campus. The Campus developed projected water demand estimates for the Final Draft 2005 LRDP using the same methodology and water factors used to forecast demand for the Draft 2005 LRDP. For information regarding the revised water demand estimates for the Final Draft 2005 LRDP, please see Final EIR, Volume IV, Chapter 2, *Project Refinements*. The revised campus estimate (including 2300 Delaware Avenue) for 2020 is 341.4 million gallons, and the total UC Santa Cruz water demand, including the Marine Science Campus is now estimated at 361.2 million gallons for 2020.

The Draft EIR (page 4.15-33) discusses the fact that the estimate of the Campus's 2020 water demand is lower than the 408 million gallons that was predicted for the campus by Maddaus in 1998 and used by the City in preparing its 2000 UWMP and the IWP. (See Section 5.2.15.2.1 in this master response for additional information about the City's water demand projections.) As indicated above, the total UC Santa Cruz annual water demand has been revised from 399.4 million gallons per year in the Draft EIR to 361.2 million gallons per year in the Final EIR. The new demand figure of 361.2 million gallons is still below the 408 million gallons that was predicted for the campus by Maddaus and used by the City in its water planning documents.

Although the University does not have access to the exact data and assumptions that Maddaus used to prepare the 1998 water demand estimate for the Campus, the University understands, based on information in the City of Santa Cruz's comment letter, that the projections were based on a maximum campus enrollment of 15,000 with 70 percent of undergraduates and 50 percent of graduates housed on campus (see Comment LA-9-101). While the City's water demand forecasts are based on a maximum campus enrollment of only 15,000 students, the forecasts include more water for the campus than is projected by the University to be needed with growth under the Draft 2005 LRDP and the Final Draft 2005 LRDP (September 2006). The methodology used by Arup to develop the demand estimate is described above. Further details, including assumptions, are provided in the Arup memo. The reason that the campus forecast for 2020 is lower than the Maddaus estimate likely is that the Campus's forecast assumes a lower on-campus residential population and/or a higher level of conservation, especially from ultra low flow fixtures and improved irrigation systems, than the Maddaus estimate.

In its comment letter, the City has requested that the 2005 LRDP Final EIR provide estimated growth in campus water demand in five-year increments so that impacts on water infrastructure serving the campus can be evaluated. The LRDP EIR is a program EIR, which looks at the effects of the full program that is anticipated to be in place in 2020. All impacts in the EIR for all resource areas are evaluated for the campus at full development. Because the 2005 LRDP does not project the rate of growth between 2005 and 2020, predicting impacts in interim years would of necessity be based on uncertain levels of growth and would be of limited value. As in the past, by continuing to closely monitor the Campus's water usage on an annual basis, and by evaluating the remaining water capacity each time a new project is proposed under the 2005 LRDP, both the City and the Campus will be able to predict the need for any improvements to the water supply system in a timely manner.

The University recognizes that the Campus's demand forecast is a projection, which is dependent on how much the campus grows. If enrollment, research activities, and/or building space do not grow to the levels currently envisioned water usage would not increase to the levels presented in this EIR. However, the University has reviewed the water demand estimate and has determined that the estimated increase in water usage on the campus under the 2005 LRDP is a reasonable and accurate estimate, and does not significantly over- or underestimate the incremental water that will be used on the campus through 2020, assuming construction of the entire 2005 LRDP building program. Moreover, because the water demand projections for the Final Draft 2005 LRDP are lower than the amount of water the City projected for the campus, the Campus's growth under the Final Draft 2005 LRDP is consistent with the City's water supply planning efforts. To clarify this point, the University has revised the text on page 4.15-33 to state that the Campus's growth under the Final Draft 2005 LRDP is consistent with the City's water supply planning efforts. Please refer to Final EIR, Volume IV, Chapter 3, *Changes to Draft EIR Text*.

5.2.15.3 Impact Analysis and Conclusions

5.2.15.3.1 Impacts from On-Campus Development and Population

The Draft EIR analyzes two impacts related to water supply. LRDP Impact UTIL-1 addresses the impact of improvements to the on- and off-campus water distribution system that would be required to serve the campus under the 2005 LRDP, and evaluates the environmental effects associated with these

improvements. The Draft EIR finds that the impact related to these infrastructure improvements would be less than significant because most of these improvements would be located in disturbed environments. To the extent that there would be environmental impacts from changes to these facilities, those impacts are expected to be mitigated to a less-than-significant level. Also, the Campus will comply with Government Code 54999, and will pay its fair share of the cost of off-campus water treatment and distribution system improvements that are needed in order to serve the campus, as described in Master Response MIT-1.

According to the City's comment letter, the planned Bay Street Reservoir Transmission Main, now under construction, is intended to allow for the maintenance of adequate water levels in the Bay Street Reservoir during peak summer periods. According to the City, inadequate water levels in this reservoir can result in low pressures in the City's gravity zone as well as increased risk of treatment plant upset due to frequent flow changes at the plant. The City did not account for additional University water demand due to increased summer enrollment in the design of the new main; therefore, the City is concerned about the adequacy of the Bay Street Reservoir Transmission Main to handle needed flows. As explained in Response to Comment LA-9-106, the transmission main would be adequate to serve the projected increase in peak day demand on the campus and further improvements will not be needed.

LRDP Impact UTIL-9 evaluates the effect of campus growth in conjunction with other regional growth on water supply, including the need to develop a new source of water and the environmental effects from developing a new source. The Draft EIR finds that in both normal water years and drought years, the cumulative demand in 2020 will exceed the available supply, and that a new water supply source will be needed, initially to provide reliability during drought periods and, as the service area demand grows, also to serve new growth. The Draft EIR finds that the impact from developing a new source would be potentially significant and that the proposed project's contribution to the impact would be cumulatively considerable (Please see below for additional information about this impact analysis and the more recent conclusions made by the City that existing water supplies are in fact adequate to serve new growth through 2020, including growth under the Final Draft 2005 LRDP, in normal water years).

The Draft EIR further states that based on the evaluation completed by the City, the new water source will likely be a desalination plant that initially would be developed for use by the City during drought conditions and by SqCWD during normal water years, and in the long run would be expanded to produce water to serve new growth in the City's service area during normal water years. The Draft EIR summarizes the environmental effects of developing a desalination plant (Draft EIR page 4.15-37) (See also Section 5.2.15.4 below for additional information about the environmental effects of developing a desalination plant). As indicated above, the Draft EIR finds this impact to be significant and unavoidable, but states that the University will pay its fair share of the cost of the required improvements, under Government Code 54999, as described in Master Response MIT-1.

Some commenters have stated that in addition to the cumulative analysis presented in the Draft EIR, the EIR should analyze the water supply impacts of the 2005 LRDP alone by adding 2005 LRDP water demand to existing demand. However, such an analysis would understate impacts. The 2005 LRDP is not a single, large development project. Rather it is a land use plan, similar to a city general plan, to guide enrollment growth over a period of 15 years. Should enrollment growth not occur at the pace currently anticipated, the period of time needed to fully implement the 2005 LRDP may extend beyond

2020. Over this planning period, the LRDP provides for the campus to grow by adding facilities incrementally. The maximum increase in demand for water that could result from the 2005 LRDP would not occur until and unless all the development under the 2005 LRDP is built, which is not likely to occur before 2020 and might not occur even by that time. This is unlike most development projects that typically are built over a short period of time and result in an immediate need for a large amount of water. A comparison of the LRDP's total demand at full development to existing demand and supply would not reflect the true impacts of the project. This approach would ignore the demand associated with other growth, which would draw on the same supply as the campus growth. If the campus's incremental demand under the Final Draft 2005 LRDP (about 135.4 million gallons between 2003 and 2020 as shown in Volume IV Chapter 2, Table 2-9) were compared to the remaining reserve capacity (about 300 million gallons) within the City's system, the incremental campus demand could be served without developing a new source of water. Therefore, if an LRDP-only analysis had been completed, the impact would have been found to be less than significant.

The impact of the increased campus demand under the 2005 LRDP on water supply is significant only when added to the demand from other future sources, because it is the cumulative demand that would trigger the need for a new supply source. Over time, the campus will grow in small increments, and other new water users (households and businesses) also will locate within the service area. All of these new users collectively will produce a total, cumulative demand that the system may not be able to meet during normal water years. When that happens, a new supply source will need to be developed. The Draft EIR indicates that this could occur sometime after 2015. Therefore, the statement by some commenters that a new supply source such as the desalination plant is needed only because of campus growth is erroneous.

The Draft EIR states on page 4.15-35 that the shortfall in supply in 2020 may not be of the magnitude identified in the EIR. Based on the City's most recent analysis, which is contained in the Draft 2005 UWMP, the City has also concluded that the existing supply is adequate to serve the growth in the service area through 2020 in normal water years, including the growth of the campus as predicted in the Draft 2005 LRDP. Therefore, according to the City's Draft UWMP, a desalination plant is needed to provide reliability to the system during drought conditions even without campus growth, but will not be needed in normal water years through 2020. The Draft 2005 UWMP, therefore, does not include water from a desalination plant in its water supply calculations in normal water years through 2020. As noted in Section 5.2.15.1.1, the desalination plant would likely be operated in normal years to supply potable water to the SqCWD.

Despite this new information, the University has decided to leave the Draft EIR's finding of a significant impact in normal water years unchanged, because it is possible that one or more of the City's existing supply sources could be reduced in the future (refer to Section 5.2.15.1.1 which discusses some uncertainties related to the supply sources). If this happens, the supply may fall short of demand, and a new water source to serve new growth could be needed before 2020. Ultimately, the desalination plant to be built for use during drought conditions would be expanded to produce this additional water to serve new growth during normal water years. City, regional, and campus growth would continue to contribute to the cumulative demand in the service area and the need to initially develop and ultimately expand the desalination plant, as indicated above. Thus, any subsequent expansion of the proposed plant after its initial construction would only be caused in part by the proposed 2005 LRDP.

The statement by some commenters that the University has avoided responsibility for mitigating its contribution to this impact by not having conducted a project-level impact analysis is erroneous. The Draft EIR includes a suite of mitigation measures (LRDP Mitigations UTIL-9A through –9I) to reduce the Campus's demand for water. Please also see Master Response UTIL-2, which describes revisions to these measures that would further reduce the campus's water demand. The University will also pay its fair share fees under Government Code 54999 to the City for water supply improvements including the potential desalination plant, as described in Master Response MIT-1.

There is ample evidence that should a new source of water be needed, the City will develop it in a timely manner. As discussed in the Draft EIR, the City has been considering the development of possible new water supplies for almost two decades. In the latest phase of water supply planning, which began in 1997, the City launched a new water supply planning effort, which looked at a suite of actions to bring supply and demand into balance, including water conservation and curtailment during drought conditions. This planning effort culminated in the adoption of the IWP in November 2005, a plan that provides for reduced demand through conservation and limited curtailment and provides for the phased development of a new supply source. As explained by the City in the IWP Final PEIR, "The need for consideration of expansion of the desalination plant to its future increments would be confirmed upon update of the population projections in the applicable future General Plans and timed for decision when actual water demands warrant that consideration. In addition, this phased and flexible approach for the provision of water supply would take into consideration any stabilization or lack of population growth in that additional water would not be needed if there is not a population need or water demand in the future" (City of Santa Cruz 2005a).

In summary, the City has conducted a detailed investigation of its available water supply and demand, and has determined that, in the immediate future, a new source of water is needed only for drought protection and that a small desalination plant operated only during periods of drought would be adequate. During normal water years, there is enough water from existing sources to serve existing and foreseeable growth through 2020. In the long term (after 2020), however, the demand may exceed supply, and the City has therefore approved a plan that allows the phased development of a new supply source. Because the IWP has been adopted, a program is now in place that will ensure that a water supply source will be developed if and when needed. The University, in compliance with Government Code 54999 fair share fee obligations, will pay the City its portion of the actual cost of the new supply source that is developed to serve the University. The University has also offered to support the City in its water planning efforts by offering the use of a site and its existing seawater intake on the Marine Science Campus for a pilot desalination plant. Please see Master Response MIT-1 regarding Government Code 54999.

5.2.15.3.2 Impacts from LRDP-Related Off-Campus Population

Although LRDP Impact UTIL-9 focuses on the effects of the Campus's direct water demand on available supply, it also accounts for the effect of the additional UC Santa Cruz employees and students living off-campus in the City of Santa Cruz. The Draft EIR acknowledges on page 4.15-32 that new LRDP-related population would reside in the City's service area and would place a demand on water supply. However, as the Draft EIR explains, this water should not be added to the City's demand forecasts for two reasons. First, residential water demand is, in large part, a function of the availability of new housing, and limited

new housing is projected to be built within the service area. Therefore, water demand within the service area would not exceed the City's projections unless more housing is constructed in the city than is currently projected. Second, as explained on page 4.15-32 of the Draft EIR, the city's water demand projections are based on the 1997 AMBAG forecasts, which predict about 4,462 more persons residing in the service area than the more recent projections. Therefore, even if it were assumed, conservatively, that about 3,500 LRDP-related persons (from Table 4.11-6 in Draft EIR) or 1,146 households (from Table 4.11-10 in Draft EIR) would be added to the service area in addition to the population growth currently projected in the City, the total water demand would not exceed that already accounted for in the City's demand forecasts.[7] The volume of water that these off-campus households would require is estimated at 94.5 million gallons per year.[8] The University acknowledges that this off-campus population that would also contribute to the need for a new water supply source. However, the impact conclusion remains unchanged.

With respect to the LRDP-related off-campus population that would reside within the other water districts in the study area, as shown in Table 4.0-3, the number of persons that would be added would be too small to have a discernible effect on water demand in most of these districts. The one exception would be the SqCWD service area. An estimated 627 LRDP-related persons are projected to reside within the three communities of Capitola, Aptos and Soquel that are served by the SqCWD.[9] As discussed in the Draft EIR, SqCWD's supply at this time is entirely dependent on groundwater. The SqCWD has identified the need to secure a new water source because there is limited potential to obtain more water from the groundwater aquifer without causing overdraft. The SqCWD has identified a preferred alternative for this new water source, which relies on obtaining water from the City of Santa Cruz's proposed desalination plant during normal water years. Because the City's current plan is that the desalination plant would be used only during drought conditions to serve the City's needs, SqCWD has proposed that water from the plant could be made available in non-drought years to meet SqCWD's needs. As stated in Section 5.2.15.1.1 above, the City adopted an option that would provide for regular operation of the plant so that water could be supplied to the SqCWD during normal years.

Thus, the LRDP-related persons that would reside within the SqCWD, like all population growth caused by the 2005 LRDP, would contribute to the need for the development of the desalination plant. Impact UTIL-9 in Section 4.14 of the Draft EIR has been revised to clarify that the off-campus population within the SqCWD service area would contribute to the need for a new supply source. A mitigation measure to compensate the City of Santa Cruz and the SqCWD for the impact of the LRDP-related off-campus population on the water supply systems is not necessary, because this off-campus population, like all other residents of the service area, would contribute to the cost of improvements to the water supply systems as part of user fees and charges.

[7] Note that based on an enrollment increase of about 6,950 students and about 1,520 faculty and staff, the Draft EIR estimated that approximately 3,500 LRDP-related persons would be living in the service area. This number will decrease under the Final Draft 2005 LRDP because of the lower enrollment (about 5,450 students) and employment (about 1,340 employees) growth projected in the Final Draft 2005 LRDP.

[8] This volume is calculated using the City's current single-family home water usage rate of 226 gallons of water per day (City of Santa Cruz, 2006).

[9] A portion of the City of Capitola is provided with water by the City of Santa Cruz Water Department, so the total number of LRDP-related off-campus persons within the SqCWD likely would be less than 627. Note that this estimate of 627 persons from the Draft EIR would decrease because of lower enrollment and employment growth under the Final Draft 2005 LRDP.

Some commenters have suggested that water demand associated with population growth induced by the 2005 LRDP should also be included in the impact analysis. Population growth induced by the proposed project is discussed in Section 6.3, *Growth Inducing Impacts of the 2005 LRDP*. As explained in that chapter, induced growth relates to jobs created in the study area as a result of the spending of income by the additional students and employees at the campus as well as through purchases made by the Campus within the study area. Because of the uncertainty associated with the induced growth, especially with respect to where the indirect/induced population would reside, it is not possible to determine how many persons from this population group would reside in the City of Santa Cruz, how many would reside within the SqCWD service area, and how many would live in other parts of the county. Therefore, a meaningful analysis of the effect of this population on water supply cannot be conducted. Regardless, for reasons presented in the preceding paragraph with respect to the LRDP-related off-campus population, this indirect/induced population would also be a subset of the regional population projections; therefore, the demand for water related to this population is also accounted for in the regional water demand estimates. In summary, this LRDP-related indirect/induced population also would contribute to the need for a new water supply source in the City of Santa Cruz and the SqCWD; however, the overall cumulative demand for water in the service area remains unchanged.

5.2.15.4 Environmental Effects from the Development of A New Source of Water

As stated on page 4.15-35 of the Draft EIR, because the project-specific details of the proposed desalination plant, including a preferred site, have not been developed by the City, the IWP EIR does not evaluate the project-specific impacts of a desalination plant, and any attempt by the University to do so at this time would be speculative. When the City proposes a specific desalination facility project, the City will conduct project-level environmental review. The IWP EIR does, however, consider the impacts at a program level. These include potential impacts to water quality in both the Pacific Ocean and onshore surface waters, to groundwater supplies, to marine resources such as sea floor habitat and intertidal invertebrates, to other biological resources such as special-status species and steelhead habitat, to noise levels, to air quality, to cultural resources, to land use planning and neighboring land uses, to aesthetics at the site, and to traffic and road conditions. These impacts are summarized in Table 1-3 of the IWP EIR. The IWP EIR concludes that all potential impacts, except those related to noise resulting from construction of the desalination plant, can be mitigated to a less-than-significant level. However, the Draft 2005 LRDP EIR conservatively concludes that the impact of constructing the plant would be significant and unavoidable, as it remains unknown whether all environmental impacts associated with this water supply project could be reduced to a less-than-significant level (see Draft 2005 LRDP EIR page 4.15-37).

5.2.16 Master Response UTIL-2. Water Supply Mitigation Measures

This Master Response addresses Comments LA-3-32, LA-6-110, LA-6-111, LA-9-98, and LA-9-107 through 114, all of which relate to mitigation measures included in the Draft EIR to reduce the project's impact on water supply.

In response to the above comments, the Campus has revised and reorganized the mitigation measures that address LRDP Impact UTIL-9 (see Draft EIR page 4.15-30). Overall, the revisions have been made both to provide more clarity about the mitigations that the Campus will implement as part of growth and development under the 2005 LRDP and to further reduce the campus's water demand. Some of the original mitigation measures required the Campus to pursue certain programs only after campus water consumption reached a certain level. Most of the revised measures provide for implementation within 1-, 2-, or 5-years after approval of the 2005 LRDP, and would be implemented regardless of the amount of campus water use. This Master Response refers to the newly revised mitigation measures. Please see Volume IV, Chapter 3, Revised Table 2-1 of the Final EIR for the text of the revised mitigation measures.

5.2.16.1 Conservation Programs

Revised LRDP Mitigation UTIL-9A requires the continuation and improvement of current conservation strategies. Ensuring the continuation of present strategies is particularly important where campus policy is more stringent than existing law or standards. LRDP Mitigation UTIL-9A requires installation of waterless urinals, which are more efficient than required by current standards, in new buildings. This continues present practice: all urinals in the Humanities and Social Sciences Facility and the McHenry Library addition, currently under construction, will be waterless.

Revised LRDP Mitigation UTIL-9A improves current campus policy concerning washing machines in student residences. Currently, the Campus's contract with the company that provides and services on-campus washing machines specifies only that the machines must be energy- and water-efficient. A water factor of 5.5, as determined by the Consortium of Energy Efficiency, represents the highest degree of efficiency available, but machines with higher water factors (i.e., less efficient) could satisfy the current standard. Revised LRDP Mitigation UTIL-9A provides for improvement to the current standards and mandates that all new washing machines have water factors of 5.5 or below.

The existing water conservation plan for landscape irrigation includes the use of predominantly drought-tolerant species in new landscaping, the installation of automatic timing systems, and a central irrigation control system that minimizes water use. This system uses up-to-date weather data to calculate the rate at which plants are using water—the evapotranspiration rate—and automatically adjusts the amount of water provided. Irrigation systems for most of the campus athletic fields and landscaping for new large projects are linked to controllers that are adjusted weekly on the same basis. Campus standards require installation of meters on most new irrigation systems and the Campus has retrofitted all but a few small existing irrigation systems with water meters. These measures have substantially reduced the rate of landscape water use. For example, the amount of water used each year to irrigate the East Athletic Field between 1994 and 2003 was an average of 28 percent less than between 1984-85. LRDP Mitigation UTIL-9A requires this program to continue, and revised LRDP Mitigations UTIL-9G and –9H provide for improvements to this system by requiring installation of meters on all irrigation systems where a single point of connection irrigates more than 1 acre of landscaping, and by evaluating the effectiveness of adding existing irrigation systems to the campus's central control system within five years of LRDP approval.

LRDP Mitigation UTIL-9A also requires the Campus to continue its leak detection and repair program, install individual water meters in new employee housing units to encourage residential water

conservation, and install separate meters on water lines for individual buildings and irrigation systems to facilitate monitoring of water usage and detection of leaks.

5.2.16.2 Pilot Programs

LRDP Mitigation UTIL-9B requires pilot programs for testing "high efficiency plumbing fixtures," which are those that exceed current standards. This ensures that the Campus will continue to explore technologies that are more efficient than current standards. For example, while all new buildings have ultra-low-flow fixtures, as required by current laws and regulations, fixtures using even less water (dual-flush toilets and waterless urinals, for example) have become available since the existing low-flow standard was established. A pilot technology is considered successful if the model being tested does not require more frequent repair or maintenance than the current standard, and if the model is effective in water conservation. Under LRDP Mitigation UTIL-9B, the Campus standards would be revised to require fixtures that pass these tests.

5.2.16.3 Reducing Water Consumption in Existing Facilities

Under revised LRDP Mitigations UTIL-9C and UTIL-9D, within one year of the adoption of the 2005 LRDP, the Campus would implement a water conservation education program for campus residents, including both students and employees. In addition, within one year, in consultation with the City of Santa Cruz, the Campus would initiate an engineering audit of campus water use. The audit would assess options for reducing water consumption and prioritize feasible improvements based on the amount of potential water savings and cost effectiveness. The scope of the audit would include an assessment of the cost effectiveness of retrofitting plumbing fixtures in non-housing facilities to current efficiency standards; the potential for improved efficiency of irrigation systems; potential water conservation measures for the campus cooling water system; and identification of landscaped areas on campus that have plants that are high water-use. Within one year of completion of the audit, the Campus would begin to implement the top priority recommendations of the audit and within five years implementation of the top priority recommendations would be completed. Under revised LRDP Mitigation UTIL-9E the Campus would re-visit the results of the water audit conducted under LRDP Mitigation UTIL-9C, consult with the City of Santa Cruz Water Department and with representatives of relevant campus departments, and conduct additional study of new technologies to and identify additional feasible and effective water conservation measures for implementation on the campus during the subsequent five-year period.

5.2.16.4 Use of Reclaimed Water

At this time, the plumbing or irrigation infrastructure required in order to use reclaimed water would add a substantial cost to development, in part because the technologies are not yet in widespread use and have not been widely tested. Given these constraints, it is not feasible at this time for the Campus to make a commitment to install costly infrastructure of unproven efficacy and high cost/benefit ratio in all new buildings. LRDP Mitigation UTIL-9F has been revised to state that within two years of approval of the 2005 LRDP, the Campus shall initiate a feasibility study for the use of reclaimed water on campus. The study will contain a plan to utilize reclaimed water in new development and will recommend an implementation schedule. The feasibility study will enable the Campus to develop a plan to identify and

implement measures that are most cost-effective in the near term, and to phase in more costly or technologically complex measures so that mitigation is implemented in conjunction with the particular development that is driving demand and is appropriately designed and scaled. This also facilitates the use of future technologies as they are developed and proven effective.

5.2.16.5 Retrofitting Existing Plumbing Fixtures

Under current policy, the Campus retrofits plumbing fixtures in older campus buildings when bathrooms are remodeled, installing modern, efficient models. In 1989, the Campus retrofitted all toilets on campus to use 3.5 gallons per flush (gpf), considered at that time to be "low-flush." Today, all new toilets installed in California must use 1.6 gpf or less. The Campus not only meets this standard in all new construction but also previously has installed 1.6 gpf toilets when building College Eight in the late 1980s and early 1990s, before this level of efficiency became the legal standard. The Campus is now retrofitting toilets in buildings constructed before 1994 to the 1.6 gpf standard for new toilets. As a result, 47 percent of toilets in pre-1994 campus buildings meet the current standard. The Campus will continue to implement the current policy of retrofitting existing fixtures as bathrooms are remodeled and the toilets need to be replaced. In addition, under revised LRDP Mitigation UTIL-9H, within five years, the Campus will complete the retrofit of all plumbing fixtures in student housing to the campus standard current at the time of the retrofit. For other campus facilities, the Campus will evaluate the cost-efficiency of retrofitting older plumbing fixtures as part of the engineering water audit required under LRDP Mitigation UTIL-9D, since most toilets in academic and administrative buildings on campus are the flush-valve type, which can be quite expensive to retrofit.

5.2.16.6 Drought Contingency Measures

LRDP Mitigation UTIL-9I addresses the additional impact of increased water demand under drought conditions. This measure ensures that campus facilities would meet the City's water use reduction targets during droughts.

5.2.17 Master Response ALT-1. Appropriate Enrollment Level for Reduced Enrollment Growth Alternative

This Master Response addresses Comments LA-2-181, LA-2-182, LA-3-42, LA-6-6, LA-6-117, LA-9-140, LA-10-24, I-26-6, I-45-29, PH-5-2, PH-11-7, and PH-33-1.

The Reduced Enrollment Growth Alternative to the 2005 LRDP, analyzed in Section 5.4.2 of the Draft EIR, was developed through extensive discussions among the UC Santa Cruz academic and administrative community. This alternative considers a total student population of up to 19,500 by 2020, which would mean an enrollment increase of about 5,458 students above the 2003-04 EIR baseline enrollment level. The Campuses proposes to recommend to The Regents the adoption of this alternative, which was identified in the Draft EIR as the environmentally superior alternative. The Final Draft 2005 LRDP revises the Draft 2005 LRDP (January 2005) to reflect this change.

Several commenters suggested consideration of a substantially smaller total enrollment growth alternative as a means of reducing project impacts, such as growth to an enrollment of 16,000 in 2020. As explained

on page 5-3 of the Draft EIR, CEQA does not require analysis of all possible alternatives, but rather a range of alternatives that is broad enough to permit a reasoned choice by decision-makers when considering the merits of the project. The Reduced Enrollment Growth Alternative and the No Project Alternative that were analyzed in the Draft EIR (Sections 5.4-2 and 5.4.4, respectively) bracket the lower enrollment growth alternatives suggested by commenters, and therefore provide a reasonable range of alternatives involving less growth than projected under the Draft 2005 LRDP.

Furthermore, as discussed on page 5-1 of the Draft EIR, the purpose of the alternatives analysis is to explore ways that the objectives of the proposed project could be attained while reducing or avoiding significant environmental impacts of the project as proposed. The suggested alternatives, involving substantially less growth than proposed under the 2005 LRDP EIR, would severely limit the Campus's ability to meet the objectives of the 2005 LRDP. For example, a 16,000-enrollment alternative would allow enrollment growth of 1,900 students between 2003-04 and 2020. In 2003-04, the on-campus three-quarter-average enrollment was 13,614 students, of whom 1,287 were graduate students. To meet the Campus's objective of increasing the proportion of graduate students to 15 percent of enrollment would require an increase of 963 graduate students, thus allowing for an increase of less than 1,000 in the number of undergraduates. The Campus's ability to develop new programs in emerging areas of study would be very limited, as would its ability to develop a full range of graduate programs. Further, the Campus would be able to meet only a small percentage of the projected system-wide growth in enrollment demand. The Reduced Enrollment Growth Alternative population of 19,500, now proposed as the Final Draft 2005 LRDP, represents a reasonable consideration of population reduction for the campus compared to the project as originally proposed and analyzed in the Draft 2005 LRDP EIR, that would still allow the campus to accomplish most of the key project objectives. The Campus's ability to meet the proposed project's goals and objectives may be compromised by an alternative that further reduced student enrollment goals.

5.2.18 Master Response ALT-2. Proposed Program Growth at Another UC Campus or a New Site

This Master Response addresses Comments I-6-1, 1-15-1, I-45-29, I-67-2, 1-87-2, LA-3-43, LA-6-118, PH-12-1, PH-14-2, PH-41-2, and PH-48-2.

Please see Master Response PD-1 regarding the distribution of projected system-wide enrollment increases among campuses. As explained in that master response, the University's proposals for accommodating future enrollment growth already allocate a substantial majority of the projected increase in student population to other UC campuses. The projected enrollment increase would not be distributed evenly across all UC campuses, but would be based on factors such as the academic goals of each campus, the physical capacity of each campus to accommodate growth, and feasible rates and proportions of growth. As discussed in Master Response PD-1, UC Santa Cruz's proposal in the Draft 2005 LRDP to plan for a three-quarter-average on-campus enrollment of 21,000 by 2020 was based on the projected system-wide enrollment and on its academic vision. The revised project, presented in the Final Draft 2005 LRDP and previously analyzed as the Reduced Enrollment Growth Alternative in the Draft EIR, would allow UC Santa Cruz to accommodate a larger share of projected growth than some campuses that do not need to grow significantly to achieve their academic goals.

In order to reasonably allocate the projected enrollment growth and maintain a varied and dynamic program, it is critical that each UC campus make efficient use of opportunities to build on existing infrastructure and programs. Each campus site provides unique opportunities and constraints for growth. For example, UC Davis has well-established programs of agricultural and animal research and presents many opportunities for private research collaboration, but is situated on prime farmland. Both UC Berkeley and UCLA, long-established campuses, have limited physical space for expansion and, with approximately 30,000 students each, face many challenges in accommodating new development and population. The new tenth UC campus in Merced offers new opportunities for Central Valley residents to attend the University but is the site of wetlands and, as a new campus, must fund the development of all new infrastructure concurrently with any campus development. UC Merced will accommodate a portion of the currently projected increases in enrollment (an estimated 13,500 by 2024-25 according to the UC Merced LRDP EIR), but this new campus cannot grow quickly enough to accept all of the growth, nor would it be reasonable to expect that all of the program and research growth could occur at a single campus.

The University of California does not have plans to open an eleventh campus at this time. While development of new campus sites could be one strategy for ensuring continuing student access, it is important to consider that development of any new campus entails a long term process of site selection and land acquisition and may require development of new buildings and infrastructure from the ground up, all of which may take many years. It also requires years from the time of initial development for a campus to develop programs that will attract faculty and a substantial student population. For these reasons, while it is possible that additional UC campuses may be built in the future, entirely or even substantially accommodating the immediate and near term demand for UC education at a new campus site is not a feasible alternative to growth at UC Santa Cruz. Further, because any future campus site is likely to present its own set of environmental issues, development at another site likely would not eliminate significant environmental impacts, but would simply trade one set of impacts for another, or result in similar impacts at another location. The University will continue to implement feasible mitigation measures to eliminate or reduce the environmental impacts of on-going development.

5.2.19 Master Response ALT-3. Range of Feasible Alternatives

This Master Response addresses Comments LA-6-6, LA-10-23, I-45-28, and 1-45-29.

CEQA requires analysis of a reasonable range of potentially feasible alternatives to the project or to the location of the project, but does not require consideration of every conceivable alternative. According to CEQA Guidelines Section 15126.6, the alternatives considered in the EIR should have the capacity feasibly to attain most of the basic objectives of the project, and should avoid or substantially lessen any of the significant effects of the proposed project.

Consistent with the CEQA guidelines, the Draft EIR considered a range of alternatives to the proposed 2005 LRDP, including 10 alternatives that were reviewed but ultimately rejected for further consideration (Draft EIR pages 5-5 to 5-12). The Draft EIR acknowledges that some of these alternatives could be combined in various ways, but notes that it would be difficult to characterize the environmental impacts of every combination for purposes of comparison with the proposed project (Draft EIR, page 5-12). The alternatives analyzed in detail in the Draft EIR are: an alternative off-site location for a portion of the

campus growth; a reduced enrollment growth alternative; a revised land use plan that would place campus growth primarily on a different part of the campus than the proposed project; and the No Project Alternative, under which campus development and enrollment growth would continue to be guided by the 1988 LRDP. The range of alternatives thus includes an alternative footprint for development on the UC Santa Cruz campus, an alternative site for UC Santa Cruz enrollment growth, and two alternatives that would reduce project population at the existing campus. The Campus proposes to recommend to The Regents the adoption of the Reduced Enrollment Growth Alternative previously analyzed in the Draft EIR and identified as the Environmentally Superior Alternative. The Final Draft 2005 LRDP (September 2006) revises the Draft 2005 LRDP (January 2005) to reflect this change.

The proposed project, analyzed in the Draft EIR, would result in direct impacts on the campus environment due to the physical development of building space and infrastructure, as well as on and off-campus population-related effects on traffic, housing supply and water supply. Each of the alternatives analyzed would reduce some of the significant environmental impacts of the proposed project by reconfiguring the proposed physical development (the Southerly Expansion Alternative); placing some of the development at another location (the Satellite Campus at Fort Ord Alternative); or reducing overall population and/ or development compared to the proposed project (the Reduced Enrollment Growth Alternative and the No Project Alternative).

A "Hybrid Alternative," proposed by one commenter, is discussed in Response to Comments LA-6-123 and LA-3-41.

A number of commenters requested additional explanation regarding particular alternatives analyzed in the Draft EIR. The amount of enrollment growth is discussed in more detail in Master Response PD-1. An increased on-campus housing alternative is discussed in Master Response ALT-5, and an alternative that would replace development of the north campus with additional infill development in the central campus is discussed in Master Response ALT-6, below. Master Response ALT-4 provides additional detail on development of the Moffett Field site. Response to Comments I-26-4 through I-26-8 and LA-9-136, -137 and -139 provide additional details regarding development of the Fort Ord Alternative site.

5.2.20 Master Response ALT-4. Moffett Field Satellite Campus/Silicon Valley Center Issues

This Master Response addresses Comments LA-6-6, I-26-1, I-15-1, I-15-2, I-26-5, I-26-6, I-45-29, PH-5-2, PH-11-7, and PH-16-2.

5.2.20.1 Feasibility of the Moffett Field Alternative

Several commenters state that the EIR should provide a detailed analysis of an alternative that would accommodate a portion of the 2005 LRDP enrollment increase at a satellite campus at Moffett Field. This alternative was discussed in Section 5.3.4 of the Draft EIR. As explained on pages 5-9 and 5-10 of the Draft EIR, this alternative was rejected for further analysis for several reasons: the need for new infrastructure that would have to be coordinated with the infrastructure needs and development schedules of other entities; the lack of public transportation to the site; the distance of Moffett Field from the main campus; and the inability of the alternative to meet most of the objectives of the proposed 2005 LRDP.

The development of the Moffett Field site would augment UC Santa Cruz main campus programs and opportunities, but could not feasibly accommodate the academic program growth envisioned for the main campus, although UC Santa Cruz is evaluating plans to provide some ancillary programs at the Moffett Field site. UC Santa Cruz programs at Moffett Field could take advantage of the presence of NASA and of the opportunity to collaborate with other educational institutions and regional and local businesses to offer programs in the areas of engineering, information management, science, mathematics, and management. The BIN-RDI (Bio-Info-Nano Research and Development Institute) facility proposed for the Silicon Valley Center (SVC - UC's existing program at Moffett Field), and mentioned by one commenter, would be a cooperative effort among several academic institutions. BIN-RDI will provide some educational space, but is not intended to substitute for enrollment growth at the main campus or at the other participating institutions.

Given the distance of Moffett Field from the main campus, only programs that can operate at least somewhat independently of the campus could feasibly be accommodated at Moffett Field. The planned program growth at UC Santa Cruz would involve most of the existing departments, and would take a variety of forms, depending on each department's stage of development. In most cases, long-distance physical separation of departments between the main campus and Moffett Field would not be compatible with program development. It is true, as one commenter points out, that a long-term goal of the Silicon Valley Initiative is to provide collaborative research opportunities for UC Santa Cruz students, which is consistent with the objectives of the 2005 LRDP. The SVC operations that are just beginning at Moffett Field may provide some opportunities for students in certain areas of study to collaborate with students from other Universities once other programs are established on the site. For example, the University Affiliated Research Center (UARC) program mentioned by one commenter, is a research contract program with NASA. This program provides graduate students opportunities to work on research activities via the Systems Teaching Institute. However, while students thus may be part of the collaborative research program, there are no classes or other enrollment-related academic activities that are part of the UARC. Graduate and professional programs on the main campus provide a much greater depth of collaborative research opportunities, including interdisciplinary study and collaboration, as well as the opportunity to be part of all of the activities and campus life of the wider academic community. The University's intent, in working to develop the SVC, is to focus first and foremost on research activity, from which a small number of graduate programs will evolve and which may, someday, involve targeted upper division academic programs. While some programs might, in the future, jointly offer upper division and graduate courses at the SVC and on the main campus, it has never been envisioned that the SVC would operate as an independently functioning ancillary campus. It is anticipated that many of the students who would participate in UC Santa Cruz SVC programs would be enrolled at and receive at least part of their academic program at the main campus. Although the facilities at 2300 Delaware Avenue or the Marine Science Campus also are separated from the main campus, these facilities are only a five-minute shuttle ride from the main campus, while Moffett Field is an hour's drive distant; therefore, a comparison between these facilities is not meaningful.

5.2.20.2 Development Challenges at Moffett Field

Although the University signed a letter of intent to master lease 25 acres at Moffett Field, that letter of intent has expired. As discussed on page 5-10 of the Draft EIR, development of the NASA Research Park

(NRP) by UC and other education partners has proceeded at a much slower pace than anticipated in the NASA Ames Development Plan (NADP). UC has encountered infrastructure, financial and environmental challenges to its development plans for the site. Some of these challenges are related to the fact that UC does not control planning for the site. For example, UC development will require construction of infrastructure that will serve other facilities that would be developed under the NADP. The University anticipated in its planning for the NRP that the costs of constructing this infrastructure would be shared by other development partners at the site. To date, very little of the development envisioned in the 2002 NASA Ames Development Plan (NADP) has occurred. Therefore, NASA intends to maintain a flexible development framework for the Moffett Field site and to pursue development opportunities, including both public and private initiatives, as they arise. Private entities may propose development that is not complementary to University proposals, and may not provide any opportunities for educational or research collaboration. Furthermore, private initiatives may also affect the siting of development, such that the initial redevelopment of the site may be distant from the identified University Research Park. The University could find itself without co-developers to share in infrastructure development costs for the University Research Park. In this case, the cost to the University of infrastructure to support the University facilities could be much more expensive than anticipated. Because UC has greater control over the UC Monterey Bay Education, Science and Technology Center (MBEST), the Campus selected that site as the more feasible location for the satellite campus alternative analyzed in detail in the EIR.

5.2.20.3 Environmental Impact Issues

Adoption of the SCV as a partial alternative to the proposed project could reduce development on the north campus. This would reduce biological and hydrologic impacts in the area. However, under the proposed 2005 LRDP as analyzed in the Draft EIR, the direct impacts of north campus development would be reduced to less-than-significant levels through mitigation in any case. The magnitude of traffic, housing, and water demand impacts of the 2005 LRDP in the Santa Cruz area would be reduced by the Moffett Field alternative as a result of population reductions on the main campus, but cumulatively with other regional growth, housing and some traffic impacts likely would remain significant, and because the University does not have the sole authority to implement the identified mitigation measures, the impacts would remain significant and unavoidable.

Further, the corollary to reduction of impacts on the north campus would be an increase in environmental impacts at the Moffett Field site, particularly with respect to housing demand, traffic and air quality, which are areas of concern in Santa Clara County. In addition, the alternative would result in increased traffic between Moffett Field and the UC Santa Cruz main campus, which would contribute to traffic congestion and air quality impacts in the Bay Region, and also is inconsistent with the sustainable planning principles of the 2005 LRDP. Thus, the alternative would not reduce overall impacts of the proposed project, but simply shift some of the impacts to other locations.

5.2.20.4 Ability to Meet Other Project Objectives

Finally, while the Moffett Field site is near major population centers, as noted above, it is an hour or more drive from the UC Santa Cruz main campus. Public transportation between the two sites is limited and

inefficient. A campus at Moffett Field essentially would have to function as an independent campus rather than as a satellite, because it would be unrealistic, and inconsistent with the goals of sustainability, to plan for large numbers of students, faculty and staff to travel regularly between the two sites. Therefore, essential student services such as libraries, recreational facilities and administrative offices would have to be duplicated. The relatively limited facilities that could be offered at Moffett Field would not fulfill the LRDP objective of providing the array of facilities that enrich campus life. Furthermore, even if such services were provided, undergraduates affiliated with a Moffett Field program could only take part in a full academic program at the main campus through a lengthy commute. While the satellite campus could provide a separate professional or technical school, or could house a distinct program or department, the students and faculty of that facility would not share in the UC Santa Cruz academic and social community. The targeted nature of programs at the SVC does not address the objective, articulated in the Strategic Future Committee Report, to strengthen a broad range of programs at UC Santa Cruz. For these reasons, the alternative would not meet the key project objective to "develop facilities to foster a dynamic intellectual and social community.

5.2.21 Master Response ALT-5. Increased On-Campus Housing Alternative

The Master Response addresses Comments LA-2-176, LA-2-177, LA-3-46, LA-6-6, LA-6-121, LA-6-123, LA-6-124, LA-9-132, LA-9-133, LA-9-134, LA-10-23, LA-10-25, LA-10-26, LA-10-27, and PH-27-2.

5.2.21.1 Capability of the Increased On-Campus Housing Alternative to Reduce Environmental Impacts

As described in the Draft EIR, Volume II, Section 5.3.3, increasing on-campus housing above the levels analyzed in the 2005 LRDP EIR likely would result in reduced environmental impacts with respect to some resources and increased impacts in other areas.

If, as proposed under this alternative, more than the 50 percent of students were willing to live on campus (feasibility issues of which are discussed in detail below), the impacts of UC Santa Cruz housing demand on the housing stock in the City of Santa Cruz--would be reduced. Further, under an Increased On-Campus Housing Alternative, the number of peak hour trips associated with commuting students would be reduced by as much as 42 percent. However, this alternative would also result in an increase in trips originating on the campus associated with students, faculty and staff, and families of faculty and staff residing on campus and working and doing business off campus. The net effect of increased on-campus housing would be a reduction in peak hour trips, but possibly not a reduction in total daily trips. As discussed in Response to Comment LA-2-176, the effect of this alternative on peak hour trips would be similar to that of the Eastern Access. Like the Eastern Access (General Vehicular Access Option discussed on page 4.14-49 of the Draft EIR), the alternative would reduce the peak hour traffic at the intersections in the west side but the reduction will not be adequate to improve the LOS at the affected intersections. In addition, increased on-campus housing likely would require construction of more parking facilities on campus, as more students would park on campus and commute off-site to work or for other activities.

The Draft EIR, Volume II, Section 5.3.3, states that increased levels of on-campus housing could increase the overall regional water demand in the long term. Some commenters questioned this conclusion. The analysis in the Draft EIR is based on the assumption—discussed in detail in the Draft EIR, Volume II, Section 4.11, *Population and Housing*—that the City currently does not anticipate the construction of much new housing in the City during the time frame of the LRDP (see Table 4.11-5), although the demand for housing is expected to be high based on AMBAG employment projections (pages 4.11-18 and -19). The water demand in the service area would be expected to increase under the Increased On-campus Housing Alternative because the total number of housing units that would generate water demand within the service area would be increased. It is assumed that the limited quantity of housing in the City, which currently has low vacancy rates, will be occupied by either University-affiliates or others. The occupants, whether University-affiliated or not, would contribute to water demand. If additional housing were constructed on campus, this would expand the total housing stock within the water service area. Students occupying this increased on-campus housing rather than off-campus housing would contribute to increased water demand from the campus. At the same time, students leaving off-campus housing in the Santa Cruz water service area would be replaced by non-University occupants, who would simply replace the students' contribution to the demand for water in the service area. The City's 1998 water demand investigation (Maddaus 1998) makes a similar argument: "If additional off-campus housing is not built, then students will compete with existing residents for housing. This could cause some existing or planned new residents to be displaced and forced to live outside the service area. In this case, the AMBAG population forecast for the service area would be too high, and would need to be revised downward. This situation would lead to a lower total water demand in the service area."

5.2.21.2 Ability of the Increased On-Campus Housing Alternative to Meet Project Objectives

The Increased On-Campus Housing Alternative would meet most of the objectives of the proposed project and would support key planning principles regarding campus life and the Santa Cruz community. The alternative could be accommodated within the proposed 2005 LRDP land use footprint, as explained in the Draft EIR (Volume II, page 5-8), either by increased density of development of the land use areas designated College and Student Housing and Employee Housing in that plan, or through increased infill development. In order to accommodate the increased amount of housing, development density could be increased, relative to the proposed project, either through the use of taller buildings or through reduction of open space between buildings. This increase in development density would challenge the ability of the Campus to respect and reinforce the Planning Principles and Guidelines and to maintain the unique character of the UC Santa Cruz campus--an important long-term objective. Infilling existing campus development areas with housing would limit the area available in the central campus for academic expansion, such that the flexibility to respond to new program initiatives could be reduced. Issues related to increased infill density are discussed in more detail in Master Response ALT-6, below.

5.2.21.3 Demand for On-Campus Housing

Commenters disagreed with the University's conclusion that the demand for on-campus student housing is unlikely to rise above 50 percent. Commenters questioned the cost of University housing, and

suggested that the demand for University housing would be increased if costs were reduced through subsidies, reduction of services, or other mechanisms; and if a wider variety of housing options were offered.

5.2.21.3.1 University Housing Costs

The policy of the University of California is that University housing cannot be subsidized by the taxpayers and must be self-supporting. Under this policy, the housing program must assume 100 percent of the debt and operating costs of housing. No housing construction or operational subsidies currently are available to the Campus. New facilities may not be approved by The Regents until the Campus meets the financial and demand analysis review. Any housing construction in excess of demand results in higher housing costs for all, since the costs of constructing and maintaining unoccupied housing must be borne by the housing program.

Although the University owns the campus land on which housing will be constructed, the University has found that it is quite expensive to build housing on campus for a number of reasons, including contracting requirements; the effects of the University's higher insurance limits and bonding requirements on the pool of contractors interested in or able to perform the work; costs of developing infrastructure to new areas of the campus; and the costs of environmental protections and mitigations in environmentally sensitive areas.

In addition, most University housing includes residential and student life programs, which add to the cost of housing. Although these programs add to the cost of housing, they are included in the University housing program for functional, liability-driven and ethical reasons, and are essential standard components of any University-sponsored group living facility. University, parental and undergraduate student expectations for certain standards affect decisions regarding staffing patterns, building safety and security, and support services. Computer facilities and in-room internet connectivity are directly aligned with the academic mission of the University. Internet connectivity, and in some case, computer labs, are seen as a core service (like telephone and electricity) that students as consumers demand and upon which the academy relies. These services are also provided by competitor institutions and other UC campuses.

Furthermore, tutoring, educational activities and other related programs provided in association with University housing are an acknowledgement that a college education happens both inside and outside of the classroom. The teamwork, appreciation of differences, leadership, civic engagement, conflict management, and other life-essential skills are taught via residential programming and experiences. These activities vary from campus to campus, but they nonetheless are seen by the University and the Campus as important and essential responsibilities of the University in educating the "whole person" so as to maximize the chances of success as a student and beyond.

Commenters suggested that eliminating requirements for meal service would reduce housing costs. The traditional residence hall model requires students to eat in a common meal facility. This is done for a number of reasons, ranging from efficient building design, to a common understanding that college freshmen, in particular, are often overwhelmed by being away from home for the first time and the academic challenges and adjustment to new-found responsibilities. Eliminating the need to cook frees up time for other activities and increases the likelihood that students will make healthy nutritional choices. Extension of the meal program to other types of student housing on campus at UC Santa Cruz is related to

the structure and objectives of the campus, in which each student is closely affiliated with one of the colleges. Making meals available to students residing in apartments and elsewhere outside the residence halls strengthens these college ties and provides opportunities for these students to participate more fully in the life and activities of his or her college.

UC Santa Cruz has been working to lower housing costs on campus even during a recent five-year housing expansion program (1999-2004) that required the Campus to assume more debt in student housing. UC Santa Cruz's double-occupancy room and board dormitory rate of $10,203 per school year was the median price for similar accommodations among the nine general UC campuses in 2005/06.[10] A 3.5 percent cost increase is proposed for 2006/07, the second smallest increase in the system. In order to make housing costs as affordable as possible, Colleges and University Housing Services staff annually conducts an exhaustive process to identify options for cost reduction and cost containment. The analysis includes a review of potential changes to services and programs that might achieve cost savings, new construction debt, increases in wages and benefits, and increases in other campus-related charges (i.e., telecommunications, utilities, campus services, etc.). The Campus also has endeavored to reduce vacancy rates, which contribute to the overall cost of housing through flexible temporary conversions of space as needed. In addition, the Campus and the University offer opportunities for students to defray some of their housing costs, including student leadership positions in on-campus housing, many of which include stipends to help pay for all or part of room and board fees. Work-study opportunities, through which students may earn money to help defray the costs of housing or other educational expenses, are also available through Financial Aid. The Campus provides housing as economically as possible. In the future, the Campus may also consider potential third-party development, or joint ventures with the City of Santa Cruz, to produce more affordable housing.

5.2.21.3.2 Range of Housing Provided by the University

UC Santa Cruz offers a wide variety of residential living accommodations, from residence halls to apartments to single rooms in modular buildings. While the range of housing on campus is not the same as the range available off campus, University housing offers some housing features and programs that are not available off campus. For example, the Campus currently guarantees housing for two years for all freshmen and transfer students, and four-year guarantees to Educational Opportunity Program students, Regents Scholars and Karl S. Pister Leadership Opportunity participants. No comparable program is available off campus. University housing also includes certain services and facilities that generally are not included in non-University housing, such as computer facilities, custodial services, utilities, telecommunication packages, security and safety services, meal programs, counseling and emergency medical services, and Residential and Student Support programs. It is the experience of the Campus that students and their parents expect that University housing will include these amenities, which are typical of housing provided by other four-year public and private institutions, including other UC campuses, and are consistent with the standard of service for the student housing industry. Similar services and facilities either are not available in off-campus non-University housing or, if available, are added to the basic rental cost.

[10] On-Campus Housing, UC Rate Comparison. 2006/2007 Budget Summary. UC Santa Cruz Housing Office. April 2006.

The off-campus setting provides some lower cost housing options not available to the Campus. For example, multiple students may pool resources to rent a house in a residential neighborhood. An option of this type could not readily be created in the campus housing environment, since the University must assume certain responsibilities and liabilities for housing provided to minors. Options of this kind, including cooperative housing, may be available to students through the University Housing office, which assists students in finding off-campus rentals. Currently, the Campus Housing program offers some examples of lower rate, community type living arrangements that include the Lower Quarry Village and the Campus Trailer Park. The Campus will continue to explore a wider range of on-campus housing options.

5.2.21.4 Occupancy Trends and Market Influences

The Campus has monitored occupancy trends over the past decade. The Santa Cruz housing market and the demand for on-campus housing appear to be strongly influenced by short-run economic fluctuations. In periods when more housing was available in the City of Santa Cruz due to economic downturn, rental costs in the City decreased, and vacancy rates on the campus increased. Housing demand on-campus has increased during periods when prices in Santa Cruz were higher and the housing supply off-campus was constrained.

The Campus annually tracks applications of freshmen and transfer students to predict housing occupancy. Demand also is reassessed each year through surveys, discussion groups, assessment of yield rates, and other mechanisms. Housing capacity is adjusted from year to year through construction of new housing, and also through conversion of lounges and other communal spaces to bed spaces or the reverse, and as a result of necessary remodeling or repairs that may decommission or recommission housing units. Based on historic occupancy rates, there has been little or no demand in excess of supply for University housing.

5.2.21.5 Student Housing Demand

In 2003, the Campus retained a consultant to analyze student and faculty/staff housing in order to assess the potential to meet campus housing goals, the role of the off-campus market in the Campus' ability to meet housing goals, and the potential to meet goals through the provision of University-sponsored off-campus housing (Sedway Group 2003). Students, faculty and staff were polled regarding housing preferences and the reasons for these preferences. In addition, off-campus apartment complexes favored by students were surveyed with respect to rental rates, occupancy rates, occupancy restrictions, and amenities.

Factors cited by students as important in the selection of housing varied widely among the student body overall, and between lower division, upper division and graduate students. In choosing specifically between on and off campus housing, factors students cited as influencing their decision to live on campus included proximity to their college, library and academic resources, proximity to public transportation, proximity to other students, neighborhood safety and building security, the natural setting, and proximity to recreational and fitness facilities. Factors cited as disadvantageous to living on campus, included lack of proximity to stores, restaurants and nightlife, and restrictive rules and supervision. Juniors, seniors and graduate students cited overall cost as the primary factor in selecting housing. The importance of student life programs decreased significantly among upper class students.

As documented by the Sedway study, housing costs are one of the factors affecting demand for on-campus housing. Fifty-seven percent of students polled indicated that, all other factors being equal, they would choose to reside on campus if on- and off-campus housing costs were comparable. Juniors, seniors and graduate student cited overall cost as the primary factor in selecting housing. It is recognized that many students will find less expensive housing off-campus. However, it is difficult to compare the cost of housing on and off campus because on-campus and off-campus housing options are not equivalent, as discussed above. Students may be willing to accept living conditions off campus, such as shared rooms or absence of amenities, which they may not find acceptable in on-campus housing. A traditional shared dormitory room with a meal plan may be more expensive than a shared apartment off campus, while costs of apartments on campus may be more comparable to off-campus shared apartment costs.

Asked about housing preferences for each of their campus years, with cost not included as a factor in the question, the majority of freshmen felt that a residence hall was the best choice for freshman year, and well over 90 percent of freshmen actually live on campus. The portion of students who expressed a preference for living on campus declined with each subsequent class year, and more than half of students indicated that they would prefer to live off-campus in non-University-affiliated housing in their senior and graduate student years.

As stated in the Draft EIR, Volume II, Section 5.3.3, providing higher levels of on-campus housing than proposed in the 2005 LRDP does not appear to be supported by housing demand. Although influenced by housing costs, student housing choices also can be attributed to the natural developmental needs of upper division students to be more independent and free of University regulations and constraints as they mature. Additionally, upper division and older students, once they have developed their academic bond with the University, typically wish to take part in and reside in the wider community. This is true for university students nationwide. The Campus therefore considers an alternative with higher housing goals to be infeasible.

5.2.22 Master Response ALT-6. Increased Infill Development

This Master Response addresses Comments I-15-3, I-33-1, and I-40-1.

The commenters suggest that the environmental impacts of the 2005 LRDP would be reduced if all development were accommodated as infill in the campus core rather than, in part, through expansion to the north. The Draft EIR, Volume II, Chapter 4, analysis identifies potential biological, hydrologic and other impacts that could result from development in the north campus. Increased development density to accommodate all academic and housing development through infill in existing developed areas of the campus was considered as an alternative development plan during the LRDP planning process. The Increased Development Density Alternative is discussed in the Draft EIR in Section 5.3.2. The alternative was not carried forward for detailed analysis because it could not provide adequate space for the envisioned development.

5.2.22.1 Environmental Impacts of Dense Infill Development

The majority of the development proposed in the 2005 LRDP could be accommodated through infill on the central campus and in the existing campus support area near the main entrance by densely developing

existing open spaces such as parking lots, meadows and the wooded areas between existing buildings, although the steep and dissected topography in this area would present many design and environmental challenges for dense development. It also would be possible to increase density by building taller structures, and demolishing existing low density (two and three story buildings) and replacing them with nine and 10 story buildings. However, even with these strategies, it would not be possible to accommodate all of the proposed housing within the areas presently designated for housing, except by providing only high rise apartment housing, for which there appears to be limited demand on the campus and which would have high potential to result in significant aesthetic impacts.

As described in the Draft EIR, Volume II, Section 5.3.2, dense infill development would result in new significant or more severe environmental impacts in a number of other resource areas. For example, high-rise development above the tree tops, and dense infill that eliminates screening vegetation or requires more topographic alteration would substantially alter the appearance, topography and "feel" of the central campus, and would result in significant aesthetic impacts. Similarly, dense development in the main entrance area of the campus would result in aesthetic impacts to the campus entrance and the Cowell Ranch Historic District (refer to Draft EIR, Section 4.1). Further, dense development in the campus core would reduce the space available for storm water infiltration and almost certainly would increase the severity of hydrological impacts (refer to Draft EIR, Section 4.8). Dense development also would further constrain wildlife movement corridors (refer to Draft EIR, Section 4.4). The focus of all campus development in a smaller area likely would increase traffic congestion and construction noise impacts and disruption. Parking lost to development in the central campus would likely need to be replaced with costly parking structures in order to satisfy parking demand within the space available. One commenter proposed that infill development could be accommodated underground. Because of geologic conditions on the central campus, as well as the cost of this type of development, among other reasons, this would not be feasible as a means of accommodating growth.

In addition to these environmental impacts, increased density of infill development would be inconsistent with the planning principles that have been in place on the campus since its inception (Draft EIR, Section 3.6). The campus has always been envisioned as a series of development clusters set into the natural setting of the campus, integrating the natural and built environments. The maintenance of the natural aesthetic and of relatively intimate clusters of development has been highly valued by the campus community. This aesthetic inevitably would be lost with increased density if the proposed development program were restricted to dense infill. One commenter opined that the physical development of the campus did not foster a close-knit community and that increased infill in the campus core would facilitate development of connecting spaces. The planning philosophy that has guided the development of the campus has emphasized clustering of development to increase the sense that each college is a small community within the larger community. Infill build-out of the core would be contrary to this planning principle.

Under a reduced development alternative, it might be possible to accommodate the necessary development as infill in the campus core. Some academic and administrative development infill in the core is included in the 2005 LRDP. However, even with a reduced program, it still would be difficult to accommodate more than a small amount of housing as infill without eliminating all future sites for

academic and research development, which would substantially reduce future options for program expansion and flexibility.

5.3 RESPONSES TO INDIVIDUAL COMMENTS

This section presents all written comments received on the Draft EIR and response to individual comments. Comments received at the two Draft EIR public hearings are contained in the two Public Hearing transcripts. Responses to the public hearing comments are presented on the pages that follow the two transcripts. It is recommended that reviewers use the index to comments on pages 5-1 through 5-6 to locate comments from specific agencies or persons and the responses to those comments.