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DATE: August 23, 2013

TO: Coastal Commissioners and Interested Persons

FROM: John Ainsworth, Senior Deputy Director
Steve Hudson, District Manager
Barbara Carey, Supervisor, Planning and Regulation
Melanie Faust, Coastal Program Analyst

RE: **Pepperdine University Major LRDP Amendment No. 1-11, Part B**
(Campus Life Project – proposed final location, layout and management of recreation area, including installation of new, permanent stadium-type sports lights for future playing field in Marie Canyon); scheduled for Commission hearing and action at the September 11, 2013 meeting, in Eureka.

SUMMARY OF AMENDMENT SUBMITTAL

Pepperdine University proposes to amend the certified Long Range Development Plan (LRDP) for the Malibu campus pursuant to Amendment Request #1-11. The amendment request was divided into two components last November so that review of Part A (which included most of the University's "Campus Life Project" development package) could be expedited in accordance with the University's request. Part A was approved by the Commission, with three suggested modifications, on December 13, 2012. Part B was separated from Part A for subsequent review, as explained below. LRDP Amendment #1-11, Part B is the subject of this staff report.

Part B includes the University's proposal to install new, permanent, high performance, stadium-style "Qualite-International" field lights at the approved recreational/sports field and associated recreational improvements in Marie Canyon, north of Huntsinger Circle Drive. Installation of the playing field, for day use, was approved as part of the LRDP in Part A. The proposed lights would consist of six, 80-ft. high light poles supporting four shielded, angled Qualite-brand fixtures per pole; each fixture would use 1500 watts for a total of 6000 watts of lighting power per pole, and 36000 watts for the bank of lights at the Marie Canyon field. The Part B component of the LRDP amendment was separated from the larger Part A amendment for the Campus life project by mutual agreement between Pepperdine staff and CCC staff to allow for additional time to further analyze the potential visual and habitat impacts associated with the placement of stadium type lighting on the periphery of the campus adjacent to chaparral ESHA.

Part B of the amendment request also includes determination of the final location, layout and management of the Marie Canyon recreation area features conceptually authorized by the Commission in approving Part A of the amendment request.

Staff note on scheduling: LRDPA #1-11 was filed as complete on August 20, 2012. The Commission extended the time for review of LRDPA #1-11 for one year, at the October 2012 Commission meeting. The final deadline for Commission action is October 19, 2013. Therefore, the Commission must act on Part B no later than the Commission's October 2013 meeting.

SUMMARY of STAFF RECOMMENDATION

Staff Recommendation: Staff is recommending that the Commission approve Long Range Development Plan (LRDP) Amendment 1-11-B to the certified Pepperdine LRDP with two suggested modifications, which would prohibit lighting of the approved recreational field in Marie Canyon and require the submission of a Recreation Area Management Plan. For the reasons summarized below, staff does not support the University's proposal to install the proposed playing field lights at the Marie Canyon playing field.

There are two existing sports fields with field lights located within the central portion of Campus, surrounded on all sides by existing campus development. The proposed Marie Canyon sports lights would provide lighting for a third field on campus. Unlike the two other sports fields with existing lighting (the existing soccer and baseball fields), which have been previously authorized by the Commission pursuant to LRDP Amendment 1-11-A and in certifying the LRDP in 1990, the lights proposed for the Marie Canyon field would be located outside of the main developed campus area, in a canyon surrounded on three sides by environmentally sensitive habitat. Commission staff ecologist Jonna Engel, Ph.D., has reviewed the University's amendment request (Part B). Dr. Engel's memorandum summarizing the results of her analysis is attached as Exhibit 12. Dr. Engel has determined that the installation of new, permanent sports field lights in Marie Canyon as proposed by the University would pose a substantial risk of significant, adverse impacts to sensitive coastal resources that would significantly degrade adjacent, environmentally sensitive habitat areas.

The two recommended Suggested Modifications are as follows: Suggested Modification 1, which would limit outdoor sports field lighting on the campus to the central campus sports complex located within the main developed campus area and continuously used for sports since the campus opened in 1972. Specifically, Suggested Modification 1 would limit such field lights to the existing soccer field, track, and baseball fields (identified by the University as the Tari Frahm Rokus Field & Stotsenberg Track, and the Eddy D. Field Baseball Stadium); and Suggested Modification 2, which would require submittal of a "Marie Canyon Recreation Area Management Plan" at the time a Notice of Impending Development is submitted for the construction of the new sports field in Marie Canyon, north of Huntsinger Circle Drive. The requirements for the preparation of the plan set forth in the suggested modification include final specifications for the siting and layout of the field and restrooms within the Marie Canyon Recreation Area and specified management practices for the proposed four-acre grass turf area necessary to protect ESHA and water quality.

Staff recommends therefore that the Commission **deny** the proposed Pepperdine University LRDP Amendment 1-11, Part B, as submitted and **approve** the amendment subject to suggested modifications. The **motions to accomplish this commence on Page 4** of this staff report. The standard of review for the proposed amendment to the certified LRDP, pursuant to Sections

30605 and 30512(c) of the Coastal Act, is whether the LRDP, as amended, meets the requirements of and is in conformance with the Chapter 3 policies of the Coastal Act.

For additional information or for instructions on submitting written comments, contact Melanie Faust at the North Coast District Office at (707) 826-8950.

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Substantive File Documents: Pepperdine University Long Range Development Plan (originally certified in 1990), as amended.

EXHIBITS

Note: Some exhibits may appear in color as part of the on-line staff report available at the Commission's web site: www.coastal.ca.gov

Exhibit 1. Regional Map
Exhibit 2. Malibu Area Map
Exhibit 3. Aerial View of Pepperdine University & Malibu Area
Exhibit 4. Campus Life Project Component 5 Boundary, including Recreation Area
Exhibit 5. Recreation Area Proposed Layout
Exhibit 6. Profile View – Recreation Area
Exhibit 7. Qualite International Series field light specification
Exhibit 8. Visibility from Trail Corridors north of Recreation Area
Exhibit 9. Visual Simulation of Recreation Area View from Trail Corridor
Exhibit 10. View of Marie Canyon Recreation Area Site from Pacific Coast Highway
Exhibit 11. Existing Globe Lights Proposed for Replacement in LRDPA 1-11, Part A
Exhibit 12. Memorandum of Commission staff ecologist Jonna Engel, Ph.D., August 23, 2013

I. MOTIONS AND RESOLUTIONS

A. DENIAL OF LRDP AMENDMENT CERTIFICATION AS SUBMITTED

Motion I:

I move that the Commission certify the Pepperdine University Long Range Development Plan Amendment LRDP-1-11, Part B, as submitted.

Staff Recommendation for Denial:

Staff recommends a **NO** vote. Following this staff recommendation will result in failure of this motion to pass, denial of certification of the proposed Long Range Development Plan Amendment as submitted, and the adoption of the following resolution and findings. The motion to certify passes only by an affirmative vote of a majority of the appointed Commissioners.

Resolution to deny certification of LRDP Amendment 1-11, Part B, as submitted:

The Commission hereby denies certification of the Pepperdine University Long Range Development Plan Amendment 1-11, Part B, and adopts the findings set forth below on the grounds that the Long Range Development Plan Amendment as submitted is inconsistent with the requirements of Chapter 3 of the Coastal Act. Certification of the LRDP Amendment as submitted would not comply with the California Environmental Quality Act because there are feasible mitigation measures or alternatives that would substantially lessen the significant adverse effects that the approval of the Plan would have on the environment.

B. CERTIFICATION OF THE LRDP AMENDMENT WITH SUGGESTED MODIFICATIONS

Motion II:

I move that the Commission certify Pepperdine University's LRDP Amendment 1-11, Part B, if it is modified as suggested in the staff report.

Staff Recommendation to Certify the Amendment with Suggested Modifications:

Staff recommends a **YES** vote. Passage of this motion will result in certification of the Long Range Development Plan Amendment only if modified as suggested. The motion to certify passes only by an affirmative vote of a majority of the appointed Commissioners.

Resolution to certify LRDP Amendment 1-11, Part B, with Suggested Modifications:

The Commission hereby certifies the Pepperdine University Long Range Development Plan Amendment 1-11, Part B, if modified as suggested, and adopts the findings set forth below on the grounds that the LRDP, as amended and as modified, is consistent with

Chapter 3 of the Coastal Act. Certification of the LRDP Amendment if modified as suggested complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the LRDP Amendment on the environment, or 2) there are no further feasible alternatives and mitigation measures that would substantially lessen any significant adverse impacts of the LRDP Amendment on the environment.

II. SUGGESTED MODIFICATIONS

The Commission hereby suggests the following modifications to the proposed Pepperdine University Long Range Development Plan Amendment 1-11, Part B, which are necessary to make requisite Coastal Act consistency findings discussed in Section IV, below. If Pepperdine University accepts and agrees to each of the suggested modifications within six (6) months of Commission action, LRDP Amendment 1-11, Part B, will become effective upon Commission concurrence with the Executive Director's finding that this acceptance has been properly accomplished.

New text recommended by Commission staff is shown in <u>underline</u>. Other suggested modifications that do not directly change LRDP text, such as directives, are shown in 12-pt. *italics*.

Suggested Modification 1:

The sixth bullet of the policy recitations in the LRDP "Visual Resources" section shall be revised as shown below

- Campus Lighting

(A) Existing "globe" style outdoor light installations throughout the campus should be replaced with new light fixtures designed to minimize sky glow and light trespass in adjacent areas. In accordance with the University's proposal pursuant to LRDP Amendment 1-11, concurrent with the implementation of the "Campus Life Program" development, all existing "globe" style outdoor light installations throughout the campus shall be replaced with modern light fixtures designed to minimize sky glow and light trespass in adjacent areas, consistent with the provisions of Section B below, in accordance with the schedule and locations proposed by the University and appended to the LRDP.

(B) New outdoor campus lighting shall be designed to achieve the minimum degree of illumination necessary for public safety. Lighting shall be downward directed, shielded, energy efficient, dark-sky-compatible, and shall incorporate state-of-the-art improvements in lighting technology when replaced thereafter. Replacement bulbs or fixtures shall be upgraded to incorporate best available technology over the life of the installation. Where safety goals would be adequately met without overhead lighting, such as along pathways, ground-level directive lights or standards less than three feet in

height shall be used. Campus lighting shall be designed to minimize light trespass into adjacent non-target areas, and to limit the illumination of campus open space and sensitive habitat areas to the maximum extent feasible. Programmable timing devices shall be utilized to turn off unnecessary lights where feasible.

(C) All new field lighting of athletics facilities shall be limited to the main campus area that includes only the Tari Frahm Rokus Field, Stotsenberg Track, and Eddy D. Field Baseball Stadium within the approved location of these facilities as of August 2013, and installed and maintained with "Qualite" or a superior, state-of-the-art technology designed to dark-sky-compatible standards. Lighting shall be minimized, directed downward, and shielded using the best available visor technology and pole height design to minimize light spill, sky glow, and glare impacts to public views to the maximum extent feasible. Replacement components shall be of at least equal or superior quality to the original installations. All sports lighting shall be designed to minimize light trespass into adjacent non-target areas, and to limit the illumination of adjacent open space and sensitive habitat areas.

Suggested Modification 2:

The following shall be included as a new bulleted policy within the ESHA section of the certified LRDP:

At the time a Notice of Impending Development (NOID) is submitted for development in Marie Canyon, north of Huntsinger Circle Drive, a "Recreation Area Management Plan" shall be included in the submittal and shall at a minimum include the specifications listed below. If, for any reason, such a plan is not submitted with the NOID, it shall be appropriate for the Commission to condition the NOID to preclude commencement of development until a plan meeting the following requirements is submitted:
(1) The Recreation Area in Marie Canyon shall be limited to day use, and no night lighting, whether temporary or permanent, shall be installed.
(2) The location of the 1,600-sq.-ft. restroom/storage building shall be at the southeastern portion of the Recreation Area, immediately adjacent to " Facility J" (or the "Page Terrace Parking Lot" as it is otherwise known in August 2013), east of the Recreation Area;
(3) The orientation of the day-use playing field within the Recreation Area may be adjusted from time to time within the boundaries of the Recreation Area as necessary to maintain field conditions;
(4) Management of grass turf within the Recreation Area shall be performed in accordance with the following requirements:

- Rodenticides containing any anticoagulant compounds (including, but not limited to, Warfarin, Brodifacoum, Bromadiolone or Diphacinone) shall be prohibited.
- Use of pesticides and herbicides shall be minimized.
- Integrated Pest Management shall be implemented, which may include use of appropriate biopesticides, lining the playing field to exclude rodents, etc.

- Efficient irrigation or other management practices shall be used, to eliminate runoff from turf during the dry season or during extended dry periods during the rainy season.
- Grass cultivars that are pest-resistant shall be used.

(5) Paving such as walkways, shall use permeable pavement;
(6) Stormwater runoff from the playing field shall be infiltrated, detained, or retained on-site for each storm event, up to and including the 85th percentile, 24-hour storm event.
(7) If a turf field is not planted, or is discontinued in the future, the University shall submit a landscaping plan to supplement the Recreation Area Management Plan, for Executive Director review and approval, that utilizes a palette of locally native fire retardant plants that are drought tolerant and require less application of pesticides, herbicides, and water, and shall implement the approved plan.

III. PROCEDURAL REQUIREMENTS

A. STANDARD OF REVIEW

The standard of review for the proposed amendment to the certified LRDP, pursuant to Sections 30605, 30512(c), and 30514(b) of the Coastal Act, is that the proposed amendment must meet the requirements of and be in conformance with the Chapter 3 policies of the Coastal Act.

Pursuant to Section 13551(b) of Title 14 of the California Code of Regulations ("14 CCR"), the University's resolution for submittal must indicate whether the LRDP amendment will require formal adoption by the Board of Regents after the Commission approval, or if it is an amendment that will take effect automatically upon the Commission's approval pursuant to Coastal Act Sections 30512, 30513 and 30519. Because this approval is subject to suggested modifications by the Commission, the University must act to accept the adopted suggested modifications for the LRDP amendment to become effective. In addition, pursuant to 14 CCR section 13537(b), the University must do so within six months from the date of Commission action on this application. Finally, the other requirements of 14 CCR Section 13547, which provides for the Executive Director's determination that the University's action is legally adequate, must occur before the LRDPA shall be effective.

B. NOTICE OF IMPENDING DEVELOPMENT

Section 30606 of the Coastal Act and 14 CCR sections 13547 through 13550 govern the Coastal Commission's review of subsequent development where there is a certified LRDP. Section 13549(b) requires the Executive Director or his designee to review the notice of impending development (or development announcement) within ten days of receipt and determine whether it provides sufficient information to determine if the proposed development is consistent with the certified LRDP. The notice is deemed filed when all necessary supporting information has been received.

Pursuant to 14 CCR Section 13550(b)-(d), within thirty days of filing the notice of impending development, the Executive Director shall report to the Commission the pendency of the development and make a recommendation regarding the consistency of the proposed development with the certified LRDP. After public hearing, by a majority of its members

present, the Commission shall determine whether the development is consistent with the certified LRDP and whether conditions are required to bring the development into conformance with the LRDP. No construction shall commence until after the Commission votes to render the proposed development consistent with the certified LRDP.

Pepperdine has not processed any notices of impending development concurrently with the LRDP Amendment Request 1-11.

C. PUBLIC PARTICIPATION

Section 30503 of the Coastal Act requires public input in preparation, approval, certification and amendment of any LRDP. The University held public hearings (recognized through the Los Angeles County Conditional Use Permit hearings) and received written comments regarding the projects from public agencies, organizations and individuals. The hearings were duly noticed to the public consistent with 14 CCR Sections 13552 and 13551, which require that notice of availability of the draft LRDP amendment (LRDPA) be made available six (6) weeks prior to the Regents' approval of the LRDP amendment. Notice of the subject amendment has been distributed to all known interested parties. A detailed narrative of Pepperdine University's outreach efforts associated with the Campus Life Project has been provided by Pepperdine staff.

IV. FINDINGS AND DECLARATIONS

The standard of review applied by the Coastal Commission in evaluating the University's request to amend the LRDP is the Chapter 3 policies of the Coastal Act. The following findings support the Commission's rejection of the LRDP amendment as submitted and approval of the LRDP amendment if modified as suggested in Section II above (*Suggested Modifications*). The Commission hereby finds and declares as follows:

A. AMENDMENT DESCRIPTION AND SETTING

Pepperdine University's 830-acre Malibu campus is located west of Malibu Canyon Road and north of (and immediately adjacent to) Pacific Coast Highway (see Exhibits 1 – 3). The Malibu Country Estates subdivision shares the southeastern border of the campus (Exhibit 4), and open spaces surround most of the remainder. The southern portion of the campus is bounded by (but not included in) the City of Malibu; the entire campus and areas to the north are located within unincorporated Los Angeles County (see Exhibit 3). The entire campus is also located within the coastal zone, and as such, development on the campus is subject to the Coastal Commission's review authority pursuant to the University's certified Long Range Development Plan, which was effectively certified in 1990 (see also Background, Section B below).

LRDP amendment request 1-11, Parts A and B

In August 2012, the University submitted a complete amendment request, LRDP Amendment #1-11, to incorporate the University's Campus Life Project in the LRDP. In October 2012, the Commission extended the time for review of the amendment request for one year. In November 2012, Part B of the amendment was separated from the larger Part A of the amendment by mutual agreement between Pepperdine staff and Commission staff, to allow additional time for Commission staff to further analyze the potential visual and habitat impacts associated with the

placement of stadium type lighting on the periphery of the campus adjacent to chaparral ESHA, which was within Part B. Part A was conceptually approved by the Commission in December 2012.

Part B: Stadium-type lights and night use of Marie Canyon playing field; final design and location of features and structures; turf management

Among other components of the University's Campus Life Project, Part A conceptually authorized a new recreational area with a day-use recreational sports playing field in Marie Canyon, north of Huntsinger Circle Drive (Exhibits 4 and 5). The University proposes in Part B to authorize the installation of new, permanent, stadium-type field lighting at the Marie Canyon playing field (Exhibits 6 and 7). The installation of the sports lighting would allow year-round night use of the facility.

The field lights that the University proposes to install at the Marie Canyon site would consist of six, 80-ft. high poles with four shielded, angled Qualite International-brand fixtures per pole (Exhibit 7). Each fixture would use 1500 watts for a total of 6000 watts of lighting power per pole and 36000 watts of maximum lighting power for the full bank of lights, as proposed by the University. The light poles would be placed on a new fill pad authorized by the Commission in Part A, at a maximum finished elevation of 565 feet above sea level; the lights would therefore be mounted at an elevation-equivalent of 645 feet above sea level (Exhibit 6).

Part B of the amendment request also includes determination of the final location, layout and management of the Marie Canyon recreation area features conceptually authorized by the Commission pursuant to Part A of the University's amendment request (Exhibit 6).

Comparative locations of campus field lighting

The Marie Canyon playing field is one of three locations proposed by the University for the installation of new, high performance, stadium-type field lights on the campus. The Commission has previously authorized the replacement of the existing field lights at the existing soccer field and track (the Tari Frahm Rokus Field and the Stotsenberg Track) as part of Part A of the University's Campus Life Project LRDP amendment request, and at the existing baseball field (the Eddy D. Field Baseball Stadium) located next to the soccer field and track, through the initial LRDP certification in 1990. The authorized new soccer and baseball field lights have not yet been installed by the University (some older style lights exist at these fields) and require submittal of a Notice of Impending Development prior to construction.

The soccer and baseball fields are located within the core of the developed area of the campus, on the interior side of Huntsinger Circle and John Tyler Drive, near the main campus administration facilities. There, the central campus sports complex includes the existing soccer field and track, and the baseball field, as well as the campus pool, tennis courts, and other sports and event facilities. The site of the main campus playing fields, where the University intends to install the authorized new stadium-type field lights once sufficient private sponsorship has been secured, has been in continuous use for sports since the campus opened in 1972.

Marie Canyon ESHA and Open Space
The Marie Canyon site, unlike the main campus site authorized for stadium-type sports lighting, is surrounded on three sides by dense chaparral vegetation, which constitutes an environmentally sensitive habitat area (ESHA), and which extends offsite to the north as part of a much larger contiguous chaparral habitat area. Moreover, the chaparral ESHA is located entirely within an area designated as 'Open Space' pursuant to the certified Pepperdine Long Range Development Plan (LRDP). A memorandum prepared by Commission staff ecologist Jonna Engel, Ph.D., included as Exhibit 12, includes an analysis of the habitat value of the area surrounding the Marie Canyon sports field site and a determination that the site constitutes ESHA.

Marie Canyon – views from trails
In addition to the Marie Canyon site's proximity to ESHA, the site is also visible from several locations along a public trail located approximately 2000 feet to the north of the Marie Canyon Field site. A visual simulation of the Marie Canyon playing field, as viewed from one such trail location, has been provided by the University and is included as Exhibits 8 and 9. As discussed below, the new, high performance lower campus sports complex field lights (that have not been installed yet) would be restricted to days and hours of use, and never used after 10 p.m. on any night, pursuant to a mutual agreement of the University and the Malibu Country Estates subdivision homeowners group, as reported by the University. The lights proposed for the Marie Canyon location, while located more than half a mile northeast of the subdivision and central campus sports complex, and much closer to the trail corridors above the campus, would not be so restricted.

B. BACKGROUND

Pepperdine University acquired a portion of the lands that would become the Malibu campus in 1968, adding additional acreage later. In 1969, Los Angeles County approved a zone change to allow the campus site to be used for educational purposes. In 1972, the Planning Commission approved a Conditional Use Permit for the expansion of the University's facilities. Specific Plans for campus development were not adopted under the Conditional Use Permit until December 30, 1976.

Under the Coastal Act of 1976, the campus came under the jurisdiction of the Coastal Commission. The University applied for a claim of vested rights for all facilities shown on the 1976 Specific Plan. The claim of vested rights to complete the remainder of the facilities under the 1976 Specific Plan was denied by the South Coast Regional Commission in June 1977. An appeal of this decision to the State Commission resulted in a finding of no substantial issue, leaving the denial in place.

On September 12, 1989, the Commission considered the Pepperdine University Long Range Development Plan (LRDP) for the University's 830-acre Malibu campus. In its action, the Commission denied the LRDP as submitted and approved it with suggested modifications necessary to bring the LRDP into conformance with the Coastal Act. These modifications related to public coastal access, hazards, visual resources, marine resources, and environmentally sensitive habitat protection. The Commission adopted findings for the September action on January 11, 1990. On February 7, 1990, the Pepperdine University Board of Regents acknowledged the receipt of the Commission's certification and agreed to the terms of the

modifications of the LRDP. On April 12, 1990, the Commission concurred with the Executive Director's determination that the Board's action accepting the certification was legally adequate and sent such determination to the Secretary of Resources, thereby effectively certifying the LRDP.

The Commission approved coastal development permits for some campus development prior to certifying the LRDP. Since certification, the Commission has approved numerous amendments to the LRDP. The Campus Life Project (LRDP amendment request 1-11) includes new housing, sports facilities, parking and social spaces, and is the University's most recent LRDP amendment request submittal of record.

C. REVIEW OF PROPOSED LIGHTS AS NEW DEVELOPMENT

The University acknowledges that the proposed installation of sports field lighting (Part B) at the authorized Marie Canyon playing field (Part A) would introduce a significant new permanent source of night lighting to the canyon setting. The University asserts, however that the appropriate way to consider the potential impacts of the potential light emissions of the proposed (Part B) field lights is by comparison with light emissions presently produced by existing development in the same general location of Marie Canyon. The University asserts on this basis and as discussed further below that the proposed new field lights (Part B) would produce lower levels of light pollution in the subject Marie Canyon location, when compared with the existing light sources (which must be completely removed to construct the authorized new playing field before the new lights could be installed).

The University concludes on this basis (comparing baselines of "existing" and "proposed" light emissions in Marie Canyon), as discussed below, that the proposed (Part B) field lights would provide a net reduction in the amount and intensity of light thereby providing a net benefit to the Marie Canyon environment. The University further concludes that, having reached this conclusion, the direct contributions of the proposed new lights to the Marie Canyon environment are not relevant, and the lights should be approved on that basis under any standard of environmental impact analysis or application of the Chapter 3 policies of the Coastal Act.

However, the existing Marie Canyon field lights were installed in 1984 without any Coastal Act authorization, whether by coastal development permit or through an LRDP amendment and notice of impending development. Moreover, regardless of the unpermitted nature of the existing field lights, the complete removal of the existing field and construction of the new pad and substantially larger field (as authorized pursuant to LRDP Amendment 1-11. Part A) constitutes complete redevelopment of the site. Therefore, the Commission must treat the new proposed field lighting as new development and evaluate the impacts of that lighting as compared to an undeveloped site with no artificial light. Stated differently, the existing lights cited by the University are not an appropriate "baseline" against which to evaluate the proposed Part B field lights.

The University's "baseline" comparison method

The University asserts that the ambient light emitted at night by existing development in Marie Canyon, as measured by an architectural lighting consultant retained by the University (Francis Krahe & Associates), establishes a "baseline" of ambient light conditions in the subject area of

Marie Canyon, north of Huntsinger Circle Drive. The University states that the University's consultant has measured the light levels at night when all sources of lighting that may currently affect the site are in use at full power to establish the "existing baseline" night lighting conditions in Marie Canyon.

The University has also explained that the University's lighting consultant separately modeled the light emissions that the consultant estimates would be produced by the operation of the proposed (Part B) field lighting ("Qualite International" brand fixtures, with specified wattages and mounted at specified heights and locations, see Exhibits 4 – 7) as proposed by the University for installation at the Marie Canyon playing field site. The resultant model establishes the "proposed baseline" theoretically superimposed by the University's consultant on the proposed site based on the "Qualite" specifications, for comparison. The University's consultant has thus compared the measured "existing baseline" of the Marie Canyon playing field site with the modeled "proposed baseline" and concludes that the proposed baseline would produce a net benefit to the Marie Canyon setting by reducing the amount of light pollution at the site, as compared with the "existing baseline."

The University's calculation of the existing baseline conditions in the subject area of Marie Canyon thus relies on the contributions of existing development in Marie Canyon to form the "existing baseline" of light emissions at the subject site. The University's consultant acknowledged that a nearby parking lot on the east side of the site contributes a small amount of light, but that most of the light pollution contributed by existing conditions is emitted by a set of four outdoor field lights presently located on the western side of Marie Canyon, north of Huntsinger Circle Drive, in the same general location authorized for the future Marie Canyon playing field. As well, most of the parking lot lights contributing measurable light to the consultant's measurements would be removed along with all of the existing field lights to construct the authorized Marie Canyon fill pad and recreation area (Part A), before proposed lights (Part B) could be installed.

Pre-existing field lighting in Marie Canyon

The University has stated that the existing field lights in Marie Canyon (the lights contributing to the "existing baseline") were installed by the University in 1984 without the required coastal development permit. The University states that the lights were placed around the perimeter of an arena used by the University's on-campus equestrian program from approximately 1981 until the program was eliminated in 1999. The subject site does not have electrical service; therefore, the lights have always required the use of a diesel-fueled generator as a power source.

The University states that in the years since the on-campus horse program ended in 1999, the administration has allowed intramural recreational use of the former arena (and converted the former barn south of Huntsinger Circle Drive to maintenance facility use). The University states that the lights still require the use of a generator and that the area is used by the campus community upon request through a sign-up system administered by the campus recreation department. Only groups including someone qualified to run the generator are allowed to use the site at night, according to the campus recreation department, and then only until 10 p.m.

The University's recreation department information explains that most of the campus intramural and club sports teams use other campus facilities and off-campus locations (such as beaches, parks and mountain trails). The University acknowledges that the former arena site (which has a flat area about 100 feet wide by 200 feet long, with sparse turf) is substandard for most organized intramural and club team sports. A visit to the site by Commission staff on October 30, 2012, and on August 7, 2013, confirmed that the conditions of the informal field do not appear to indicate regular use.

The University's lighting consultant, however, has compared the existing light levels, which are produced primarily by the remaining arena lights according to the consultant (the University states that the remaining metal halide lights operate with a maximum combined bank of 8000 watts of lighting power, and that the lights are horizontally mounted, two 1000-watt lights per pole, on four, 28-ft. high poles) with the proposed (Part B) lights (which would operate with a combined bank of 36,000 watts of lighting power around a 240-foot by 340-foot playing field, with lights mounted on six, 80-ft. high poles, 6000 watts of lighting power per pole). The consultant has determined that the proposed lights would nevertheless produce lower light emissions than the existing field lights. The University attributes this difference primarily to the improved Qualite design, with shielded and downward-directed fixtures.

University's Proposed Marie Canyon field lighting constitutes new development
The University acknowledges that the existing Marie Canyon field lights were installed without the required coastal development permit, in 1984. The University further acknowledges that the existing lights have never been subject to any form of environmental impact analysis in the almost 30 years that the University has continued to use the lights. The University further acknowledges that the existing lights must be completely removed to construct the new pad that will support the Marie Canyon recreation area conceptually authorized in LRDPA 1-11 Part A. Thus, regardless of the unpermitted nature of the existing field lights, the complete removal of the existing field and construction of the new pad and substantially larger field constitutes complete redevelopment of the site. Therefore, the Commission must evaluate the new proposed field lighting as new development since the "baseline" of the existing lights cited by the University is not an appropriate basis for evaluating the proposed Part B field lights.

Moreover, an applicant is not entitled to rely on unpermitted development as a baseline in support of the approval of proposed new development. *LT-WR, L.L.C. v. California Coastal Comm'n* (2007) 152 Cal.App.4th 770, 797 ("to enable the Commission to protect coastal resources, and to avoid condoning unpermitted development, the Commission properly reviewed the application as though the unpermitted development had not occurred"). Thus, when unpermitted development has altered a site, in order to fairly evaluate the impacts of any new proposed development, the Commission has consistently taken the position that it must compare the proposed condition to the condition that would exist currently were the unpermitted development not to have occurred (See, e.g., Commission findings in support of its February 6, 2013 action on the "Substantial Issue portion" of Appeal No. A-6-ENC-11-073 (Gordon), as shown in its January 17, 2013 staff report at 12; Commission Findings in support of its January 11, 2012 action on CDP Application No. 4-08-069 (Kies), as shown in its December 22, 2011 staff report, at page 2; Commission Findings in support of its July 13, 2011 approval of CDP

Application and Appeal Nos. 2-06-18/A-2-MAR-08-028 (Lawson's Landing, Inc.), section V.D., as shown in July 12, 2011 Addendum, at page 12.)

The University asserts that the existing lights were deemed approved both through the Commission's actions (a statement in the initial, 1989 certification that "Development at Pepperdine University has been consistent with the goals, policies, rules and regulations of the County . . . and the California Coastal Commission") and its inaction (failure to object to the lights previously). However, the quote from the LRDP certification was a general statement, adopted at the time of LRDP certification for the campus as a whole, as reflected by the fact that it goes on to talk about clustering and infrastructure, not the details of specific projects. The LRDP certification was also based on plans submitted by the University, which did not show the arena or lights north of Huntsinger Circle Drive or the barn south of Huntsinger Circle Drive. It would be wholly inappropriate to interpret that language as expressing Commission support for individual components of a specific facility, especially one such as the field lighting that was not shown on any plans, and even more so given that 15 years earlier, the Commission specifically called out its approval of lighting in connection with tennis courts while simultaneously approving the initial horse facility without any mention of lighting.

Nor can the Commission's failure to take action on the lights be seen as implicit approval thereof. Such an argument is effectively an estoppel argument, and it will not lie against the Commission in a case such as this, where Commission staff was not even aware of the existence of the violation until very recently. See *Feduniak v. CCC* (2007) 148 Cal.App.4th 1346. The only thing to which the University points as evidence that the Commission should have been aware of the lights is a picture in the file from the 1997 LRDP Amendment No. 2-97, in which a light standard was visible. The lighting was not part of the application, and it was not discussed anywhere in the LRDP or the findings. The fact that this single photograph is in the file cannot reasonably be seen as evidence of the Commission intending to grant after-the-fact approval of the lighting.

Finally, the University itself seems to concede the fact that lights cannot be treated as implicit in the approval of an equestrian facility, as an assumed component, in that it argues for that status for the lights on the parking lots (letter from Pepperdine University staff dated July 29, 2013 at page 5), but it makes no such argument for the equestrian facility.

In addition to all of that, it is beyond dispute that the Commission has never reviewed the existing Marie Canyon lights, which were installed prior to certification of the LRDP in 1990. No environmental analysis of the lights was ever undertaken or presented to the Commission by the University. Finally, the University converted the existing lights and the former equestrian facilities to other uses in 1999 without processing a further LRDPA for that change. The night use of the facilities and installation of lights would have been reviewed had such an amendment request been submitted for Commission consideration.

Moreover, even if the University had secured necessary approvals for the 1984 riding ring lights, removal of the lights is necessary to construct the proposed project by the University's own admission. The existing pad, informal intramural field, fencing, lights, and all other existing development in the subject area of Marie Canyon must be completely removed, and the site

regraded, to construct the approved Part A development before the proposed Part B lights could be installed. In addition, electrical service must be extended to an area where such service has not previously been available, to power the proposed new lights (the lights are too powerful to be supported by the existing diesel generator, according to the University).

For all of these reasons, therefore the Commission requires the consideration of the proposed new lights (Part B) as new development and rejects the University's argument that impacts resulting from the new lights must be compared with a baseline of site disturbance arising from a history of unpermitted development at the subject site.

In considering Part B by this standard, as new development, Commission staff ecologist Jonna Engel, Ph.D. has determined that proposed new lights represent a significant and adverse threat to the environmentally sensitive resources of Marie Canyon and beyond. The results of her analysis are set forth in a memorandum attached hereto as Exhibit 12. In addition, the University has acknowledged that the proposed Part B field lights would be visible from publicly-used trail corridors at elevations above, and generally north of, the subject site (Exhibits 8 and 9).

D. ENVIRONMENTALLY SENSITIVE HABITAT AREA

Section 30240 of the Coastal Act states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
>
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Section 30107.5 of the Coastal Act defines "environmentally sensitive habitat area" as:

> *…any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.*

Section 30230 of the Coastal Act states that:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30231 of the Coastal Act states that:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where*

feasible, restored through, among other means, minimizing adverse effects of waste water discharges- and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Setting and Proposed Development

The campus of Pepperdine University occupies 830 acres located along the lower south flank of the Santa Monica Mountains immediately north of Pacific Coast Highway and approximately one-half mile from the Pacific Ocean. The campus is built on coastal terraces and foothills and is surrounded by steep and rugged mountains with narrow north-to-south flowing creeks and associated ridges and canyons. The majority of the campus lies in the Marie Canyon watershed, and much of the lower reach of Marie Canyon was filled to construct the existing campus, where the riparian drainages have been confined and now run underground beneath the campus through a series of storm water conveyances commencing with the existing retention basin north of Huntsinger Circle Drive (the location of the Marie Canyon Recreation Area authorized in LRDP Amendment 1-11, Part A) and draining ultimately to the Pacific Ocean downgradient of the campus. The campus lands are bounded by large blocks of undeveloped public and private land including the open space dedicated and owned by the University and Malibu Creek State Park. The southwestern boundary of the campus is shared with the Malibu Country Estates Subdivision. (See Exhibits 1 – 4).

As described above, LRDP Amendment 1-11, Part A, approved by the Commission with suggested modifications last December included almost all of the University's "Campus Life Project" – a mix of projects designed to improve and expand campus housing, sports facilities, parking, and social spaces on the main, "lower campus." (The "upper campus" or "Drescher Graduate Campus" constructed in 2002 was not included in the Campus Life Project.) Among the Part A Campus Life Project components was a proposal to construct Campus Life Project Component 5, a "Recreation Area" in Marie Canyon, north of Huntsinger Circle Drive. The Recreation Area as authorized conceptually by the Commission in approving Part A (with suggested modifications) would eventually contain a four-acre flat surface landscaped with irrigated turf, providing mainly for a 240-ft. by 340-ft. regulation sized sports playing field and a 1,600-ft. restroom/storage building. (See Exhibits 4 – 6).

Part B of the LRDPA 1-11 includes the University's proposal to install a set of new, permanent high-performance, stadium-type outdoor sports lights for the Marie Canyon playing field authorized in Part A (Exhibits 6 and 7), and the use of the field at night. Part B also includes final design, siting and orientation of the recreational amenities, and management of the turf area.

Unlike the other Campus Life Project components located within the central developed areas of the campus, Component 5 included development in an area at the periphery of the campus, where limited disturbance for a retention basin and stockpile site with driveway and some parking is presently authorized and used mostly by day. In the subject location of Marie Canyon, the development associated with the main developed campus is separated by Huntsinger Circle Drive immediately south of the Recreation Field location. Most of the campus sports facilities

are located within a central area that includes the baseball field, track, soccer field, swimming pool, tennis courts, and fieldhouse (see Exhibit 4).

Day-use facilities authorized for the Recreation Area in Part A include construction of a fill pad with other campus construction cut material, and eventually completing the pad to a flat surface area of about four acres in size, at a maximum finished elevation of 565 feet above sea level. The construction of a 240-ft. by 340-ft. playing field for Pepperdine's intramural and club sports program - and a 1,600 sq. ft. restroom/storage building on the southeastern portion of the site was authorized at the Marie Canyon Site pursuant to the Commission's approval of LARP Amendment 1-11, Part A. However, no field lights were authorized as part of that amendment.

The amendment was divided into two parts last November – the larger Part A, and the specific proposal in Part B to install new, permanent high performance outdoor stadium-type lights at the Marie Canyon playing field to allow night use of the facility. Part B was separated to allow additional time for staff review of potential risks the sports lights and night use of the Marie Canyon playing field posed to visual and ESHA resources.

The Marie Canyon site, unlike the main campus site authorized for stadium-type sports lighting, is surrounded on three sides by dense chaparral vegetation, which constitutes an environmentally sensitive habitat area (ESHA), and which extends offsite to the north as part of a much larger contiguous chaparral habitat area. Moreover, the chaparral ESHA is located entirely within an area designated as 'Open Space' pursuant to the certified Pepperdine Long Range Development Plan (LRDP). A memorandum prepared by Commission staff ecologist Jonna Engel, Ph.D., and included as Exhibit 12, includes an analysis of the habitat value of the area surrounding the Marie Canyon sports field site and a determination that the site constitutes ESHA.

Analysis

Commission staff ecologist Jonna Engel, Ph.D., has reviewed the environmental setting of the subject Marie Canyon site, including on a site visit on October 30, 2012, and the University's proposal in LRDPA 1-11 Part B to construct new, permanent outdoor sports lighting and to allow night use of the Marie Canyon playing field for intramural and club team sports. Dr. Engel recently completed a memorandum dated August 23, 2013 (included as Exhibit 12), summarizing the results of her review.

Dr. Engel's memorandum confirms her initial impression (during a site visit by staff last fall) that the canyon slopes adjoining the Recreation Area site and nearby environs support chaparral ESHA, and that the ESHA of the immediate canyon location is connected to contiguous areas of habitat and large expanses of protected open space (University lands and Park lands) and habitat areas of regional importance (such as for wildlife corridors). Dr. Engel was requested by staff to determine if ESHA existed at the site, whether the introduction of the proposed field lighting and the night use of the site would affect the Marie Canyon ESHA, and to make recommendations regarding any measures that might reduce the project's adverse effects on sensitive resources. Dr. Engel additionally confirmed that the habitat of concern meets the characteristics identified by Commission staff ecologist John Dixon for designation of ESHA in the Santa Monica Mountains set forth in a memorandum prepared by Dr. Dixon, dated March 25, 2003.

In response, and as reported in her memorandum included in Exhibit 12, Dr. Engel has determined that the subject Marie Canyon location proposed by the University for the installation of new, permanent playing field lights and night use of the site made possible by the installation of the subject lights, is located immediately adjacent to steep canyon slopes supporting chaparral ESHA contiguous to broader expanses of ESHA. The continuous habitat reaches to the protected open spaces and parklands generally north of the Marie Canyon playing field site.

Dr. Engel determined (Exhibit 12) that the habitat in and adjoining the Marie Canyon area under review is comprised of "unfragmented and continuous relatively pristine native habitat in the Santa Monica" which the Commission has determined since 2003 constitutes ESHA in the Santa Monica Mountains. Dr. Engel determined that the western, northern, and eastern slopes surrounding the subject Marie Canyon area ("Component 5" of the Campus Life Project) support habitat that meets the three tests for ESHA in the Santa Monica Mountains:

1) The slopes are properly delineated as supporting coastal sage scrub and chaparral habitats;
2) The habitats are undisturbed and nearly pristine stands of native plant communities;
3) The habitats are large areas that in turn connect to large, contiguous blocks of undeveloped and relatively pristine habitat.

Dr. Engel has further observed in her memorandum that: "It is the unique position and surroundings of the Component 5 site that set it apart from other sports fields on the Pepperdine University campus. The Component 5 site is positioned like a bowl or amphitheatre against the slopes of the Santa Monica Mountains at the apex and northern-most edge of campus; at the urban-rural (artificial light-natural light) boundary. The slopes surrounding the Component 5 site support native habitat that rises to the level of ESHA that in turn supports numerous native animals. Because of its topographical setting the Component 5 site is actually more isolated that a plan-view map would suggest. Animals within and around the Component 5 site, especially at night, experience the area generally as an uninhabited and natural area suitable for conducting animal business as usual."

Dr. Engel's memorandum contains a detailed explanation of the way light energy is perceived by human receptors and animal receptors, which varies considerably in ways that make clear the significant and adverse impacts on wildlife that night lighting in the subject Marie Canyon location is likely to cause. Dr. Engel also explains the hazard that such lighting in the Marie Canyon location poses for migratory birds using the Pacific Flyway. Dr. Engel explains that: "The main concern with artificial night lighting at the new intramural field is its location at the outer edge of campus at the urban-rural (artificial light-natural light) boundary and the potential for night migrating birds to become confused and attracted to the lights during inclement/foggy weather. Most migratory movement occurs early in the evening so any impacts to migrating birds due to the intramural field night lighting are likely to occur during the first two to three hours after sunset. Birds that migrate at night use the moon and stars for navigation. During clear weather they appear to be able to distinguish artificial lighting from light emanating from the planets and stars. However, during inclement weather, birds can become confused and drawn to artificial lights. This phenomenon has been observed on numerous occasions at lighted buildings, oil platforms, and athletic fields. Once drawn into an artificial light source a number

of negative outcomes including mortality can occur; birds may crash into something, circle the light source becoming exhausted, or become confused and drawn off course."

Dr. Engel has also reviewed the lighting analyses prepared by Pepperdine University's architectural lighting consultant (Francis Krahe & Associates). Dr. Engel's memorandum explains that the methodology used by the consultant in concluding that the proposed sports field lighting at Marie Canyon would not affect wildlife lacks analysis specific to light impacts upon wildlife and does not evaluate the unique location and topography of the Component 5 area.

As Dr. Engel notes in her memorandum (Exhibit 12), the University states that a "line" measuring the extent of the offsite limit of light trespass determined by the 0.1 footcandle line would approximate the limits of a "full moon"--equivalent standard. A "footcandle" (fc) is the American unit used to measure the total amount of light cast on a surface (illuminance) is the footcandle (fc). One footcandle is equivalent to the illuminance produced by a source of one candle at a distance of one foot. For example, the full moon produces .01 fc (fc are measured with a light meter). One footcandle is approximately equal to ten (10) lux, the metric unit also used to measure illuminance.

As noted above, the University retained an architectural lighting consultant to estimate the extent of light trespass beyond the authorized Marie Canyon playing field that would be produced by the Part B lights. The consultant determined that light trespass described as a full-moon equivalent would not extend beyond the targeted playing field area if the new Part B field lights are installed as prescribed (Exhibit 6 and 7); however, the accurate standard for describing a full-moon equivalent of lighting is actually 0.01 footcandles, suggesting that the area around the Part B lights the University describes as approximating the natural light of a typical full moon may actually be significantly brighter than a full moon, and would in any case represent the light impact of the brightest possible full moon on a clear night, every night (the University projects year-round, nightly use of the Marie Canyon playing field once the proposed Part B lights are installed). This impact is significant for wildlife use of the subject playing field area and of the environmentally sensitive habitat surrounding much of the Marie Canyon Marie Canyon site.

As more fully explained in Dr. Engel's memorandum, "adverse impacts to wildlife in the surrounding Marie Canyon ESHA from artificial night lighting, such as the proposed field lights, are expected to include increased disorientation, disruption of foraging patterns, increased predation risk, disruption of biological clocks, increased mortality on roads, and disruption of dispersal movements through artificially lighted landscapes."

Dr. Engel continues, "In addition, the artificial night lighting at the new intramural field is its location at the outer edge of campus at the urban-rural (artificial light-natural light) boundary and is also expected to result in adverse impacts to migrating birds who may become confused and attracted to the lights during inclement/foggy weather. Most migratory movement occurs early in the evening so any impacts to migrating birds due to the intramural field night lighting are likely to occur during the first two to three hours after sunset[1]. Birds that migrate at night use

[1] McCrary, M.D., R.L. McKernan, R.E. Landry, W.D. Wagner & R.W. Schreiber. 1982. Nocturnal Avian Migration Assessment of the San Gorgonio Wind Resource Study Area. Report Prepared for Research and

the moon and stars for navigation. During clear weather they appear to be able to distinguish artificial lighting from light emanating from planets and stars. However, during inclement weather, birds can become confused and drawn to artificial lights. This phenomenon has been observed on numerous occasions at lighted buildings, oil platforms, and athletic fields. Once drawn into an artificial light source a number of negative outcomes including mortality can occur; birds may crash into something, circle the light source becoming exhausted, or become confused and drawn off course."

Two other recent examples of Commission review of outdoor sports lighting proposals (Beach Chalet, at Golden Gate Park in San Francisco, and Malibu High School field lights) are also detailed and further discussed in Dr. Engel's memorandum, which explains why the proposed outdoor sports lighting proposed by the University for installation at the Marie Canyon poses a much more significant threat to ESHA, wildlife and migratory birds.

Finally, Dr. Engel recommends among other things that alternatives to the Marie Canyon playing field night use would be found by identifying other campus locations (such as Alumni Park) with space suitable for additional day-use playing fields. This is also addressed in the "Alternatives" section below. Dr. Engel concludes that night use of Marie Canyon by made possible by the University's proposed installation and use of new, permanent high performance stadium-type artificial outdoor lighting would pose an unacceptable, significant and adverse threat to environmentally sensitive habitat and to sensitive species.

Conclusion

For the reasons set forth above, and as more fully described in Dr. Engels memorandum attached as Exhibit 12 of this staff report, the proposed development requested by the University in LRDPA 1-11, Part B consisting of installing electrical service, and new, permanent high performance stadium-type field lights in Marie Canyon, north of Huntsinger Circle Drive, and allowing night use of the Marie Canyon playing field made possible by the lights, poses a substantial risk of significant, and adverse effects upon ESHA resources of the Marie Canyon area and to broader expanses of contiguous ESHA and open spaces beyond the immediate Recreation Area site. Suggested Modification 1 in necessary in order to prohibit outdoor sports field lighting in Marie Canyon and limit such lighting to the existing sports fields on the main developed campus. Specifically, Suggested Modification 1 provides for the following:

Suggested Modification 1:

The sixth bullet of the policy recitations in the LRDP "Visual Resources" section shall be revised as shown below

- Campus Lighting

(D) Existing "globe" style outdoor light installations throughout the campus should be replaced with new light fixtures designed to minimize sky glow and light trespass in adjacent areas. In accordance with the University's proposal pursuant to LRDP

Development, Southern California Edison Company, Rosemead, California through the Los Angeles County Natural History Museum Foundation, Section of Ornithology, Los Angeles, California.

Amendment 1-11, concurrent with the implementation of the "Campus Life Program" development, all existing "globe" style outdoor light installations throughout the campus shall be replaced with modern light fixtures designed to minimize sky glow and light trespass in adjacent areas, consistent with the provisions of Section B below, in accordance with the schedule and locations proposed by the University and appended to the LRDP.

(E) New outdoor campus lighting shall be designed to achieve the minimum degree of illumination necessary for public safety. Lighting shall be downward directed, shielded, energy efficient, dark-sky-compatible, and shall incorporate state-of-the-art improvements in lighting technology when replaced thereafter. Replacement bulbs or fixtures shall be upgraded to incorporate best available technology over the life of the installation. Where safety goals would be adequately met without overhead lighting, such as along pathways, ground-level directive lights or standards less than three feet in height shall be used. Campus lighting shall be designed to minimize light trespass into adjacent non-target areas, and to limit the illumination of campus open space and sensitive habitat areas to the maximum extent feasible. Programmable timing devices shall be utilized to turn off unnecessary lights where feasible.

(F) All new field lighting of athletics facilities shall be limited to the main campus area that includes only the Tari Frahm Rokus Field, Stotsenberg Track, and Eddy D. Field Baseball Stadium within the approved location of these facilities as of August 2013, and installed and maintained with "Qualite" or a superior, state-of-the-art technology designed to dark-sky-compatible standards. Lighting shall be minimized, directed downward, and shielded using the best available visor technology and pole height design to minimize light spill, sky glow, and glare impacts to public views to the maximum extent feasible. Replacement components shall be of at least equal or superior quality to the original installations. All sports lighting shall be designed to minimize light trespass into adjacent non-target areas, and to limit the illumination of adjacent open space and sensitive habitat areas.

Turf management practices near ESHA; water quality protection

In addition to the recommendations of Dr. Engel, Commission staff Water Quality Program Analyst Vanessa Metz, Ph.D., has also analyzed the proposed amendment request concerning management practices for the four acres of irrigated, managed turf the University proposes to install and maintain at the Recreation Area in Marie Canyon, including the Marie Canyon playing field. Dr. Metz noted that Audubon International Society publishes "Environmental Management Practices for Golf Courses," (an undated fact sheet) from which Dr. Metz advised a subset of specific measures pertinent to the Marie Canyon Recreation Area setting, listed below, based on her expertise as a biologist and water quality specialist:

Management of grass turf within the Recreation Area shall be performed in accordance with the following requirements:

- Rodenticides containing any anticoagulant compounds (including, but not limited to, Warfarin, Brodifacoum, Bromadiolone or Diphacinone) shall be prohibited.
- Use of pesticides and herbicides shall be minimized.

- Integrated Pest Management shall be implemented, which may include use of appropriate biopesticides, lining the playing field to exclude rodents, etc.
- Efficient irrigation or other management practices shall be used, to eliminate runoff from turf during the dry season or during extended dry periods during the rainy season.
- Grass cultivars that are pest-resistant shall be used.

Dr. Metz advised that requirements tailored to the Marie Canyon setting, where pocket gophers and other rodents (which serve as a food source for raptors and other wildlife) could be a "pest" from the University's perspective when seeking to manage the proposed four acres of irrigated turf. The use of rodenticides containing anticoagulant compounds has been linked to the death of sensitive predator species, including mountain lions and raptors, in the Santa Monica Mountains. These species are a key component of chaparral and coastal sage scrub communities in the Santa Monica Mountains considered ESHA. Dr. Metz also advised that the University prepare a Management Plan incorporating the above requirements as well as the following requirements recommended generally by the Commission's water quality program staff:

- Paving such as walkways, shall use permeable pavement;
- Stormwater runoff from the playing field shall be infiltrated, detained, or retained on-site for each storm event, up to and including the 85th percentile, 24-hour storm event.
- If a turf field is not planted, or is discontinued in the future, the University shall submit a landscaping plan to supplement the Recreation Area Management Plan, for Executive Director review and approval, that utilizes a palette of locally native fire retardant plants that are drought tolerant and require less application of pesticides, herbicides, and water, and shall implement the approved plan.

Therefore, to ensure that the final design and management of the Marie Canyon Recreation Area is incorporates measures to protect ESHA and water quality on site and offsite in locations that may be affected by activities such as turf management at the Recreation Area and playing field, **Suggested Modification 2** incorporates the measures recommended by the Commission's water quality program staff as follows:

Suggested Modification 2:

The following shall be included as a new bulleted policy within the ESHA section of the certified LRDP:

At the time a Notice of Impending Development (NOID) is submitted for development in Marie Canyon, north of Huntsinger Circle Drive, a "Recreation Area Management Plan" shall be included in the submittal and shall at a minimum include the specifications listed below. If, for any reason, such a plan is not submitted with the NOID, it shall be appropriate for the Commission to condition the NOID to preclude commencement of development until a plan meeting the following requirements is submitted:
(1) The Recreation Area in Marie Canyon shall be limited to day use, and no night lighting, whether temporary or permanent, shall be installed.

(2) The location of the 1,600-sq.-ft. restroom/storage building shall be at the southeastern portion of the Recreation Area, immediately adjacent to " Facility J" (or the "Page Terrace Parking Lot" as it is otherwise known in August 2013), east of the Recreation Area;
(3) The orientation of the day-use playing field within the Recreation Area may be adjusted from time to time within the boundaries of the Recreation Area as necessary to maintain field conditions;
(4) Management of grass turf within the Recreation Area shall be performed in accordance with the following requirements:

- Rodenticides containing any anticoagulant compounds (including, but not limited to, Warfarin, Brodifacoum, Bromadiolone or Diphacinone) shall not be used.
- Use of pesticides and herbicides shall be minimized.
- Integrated Pest Management shall be implemented, which may include use of appropriate biopesticides, lining the playing field to exclude rodents, etc.
- Efficient irrigation to minimize runoff shall be implemented.
- Grass cultivars shall be selected that are pest-resistant.

(5) Paving such as walkways, shall use permeable pavement;
(6) Runoff from the playing field must be infiltrated or otherwise retained on-site (for the volume of water generated by the 85th% storm), and not flow directly to the storm drain system;
(7) Measures shall be included to reduce or eliminate dry-weather runoff from the playing field and reduce or eliminate runoff from the playing field between rain events during the rainy season;
8) If a turf field is not planted, or is discontinued in the future, the University shall submit a landscaping plan to supplement the Recreation Area Management Plan, for Executive Director review and approval, that utilizes a palette of locally native fire retardant plants that are drought tolerant and require less application of pesticides, herbicides, and water, and shall implement the approved plan.

Conclusion

To ensure that the Marie Canyon Recreation Area final design, development and management measures that will provide adequate protection of the biological productivity and quality of the Marie Canyon chaparral ESHA, wildlife corridors, migratory bird habitat, coastal streams and waters consistent with Sections 30230, 30231, and 30240 of the Coastal Act, the Commission finds it necessary to require **Suggested Modification 1 (**Restrict new field lighting to existing main campus sports complex), and **Suggested Modification 2** ("Marie Canyon Recreation Area Management Plan" requirements). These Suggested Modifications contain recommendations of Commission staff biologists and water quality specialists to restrict high performance outdoor sports field lighting to existing locations of developed sports fields located on the main Pepperdine campus and to prohibit such lights elsewhere on campus, such as in the subject area of Marie Canyon, and to thereby preserve and protect the natural night sky conditions of the chaparral ESHA of the canyon and contiguous habitat areas. In addition, Suggested Modification 2 requires the design, placement of structures and management of Marie Canyon Recreation area to be undertaken and maintained in a matter that will protect coastal water quality. Therefore, the Commission finds that LRDPA 1-11, Part B would be consistent with the

applicable policies of Chapter 3 of the Coastal Act if modified in accordance with Suggested Modifications 1 and 2.

E. PUBLIC COASTAL ACCESS AND RECREATION; VISUAL

Section 30210 of the Coastal Act states:

> *In carrying out the requirements of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Section 30213 of the Coastal Act states:

> *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.*

Section 30214 of the Coastal Act states:

(a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:
(1) Topographic and geologic site characteristics.
(2) The capacity of the site to sustain use and at what level of intensity.
(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area and the proximity of the access area to adjacent residential uses.
(4) The need to provide for the management of access areas so as to protect the privacy of adjacent property owners and to protect the aesthetic values of the area by providing for the collection of litter.
(b) It is the intent of the Legislature that the public access policies of this article be carried out in a reasonable manner that considers the equities and that balances the rights of the individual property owner with the public's constitutional right of access pursuant to Section 4 of Article X of the California Constitution. Nothing in this section or any amendment thereto shall be construed as a limitation on the rights guaranteed to the public under Section 4 of Article X of the California Constitution.
(c) In carrying out the public access policies of this article, the Commission, regional commissions, and any other responsible public agency shall consider and encourage the utilization of innovative access management techniques, including, but not limited to, agreements with private organizations which would minimize management costs and encourage the use of volunteer programs.

Section 30223 of the Coastal Act states:

> *Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.*

Section 30250(a) of the Coastal Act states:

> *(a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it, in other areas with adequate public services and where it will not have a significant adverse effect, either individually or cumulatively, on coastal resources.*

Section 30251 of the Coastal Act states:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Setting and proposed development

The Pepperdine University campus is located on a coastal terrace between the Santa Monica Mountains to the north and bluffs descending to the Pacific Ocean to the south, across Pacific Coast Highway, which borders the campus (see Exhibits 1-3). The campus enjoys an open space setting with expansive views. The northern portion of the 830-acre campus and nearby open spaces are ringed by mountain ridges and traversed by a network of popular, publicly used trails of local and regional importance, with spectacular coastal vistas. Publicly used sections of the Mesa Peak and Coastal Slope trails traverse the northern campus; these sections tie into other public roads and trails, connecting the campus lands and nearby trails to the Backbone trail – the primary trail route of the Santa Monica Mountains. To the south of the campus, across Pacific Coast Highway, the Santa Monica Mountains Conservancy-owned Malibu Bluffs parklands have recently been approved for public camping sites. The semi-rural location of the Pepperdine campus setting and surrounding open spaces are relatively unaffected by concentrated urban sources of light pollution. Night hikes are popular and offer coastal visitors a unique recreational experience.

The University proposes in LRDP Amendment (LRDPA) 1-11, Part B, to install new, permanent, high performance, stadium-type sports lights at a playing field located in Marie Canyon on the periphery of the developed campus. Construction of the field was authorized by the Commission in approving LRDPA 1-11, Part A; however, no field lighting was authorized pursuant to that action. The authorized field is located in Marie Canyon, north of Huntsinger Circle Drive. The Marie Canyon Field site is surrounded on three sides by steep slopes supporting chaparral ESHA. The chaparral habitat on site extends off campus to the north and is

part of a larger contiguous chaparral habitat area. A publicly-used trail is located on the steep slopes approximately 2,000 ft. from the field location, and at a higher elevation than the Marie Canyon playing field; the proposed lighting will be visible from several segments of the trail.

The University states that the lights at the Marie Canyon Field would consist of six, 80-ft. high poles, each with four shielded, angled "Qualite International Series" brand fixtures per pole (Exhibits 6 and 7). Each fixture would use 1,500 watts for a total of 6,000 watts of lighting power per pole, and 36,000 watts of maximum lighting power for the full bank of lights configured as proposed by the University.

The proposed lights would be installed atop a fill pad supporting the playing field authorized pursuant to Part A of LRDP Amendment 1-11, at a finished elevation (the maximum elevation authorized for the pad surface) 565 feet above sea level. The proposed (Part B) lights mounted on 80-ft. high poles would therefore extend vertically to the 645-foot elevation-equivalent. The lights would provide for night use of the authorized 240-ft. by 340-ft. playing field. The University states that the Marie Canyon playing field would only be used for recreational intramural and club sports, and that the fixtures and lights proposed for the Marie Canyon field would not be adjustable or adaptable to the higher power settings necessary for collegiate-competition sports use, such as NCAA games, televised games, or practices. This amendment will also allow for the final siting of a new 1,600 sq. ft. restroom/storage building authorized in Part A that was conceptually located southeast of the authorized playing field.

Analysis

Coastal Act Section 30251 states that new development shall be sited and designed to protect views to and along the ocean and scenic coastal areas and that scenic and visual qualities of coastal areas be considered and protected as resources of public importance. Sections 30210, 30213, 30214, 30223, and 30250 additionally require that maximum public access be provided for all of the people of the state, that development be sited and designed to avoid significant, adverse effects on coastal resources, and that low cost forms of public coastal recreation (such as trails) be preserved and encouraged.

The Pepperdine campus is located in an area of the Santa Monica Mountains that is relatively unaffected by concentrated urban sources of light pollution. Public trail routes of local and regional importance traverse the campus and adjoining lands. Night hikes are popular and offer coastal visitors a unique recreational experience.

The subject site would be visible from several segments of a publicly-used trail located on the steep slopes above the field site, particularly at night (see Exhibit 8 and a day-use simulation of the visibility of the site from above the campus, Exhibit 9). The University states that under clear sky conditions, although the proposed lights would be visible from the public trail located to the north, the light fixtures would not be directly visible from public viewing areas near Pacific Coast Highway, which is located approximately three-fourths of a mile south of the campus – either by day or during night use of the proposed Marie Canyon field lights. (See Exhibit 10, which shows the visual analysis of a profile view from the worst-case viewing location identified by the University, looking north toward the subject site from Pacific Coast Highway.)

However, although the light fixtures will not be directly visible from Pacific Coast Highway during the day or under favorable clear weather conditions at night, the additional sports field lights would result in a cumulative increase in the sky glow from the campus. Sky glow is the unintended brightening of the night sky, and a form of light pollution caused by the introduction of artificial lighting into outdoor spaces. It is the "glow" effect that can be seen over distant populated areas.

Commission staff ecologist Jonna Engel, Ph.D. has evaluated the University's proposed lighting and the effects that the lighting may have on the Marie Canyon environment and has prepared a memorandum explaining her conclusions (Exhibit 12). Dr. Engel states that sky glow is produced by a combination of light reflected off illuminated surfaces, light emitted directly, and light that is scattered (redirected) by the atmosphere itself. Under atmospheric conditions associated with foggy or cloudy conditions, artificial outdoor lighting can be reflected and amplified by moisture in the air to produce "sky glow" effects that render the lighting significantly more visible than would otherwise be the case under clear skies. When sky glow-producing conditions arise, outdoor lighting may produce amplified visible effects on the night sky that are visible from much greater distances.

The University acknowledges that the proposed lights would introduce a new, permanent source of stadium-type artificial lighting in Marie Canyon, and that the proposed lights may produce light pollution. The University states that the shielded type of fixture ("Qualite" brand) proposed by the University aims light downward and reduces the potential for sky glow effects as compared with clear globe lights or with other sports lights that are horizontally mounted or of lesser quality. The University states, however, that it would be impractical to limit the use of the proposed Marie Canyon playing field on nights when atmospheric conditions arise that may produce sky glow while the lights are in use.

The coastal setting of the Pepperdine campus often produces weather foggy or cloudy weather. High atmospheric moisture conditions are conducive to the formation of sky glow, as noted by Dr. Engel (Exhibit 12). The University proposes that the Marie Canyon field lights would be operated nightly, year-round for campus intramural and club team sports. The intensive proposed schedule for night use of the facility, combined with Pepperdine's marine-influenced weather, suggests that even with the use of contemporary shielded, downward-aimed light fixtures that the University proposes, the Marie Canyon field may produce significant sky glow.

The potential increase in sky glow resulting from the proposed field lighting in Marie Canyon (particularly late at night when other lighting is less visible on the campus) would result in adverse impacts to night-time views available from nearby public beaches and parks, such as the Malibu Bluffs state park lands managed by the Santa Monica Mountains Conservancy, located directly across Pacific Coast Highway from the campus, as well as the views from the trails above the site. An important part of public coastal access and recreation is the opportunity for coastal visitors to the area's beaches, mountains, and parklands to enjoy peaceful experiences within natural settings. Night hiking, night photography, and stargazing are popular past-times in the Santa Monica Mountains.

Public lands in the region are convenient, accessible, and affordable destinations for coastal visitors from urban southern California; Malibu is only 30 miles west of downtown Los Angeles. Urban visitors particularly enjoy the dark-sky night views of the Santa Monica Mountains, because artificial light pollution obscures such views in most cities. The Pepperdine recreation department offers frequent night hikes and stargazing events for students at nearby parks and trails, free of charge, noting that such outings make refreshing, stress-reducing study breaks.

Development located near open spaces and public lands may produce light pollution that affects nearby parklands and trails. The Marie Canyon playing field proposed for night sports lights by the University, is sited outside of the main developed area of the campus, in an area designated as Open Space (certified LRDP 1990), and near public trail routes such as the Mesa Peak and Coastal Slope Trails. Light pollution of night skies may reduce affordable opportunities to enjoy dark-sky views, and limit activities such as night photography, nature study, and stargazing – for example by occluding starry skies. Thus, introducing such significant anthropogenic sky glow fails to protect lower cost visitor and recreational facilities as required by Section 30213.

Although the Marie Canyon playing field is located in a canyon at the northern periphery of the developed campus and is partially shielded by steep slopes, the playing field lights would be located at a topographic elevation several hundred feet higher than the lower campus elevation (see the Figures attached to the memorandum of Commission staff ecologist Jonna Engel, included in Exhibit 12, which show among other things, the Marie Canyon site in oblique aerial view perspective of the site). North of the subject site, publicly used trail corridors are located at higher elevations with views downward toward the subject Marie Canyon location hundreds of feet down gradient. The Marie Canyon field lights would be readily visible at night from at least five viewing areas along the portion of the combined Mesa Peak and Coastal Slope public trail route that traverses the northern campus above Marie Canyon (Exhibit 8).

Existing trails routes through and around the Pepperdine campus lands have a long history of public use pre-dating the development of the campus. Campus construction commenced in 1971, and as the campus was graded, publicly used trail routes traversed what is now the center of the campus, primarily through Marie Canyon before most of the canyon was filled to construct the campus.

The Commission, in certifying the University's Long Range Development Plan in 1990, acknowledged the impacts of campus development on public trail corridors (Exhibit 2 of the LRDP adopted findings contains a map of the primary trail routes through the campus, and alternative routes proposed by the University). Los Angeles County, in approving a conditional use permit for the Campus Life Project, required the University to record an amended offer to dedicate the public trail easements (which were previously recorded along "paper" trail routes that later proved physically impossible to build) including provisions to allow a potential realignment of the combined Coastal Slope and Mesa Peak trails (the location of the publicly used trail route is shown in Exhibit 8). Regardless, public use of the trail corridors traversing the campus and beyond has persisted since long before the University acquired the campus lands and commenced construction, and public rights to the continued use of the trail corridors are well established.

The certified LRDP states (Conservation and Open Space section):

> *"The University shall offer to dedicate a public trail easement, limited to pedestrian and equestrian access only, over the Coastal Slope and Mesa Peak trails which cross the subject property. The trail routes may be realigned provided it is done in such a manner which provides for equivalent use, can be safely used, and minimizes impacts on sensitive resources. Final route selection shall include consultation with the Santa Monica Mountains Trail Council and the Los Angeles County Department of Parks and Recreation, subject to the review and approval of the Executive Director of the Coastal Commission."*

The public, including members of the Pepperdine campus community and campus visitors, use the existing Mesa Peak and Coastal Slope trails as well as other informal trails crossing or adjoining campus lands, including trail corridors located north of the subject site in Marie Canyon (see for example Exhibit 8 and 9). However, the existing trails on site do not correlate with the location of the recorded public trails easements on site in all areas. According to the University, the trail easements recorded for the area north of the Marie Canyon site offer access in "paper" locations that are nearly impossible to traverse in the field. Thus, the University has explained that campus representatives and the staff of the Santa Monica Mountains Conservancy have been discussing potential realignment of the recorded trail easements to better match the physical field conditions, which would ultimately be reflected in new, future easement locations if authorized by the Commission (pursuant to a future LRDP amendment request). Nevertheless, the public right to the use of the original trail routes through the center of the main campus cannot be unilaterally extinguished by the University, and so, they continue to exist. As well, the alternative public trail routes skirting the campus or traversing open space lands north of the developed campus, including bypass routes originally established by the public to avoid major campus construction since 1971 that has affected historic trail routes traversing lands within the main areas of the campus, have also extended patterns of public use and likely has established additional public access rights. The alternative routes to impact trail routes proposed by the campus for new recordation of new trail alignments would require a further LRDPA, as the route, though shown in Exhibits 8 and 9, has not been included as part of amendment request #1-11.

As described above, an important part of public coastal access and recreation, for campus members and visitors and the general public alike, is the opportunity to visit the area's beaches, mountains, parklands, and hiking trails to enjoy peaceful experiences within natural settings. Public access during the day is an important resource, but evening and night hiking, night photography, and stargazing are also popular past-times on public lands. The proposed sports field lights the University seeks to add have the potential to significantly and adversely affect the visual quality of public coastal access and recreation experiences that rely on dark sky conditions during night use of trail corridors above the campus. In addition, more distant beaches, parks and trails could be adversely affected if sky glow is produced by the proposed Marie Canyon sports lights.

As explained above, the field lighting proposed as part of LRDP Amendment 1-11, Part B, has the potential to generate light pollution that would adversely affect the night sky views available from public coastal access routes and recreational resources near the subject site in Marie

Canyon area and from more distant locations under atmospheric conditions conducive to the formation of sky glow.

In addition, the Commission has previously authorized the installation of two other sets of new, high performance, stadium-type lights at the lower campus main sports complex (the lights have not yet been installed) pursuant to LRDP Amendment 1-11, Part A (the soccer field and track) and the LRDP, as certified in 1990 (the baseball field). In combination with these lights, when all three sets are potentially in operation two or more at a time, the Marie Canyon lights could produce a much more extensive overall campus night light footprint, particularly as viewed from open spaces north of the site where views of the Marie Canyon field would be back-dropped by the additional down-campus playing field lights.

As well, the use of the authorized stadium type lights the University plans to install at the lower campus soccer field and track and at the baseball field would be limited to a restrictive schedule of total days and times of day that certain uses of the field lights would be allowed. The University and the Malibu Country Estates subdivision residents have mutually agreed to significant restrictions on the use of the proposed field lights. The Marie Canyon site, however, would have no such restrictions on days and hours of use – restrictions the University opposes for the Marie Canyon playing field site.

Globe light replacement; LRDP Amendment 1-11, Part A

The Commission determined in approving LRDPA 1-11, Part A, last December that the net effect of the Part A development would be a decrease in cumulative night lighting levels on campus, compared with the pre-Campus Life Project baseline conditions. The Commission also concluded in approving Part A that the soccer field lighting located within the centrally developed area of the main campus, away from environmentally sensitive habitat, would not result in any significant impacts to public views or ESHA due the location of the lights near the center of the developed campus.

However, although the stadium lighting for the fields in the center of campus would not have resulted in significant adverse impacts to public views or ESHA from sky glow, the lights would still result in some unavoidable cumulative impacts to public views due to their contribution to sky glow emanating from the campus. To mitigate the cumulative light pollution impacts of the development authorized pursuant to LRDP Amendment 1-11, Part A, the University proposed and the Commission required a suggested modification requiring the replacement of all "globe" light standards on campus (except for 32 vintage lights of historic significance to the campus) with shielded fixtures (see Exhibit 11). The existing globe lights cast circular halos of light that cumulatively contribute to overall campus light pollution levels. Replacement of the globe lights would be undertaken on a schedule tied to the progress of estimated 12-year Campus Life Project construction schedule authorized pursuant to LRDP Amendment 1-11, Part A.

However, the new field lighting in Marie Canyon that is proposed by Part B of this amendment, unlike the soccer field lighting in Part A, is not proposed for the central campus area far from environmentally sensitive habitat. The Marie Canyon site would extend the adverse effects of light pollution into adjacent chaparral ESHA as discussed in Section D above. As well, the Marie Canyon site poses direct impacts of light pollution on the trail corridors above the campus,

and potentially (under sky glow conditions discussed above) would be visible from public beaches and parks and from Pacific Coast Highway (see Exhibit 10, which shows that the lights in Marie Canyon, without sky glow, are only approximately 25 feet below the line of sight of a viewer at Pacific Coast Highway, looking toward the Marie Canyon site). Moreover, the expansion of high intensity night lighting into Marie Canyon, north of Huntsinger Circle Drive, and beyond the main developed area of campus extends the overall footprint of night sky lighting on campus and pushes the urban fringe represented by the concentrated urban development of the campus into otherwise undisturbed open spaces.

In addition, Section 30251 of the Coastal Act states in part that that:

> *Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, …, to be* ***visually compatible with the character of the surrounding areas****, and where feasible to restore and enhance visual quality in visually degraded areas.*

Although the University is not within the boundaries of the City of Malibu it is surrounded by the City to the south. The City of Malibu is a semi-rural to rural area that is adjacent to large areas of open space and is a relatively dark community at night. The City's Certified Local Coastal Program (LCP) includes a policy that requires outdoor lighting be minimized and restricted to protect the dark sky character of the community and for protection of sensitive habitats. The City is currently working on developing a more comprehensive dark skies ordinance for the City. The unincorporated Los Angeles County area surrounding the campus is primarily open space with little or no nighttime lighting. The County of Los Angles is currently working with Commission staff on a draft LCP for the Santa Monica Mountains that will also include dark skies policies and ordinances. The introduction of new high intensity stadium lights that will produce a significant amount of sky glow on the periphery of the developed campus is not visually compatible with the dark skies community character of this rural and semi-rural area.

Therefore, in order to ensure that significant adverse impacts to public views are avoided, **Suggested Modification 1** adds language to an LRDP policy required by the Commission in approving LRDP 1-11, Part A, to restrict new outdoor sports field lighting installations to the locations of the existing soccer field, track, and baseball fields located within the main developed area of the campus, and in an area of campus that has been continuously devoted to similar sports use, including use of night lighting, since the campus opened in 1971. The suggested modification would prohibit the installation of outdoor sports field lighting in the part of Marie Canyon proposed by the University for sports lighting in Part B

Public Coastal Access and Recreation, and Visual – Conclusion

The development included in the Campus Life Project that would be incorporated into the LRDP pursuant to proposed LRDP Amendment 1-11, Part B has the potential to generate light pollution adversely affecting dark-sky conditions of importance to public coastal access and recreation near the Pepperdine University campus. Coastal Act Section 30251 requires that new development shall be sited and designed to protect views to and along the ocean and scenic

coastal areas and that scenic and visual qualities of coastal areas be considered and protected as resources of public importance. Additional Coastal Act Chapter 3 policies require that maximum public access be provided for all of the people of the state, that development be sited and designed to avoid significant, adverse effects on coastal resources, and that low cost forms of public coastal recreation be preserved and encouraged.

Suggested Modification 1 (lighting) limits the installation of new stadium-type outdoor sports field lighting to the existing soccer field, track, and baseball field located in the main developed area of campus. This restriction would minimize potential light pollution that would otherwise cause significant, adverse effects on visual resources, and public coastal access and recreation.

Therefore, for all the above stated reasons, the Commission finds that only if modified by **Suggested Modification 1** will the request of Pepperdine University to amend its certified LRDP pursuant to LRDPA 1-11, Part B, be consistent with the requirements of the Chapter 3 policies of the Coastal Act protective of public coastal access and recreation.

F. ALTERNATIVES

The University has considered and rejected several options for alternative locations for new recreational playing field areas on the Malibu campus. Two of the rejected options would have installed the new playing field in open space areas of the campus lands near environmentally sensitive habitat, and thus would not reduce the impacts of the proposed project, as compared with the proposed location in Marie Canyon, which is also located adjacent to ESHA.

The third alternative location considered by the University would utilize the 30-acre Alumni Park at the south end of the campus as the site of new intramural playing field space. Alumni Park is a previously graded, low-relief area on the south axis of the campus noted for the broad expanses of irrigated turf seen from Pacific Coast Highway. The turf is irrigated with reclaimed wastewater that is stored in two wastewater holding lagoons within Alumni Park. A tennis court shared by Pepperdine and the residents of the adjacent Malibu Country Estates subdivision is located in Alumni Park. There is also an existing intramural recreational playing field north of the tennis courts, which is one of the main areas used for campus recreational sports team practices and games.

The University rejected the Alumni Park area for an intramural field expansion or for the addition of a new field, citing conflicts with other campus activities. Nevertheless, there appears to be adequate space for at least one more playing field at that location. Combined with the authorized recreational playing field in Marie Canyon north of Huntsinger Circle Drive (Part A of LRDPA 1-11), and improvement of the existing playing field at Alumni Park, the campus supply of intramural day-use fields would be tripled without posing any risk of significant adverse effects on ESHA as the Alumni Park site is highly managed and supports little or no native vegetation.

Finally, the new recreational area in Marie Canyon authorized by LRDPA 1-11, Part A, would be almost four acres in completed surface area once constructed. Two smaller fields could be accommodated within that area, instead of the 240-foot by 340-foot field presently proposed in

Marie Canyon, and the existing Alumni Park playing field could be expanded to the optimal, larger size presently proposed for a single field in the authorized Marie Canyon location.

Thus, a variety of alternatives exist for expanding the campus supply of day-use intramural playing field areas that have not been considered by the University or rejected without further analysis, in proposing use of a single site (Marie Canyon) subject to expanded hours of use made possible only by the installation of outdoor field lighting (Part B).

G. CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to Section 21080.9 of the California Environmental Quality Act ("CEQA"), the Coastal Commission is the lead agency responsible for reviewing Long Range Development Plans for compliance with CEQA. The Secretary of Resources Agency has determined that the Commission's program of reviewing and certifying LRDPs qualifies for certification under Section 21080.5 of CEQA.

Section 21080.5(d)(I) of CEQA and Section 13540(f) of the California Code of Regulations require that the Commission not approve or adopt a LRDP, "…if there are feasible alternative or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment."

As described in detail above, two (2) modifications to the proposed LRDP Amendment are suggested to mitigate significant adverse impacts to environmentally sensitive habitat areas, public coastal access and recreation upon certification of the subject amendment. The Commission finds that for the reasons discussed in this report, if the LRDP amendment is modified as suggested, there are no additional feasible alternatives or feasible mitigation measures available that could substantially reduce any adverse environmental impacts. The Commission further finds that the proposed LCP amendment, if modified as suggested, is consistent with Section 21080.5(d)(2)(A) of the Public Resources Code.

Exhibit 1
Regional Map
LRDP Amendment 1-11, Part B
Pepperdine University

PEPPERDINE UNIVERSITY LRDPA #1-11, PART B

Malibu Area Map

MILES 0 1 2 3

Exhibit 2

Exhibit 2
Malibu Area Map
LRDP Amendment 1-11, Part B
Pepperdine University

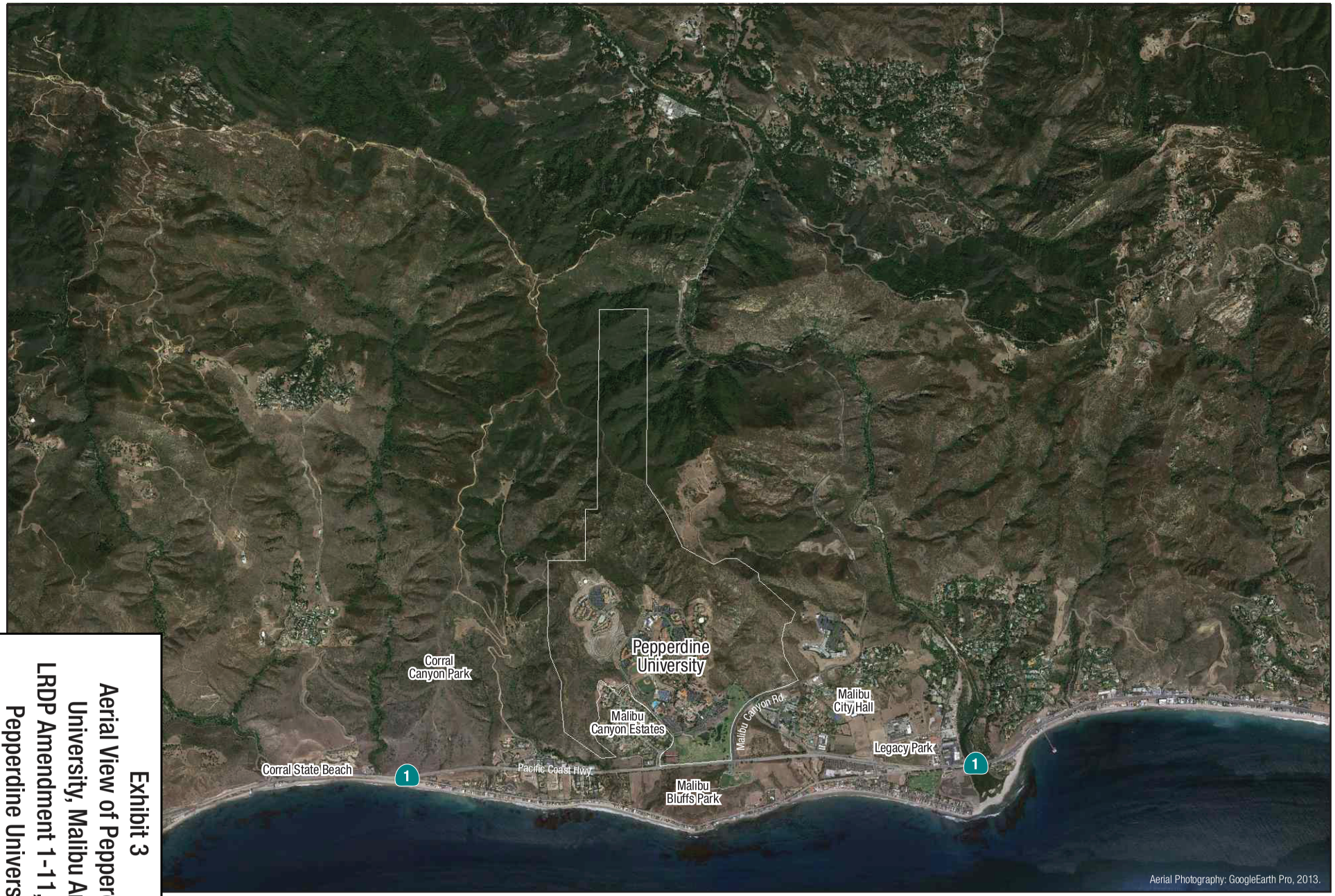


Exhibit 3
Aerial View of Pepperdine University, Malibu Area
LRDP Amendment 1-11, Part B
Pepperdine University

PEPPERDINE UNIVERSITY LRDPA #1-11, PART B

Aerial View of Pepperdine University, Malibu Area

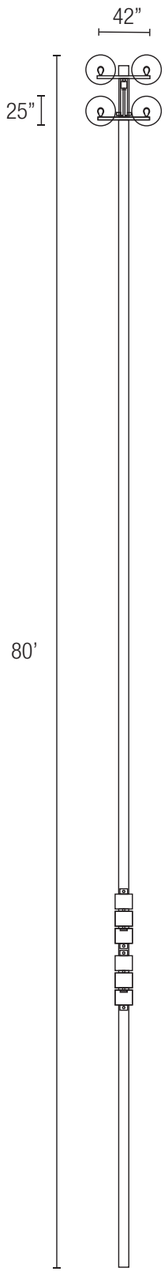
FEET 0 1,750 3,500

Exhibit 3

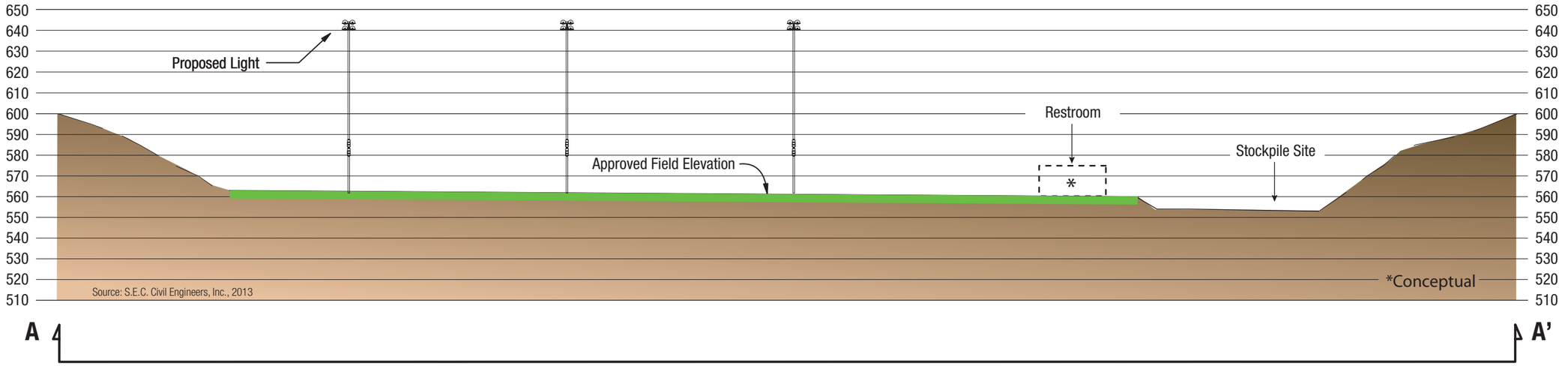
FEET 0 300 600

Exhibit 4
Aerial View of Pepperdine Campus Component 5 Boundary
LRDP Amendment 1-11, Part B
Pepperdine University

Exhibit 5
Aerial View of Enhanced
Recreation Area
LRDP Amendment 1-11, Part B
Pepperdine University

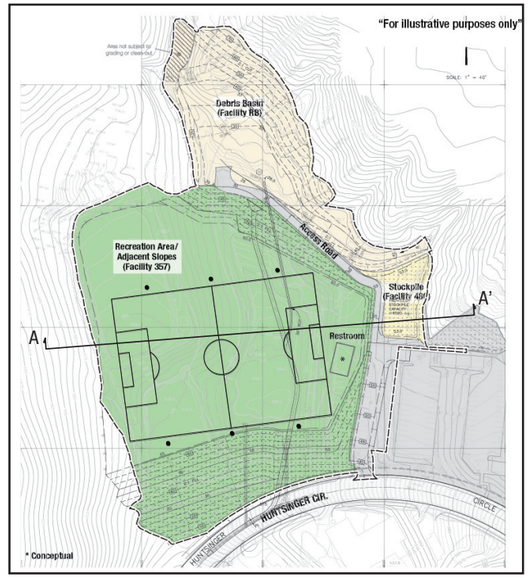


Pole and Arm Detail



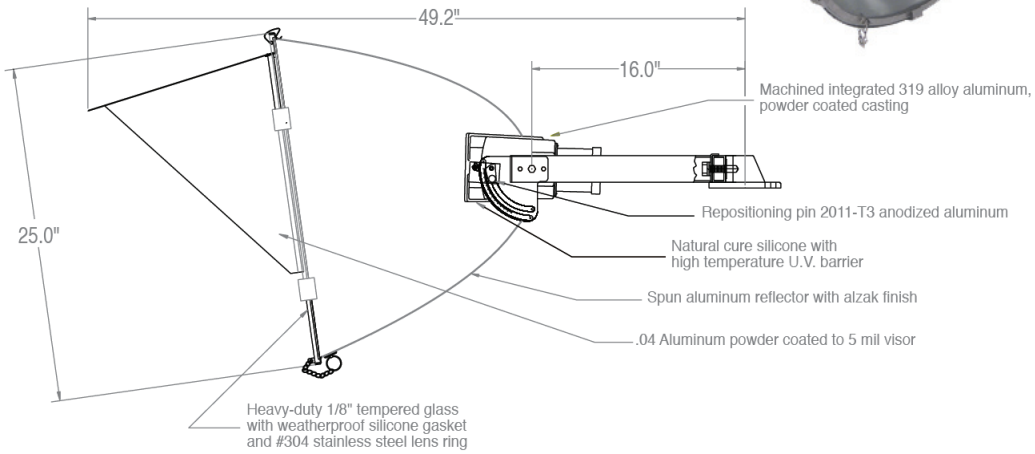
Note: Enhanced Recreation Area Proposed Field Lighting will consist of six poles with four shielded angled fixtures per pole. Each fixture will use 1500 watts for a total of 6000 watts per pole and 36000 watts for the entire system.

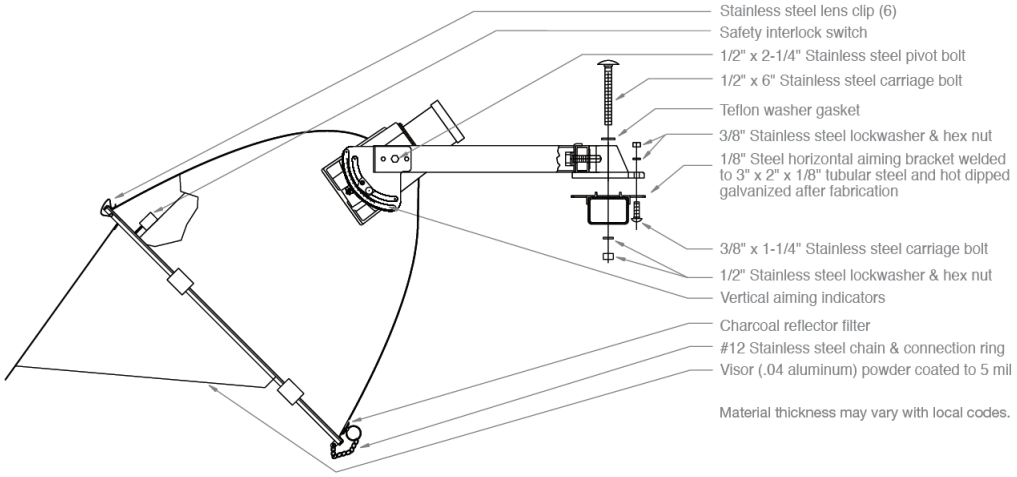
Final field dependent upon pad elevation.



August 19, 2013

Exhibit 6
Profile View of Enhanced Recreation Area and Proposed Field Lighting
LRDP Amendment 1-11, Part B
Pepperdine University





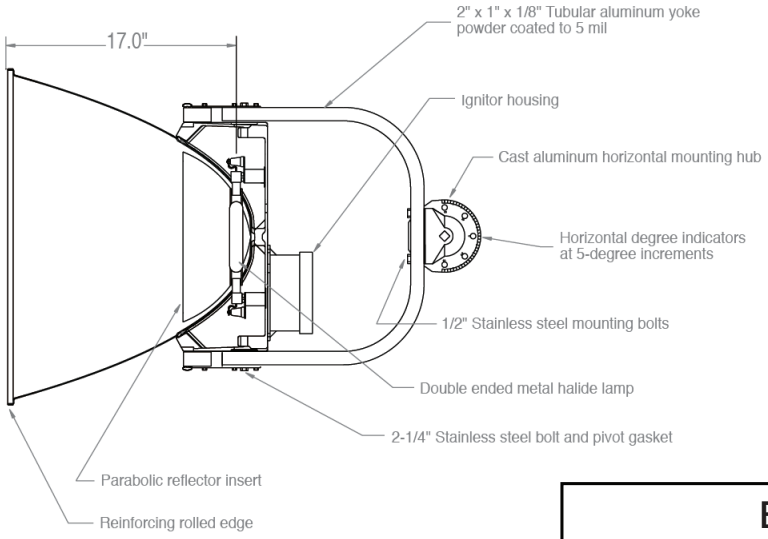


Exhibit 7
Proposed Qualite International Series Fixture Specifications
LRDP Amendment 1-11, Part B
Pepperdine University

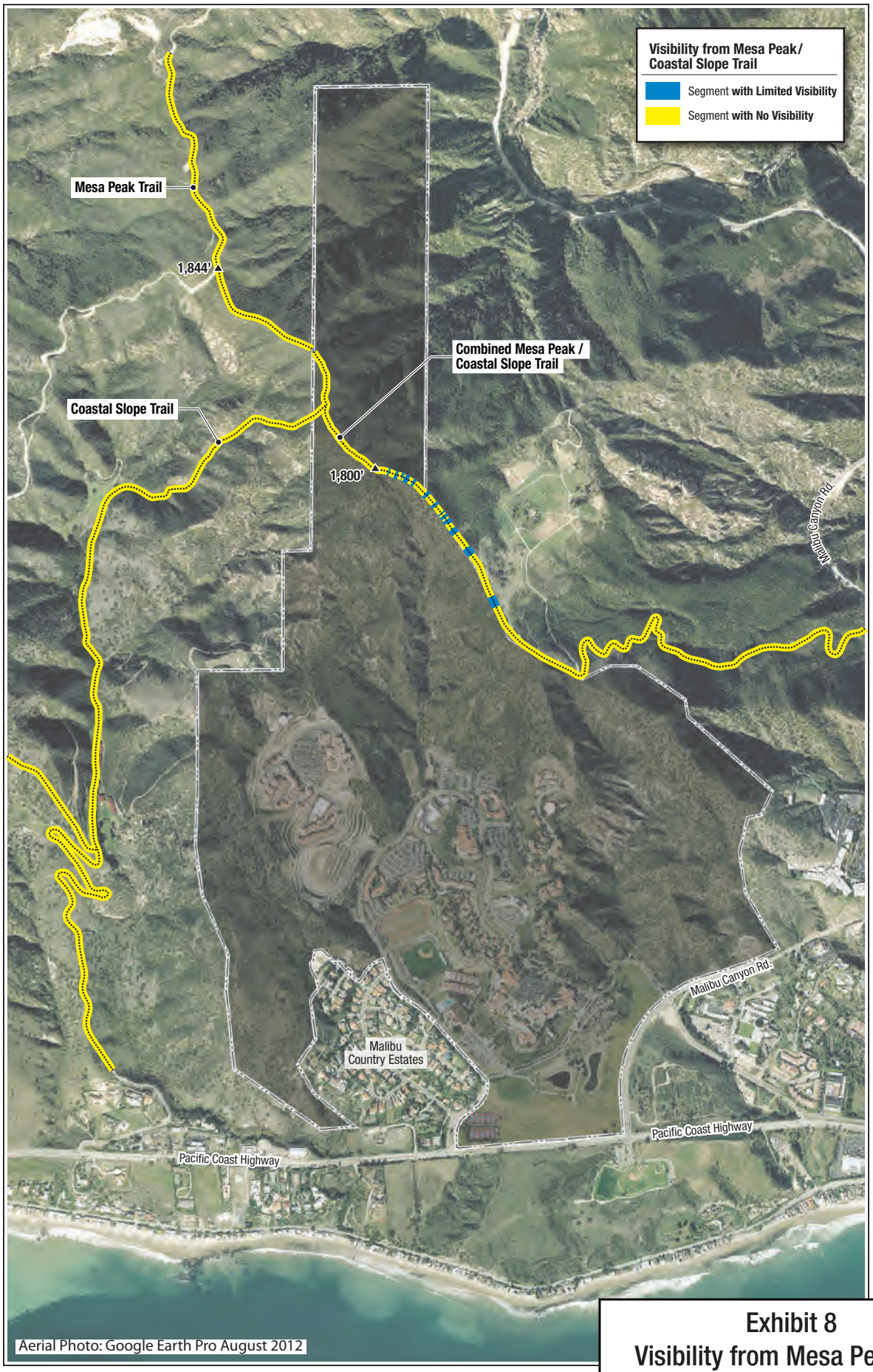


Exhibit 8
Visibility from Mesa Peak and Coastal Slope Trails
LRDP Amendment 1-11, Part B
Pepperdine University

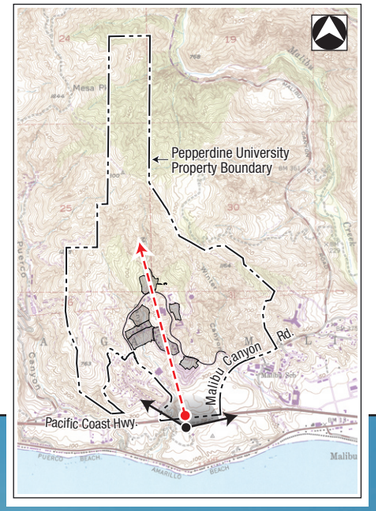
Existing View

Simulated View with Approved Enhanced Recreation Area and Proposed Recreation Lights

Note: Future poles depicted a lighter color than proposed to aid in identification. They will be painted to blend with the prevailing background colors.

Exhibit 9
Visual Simulation of Approved Enhanced Recreation Area with Proposed Lights
LRDP Amendment 1-11, Part B
Pepperdine University

Orientation of Lines-of-Sight



Terrain Cross-Section and Lines-of-Sight View Profile of Approved Facilities and Proposed Lights

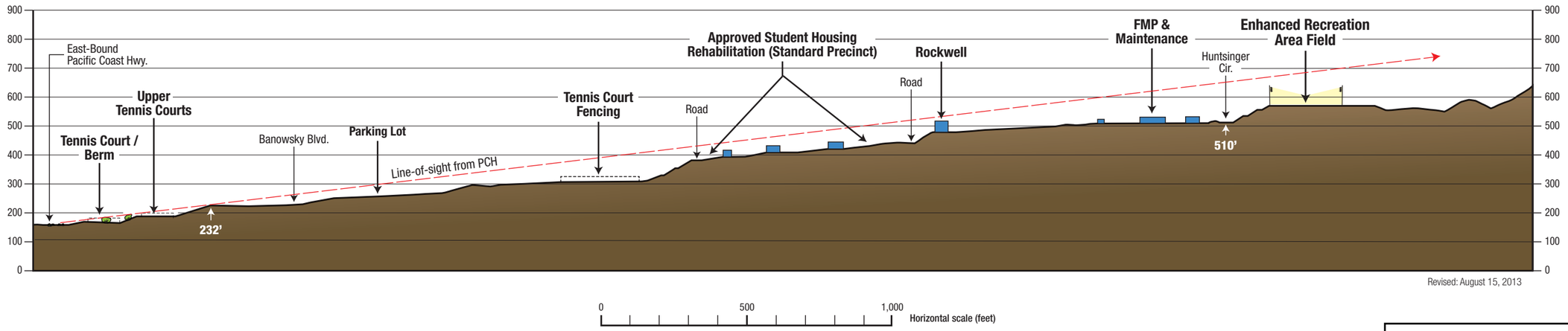


Exhibit 10
Select View from Pacific Coast Highway
LRDP Amendment 1-11, Part B
Pepperdine University

Existing Light

Representative Replacement Lights

Note: The globe light replacement project does not include the historic lights located along Banowsky Boulevard & Baxter Drive, which will be retained.

Exhibit 11
Replacement of Existing Globe Lights
LRDP Amendment 1-11, Part B
Pepperdine University

CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST AREA
89 SOUTH CALIFORNIA ST., SUITE 200
VENTURA, CA 93001
(805) 585-1800

M E M O R A N D U M

FROM: Jonna D. Engel, Ph.D., Ecologist; and Nick Sadrpour, Graduate Student Intern

TO: Melanie Faust
Coastal Program Analyst

SUBJECT: Pepperdine University, Campus Life Project, Component 5: Enhanced Recreation Area – Biological Analysis of the Proposed Artificial Night Lighting, Intramural Field Orientation, and Restroom and Storage Facility Location

DATE: August 23, 2013

Documents Reviewed:

Commission Findings in Support of October 5, 2011 Certification, with Suggested Modifications, of City of Malibu Local Coastal Program Amendment No. MAL-MAJ-1-11-A, as shown in September 22, 2011 Staff Report and the October 4, 2011 Addendum[1].

Commission Findings in Support of December 13, 2012 Certification, with Suggested Modifications, of Pepperdine University's Long Range Development Plan Amendment No. 1-11-A (as shown in November 30, 2012 Staff Report and December 10, 2012 Addendum).

ENVICOM Corporation. March 12, 2012. Biological Assessment and Impact Analysis; Pepperdine University Campus Life Project Component 5 – Enhanced Recreation Area. Prepared for Pepperdine University.

ENVICOM Corporation. March 31, 2011. Final Environmental Impact Analysis, Pepperdine University, Campus Life Project. Prepared for County of Los Angeles, Department of Regional Planning.

ENVICOM Corporation. November 5, 2010. Draft Environmental Impact Analysis, Pepperdine University, Campus Life Project. Prepared for County of Los Angeles, Department of Regional Planning.

[1] At the October 5, 2011 Commission meeting, the Commission made minor changes to Suggested Modification No. 3 that are not reflected in the findings, but which are not relevant here.

Francis Krahe & Associates Inc. Architectural Lighting Design. August 3, 2010. Draft Environmental Impact Lighting Analysis; Pepperdine University, Campus Life Project. Prepared for Pepperdine University.

AIS (Aerial Information Systems, Inc.) and ESRI (Environmental Systems Research Institute. 2007. USGS-NPS Vegetation Mapping Program. Santa Monica Mountains National Recreation Area Photo Interpretation Report. Submitted to Santa Monica Mountains National Recreation Area, May 23, 2007.

CDFG (California Department of Fish and Game), California Native Plant Society, T. Keeler-Wolf, and J. Evens. 2006. Vegetation Classification of the Santa Monica Mountains National Recreation Area and Environs in Ventura and Los Angeles Counties, California. Submitted to National Park Service, January 2006.

Dixon, J. 2003. Memorandum to Ventura Staff (California Coastal Commission): Designation of ESHA in the Santa Monica Mountains. March 25, 2003.

Department of the Interior; National Park Service. March 1998. Santa Monica Mountains National Recreation Area Land Protection Plan.

In November 2012 the Commission approved the development at the Components 1 - 4 site and several features of the Component 5 site that compirse Pepperdine University's Long Range Development Plan (LRDP) Campus Life Project amendment[2] (Figure 1). In order to avoid approval delay for the majority of the Campus Life Project, several of the Component 5 site project elements requiring more in-depth biological analysis were held back. The features of the Component 5 site development that were approved are the intramural field, debris basin relocation, and parking lot improvements. The outstanding elements proposed at the Component 5 site are artificial night lighting for the new intramural field, orientation of the new intramural field, and location of a restroom and storage facility.

We have been asked to analyze and determine if artificially lighting the intramural field at night at the Component 5 site will have significant adverse impacts, the orientation of the new intramural field that minimizes environmental impacts, and the location for the restroom and storage facility that minimizes environmental impacts. In considering these questions Dr. Engel visited the site on October 30, 2012 along with other commission staff, Pepperdine University staff and their biological consultants and other representatives. Mr. Sadrpour also visited the site on Thursday, August 1, 2013. In addition we reviewed the documents listed above including the environmental impact report and associated documents prepared for the project, the National Park Service vegetation mapping for the area, current and historical aerial photographs, and peer-reviewed literature. It is critical to note that the potential biological impacts of artificial

[2] Commission Findings in Support of December 13, 2012 Certification, with Suggested Modifications, of Pepperdine University's Long Range Development Plan Amendment No. 1-11-A.

night lighting at the Component 5 site have never been analyzed and are potentially very significant.

To analyze the potential biological impacts of artificially lighting the new intramural field at night at the Component 5 site and to determine whether night lights would or would not pose a significant adverse impact at this site we evaluated the location of Component 5, the nature and condition of the habitat on and around the site, wildlife presence within and use of habitat on and around the site, the impacts of artificial night lights on animals, and the methodology and results of the Krahe and Assoc. Inc. lighting analysis. We also evaluated the two options for the field orientation and the restroom and storage facility location to determine which alternative would have the least environmentally damaging impacts.

Pepperdine University is located along the lower south flank of the Santa Monica Mountains immediately north of Pacific Coast Highway and approximately 0.5 miles from the Pacific Ocean. The university is built on coastal terraces and foothills and is surrounded by steep and rugged mountains with narrow north-to-south flowing creeks and associated ridges and canyons. The majority of the campus lies in Marie Canyon watershed and is bounded by large blocks of undeveloped public and private land including the university and Malibu Creek State Park protected open space (Figure 2). The dominant native vegetation on and around the campus is coastal sage scrub that transitions to chaparral at higher elevations with creeks and riparian habitat in the main and tributary canyons.

The Component 5 site lies at the upper and outer edge of the core campus at the base of the upper Marie Canyon watershed. It is surrounded to the west, north, and east by steep slopes of the Santa Monica Mountains that support pristine native habitat and is bounded to the south by Huntsinger Circle Drive which forms a perimeter around the main campus (Figure 1). The location of the proposed Component 5 development (Component 5) occupies a knoll and slopes descending to a stream channel that have been modified through the years so that the area consists of several more-or-less level pads that are set back in Marie Canyon with steep slopes on three sides and an open view to the south in an amphitheatre or bowl-like position (Figure 3).

While adjacent to pristine native habitat, the Component 5 site has a history of development and associated disturbance including grading, fill, construction staging, stockpiling, fuel modification, and restoration work. Development and disturbance also includes channelizing part of Marie Creek and eliminating the lower extent of Marie Creek on the site in the process of excavating a debris basin. Coastal sage scrub restoration of the slope below the equestrian facility was done as mitigation for creation of the debris basin. In c. 1999 the equestrian facilities were removed and converted to a sports field. As a result of past disturbance and ongoing fuel modification there has been a shift over the years from an area that supports a significant amount of native habitat to one that is dominated by non-native and invasive plant species.

Biological Characterization of the Component 5 Site and Surroundings

ENVICOM has conducted several biological surveys at the Component 5 site including one in each of 1998, 2010, and 2012. In 2010 ENVICOM mapped the vegetation at the Component 5 site (Figure 4). They found that majority of the site was occupied by exotic landscaping/weed infestation and that there was only small patches of native chaparral, coastal sage scrub, and riparian habitat.

The small patches of chaparral in the Component 5 site is dominated by greenbark ceanothus*, Ceanothus spinosus,* and mountain mahogany, *Cercocarpus betuloides*. A smaller percentage of the chaparral consisted of big pod ceanothus, *Ceanothus megacarpus;* chamise, *Adenostoma fasiculatum*; laurel sumac, *Malosoma laurina*, sugar bush, *Rhus ovata;* and toyon, *Heteromeles arbutifolia*. Our site visit observations confirmed these findings and we noted that the chaparral surrounding the Component 5 site was pristine in nature[3] and has the same suite of native species as the disturbed chaparral within the Component 5 site.

The small patch of coastal sage scrub in the Component 5 site is dominated by black sage, *Salvia mellifera* but also contains several other signature species including California sagebrush, *Artemesia californica;* coyote bush, *Baccharis pilularis*;; California sunflower, *Encelia californica*, Giant wild rye, *Leymus condensatus*; and deerweed, *Acmispon glaber.* Our site visit observations confirmed these findings and we noted that the coastal sage scrub surrounding the Component 5 site was pristine in nature[4] and has the same suite of native species as the disturbed coastal sage scrub within the Component 5 site.

The extremely small area riparian habitat on the Component 5 site is made up of mulefat (*Baccharis salicifolia*) scrub dominated by mulefat; mugwort, *Artemisia douglasiana;* and giant rye grass.

The western perimeter of the Component 5 site supports small patches of pristine greenbark ceanothus and mountain mahogany dominated chaparral outside and even within the fuel modification. The majority of the northern perimeter of the Component 5 site, with Marie Creek, a tributary creek, and riparian habitat, are disturbed from fuel modification as well as from creek channelization, broken concrete blocks in the creek beds, and non-native and invasive species. Just beyond the Component 5 site boundary and fuel modification zone the surrounding slopes support pristine native chaparral and riparian habitat. The eastern perimeter of the Component 5 site is dominated by non-native and invasive terracina spurge and acacia. However, again, just beyond the Component 5 site boundary and fuel modification the slope is covered with pristine native coastal sage scrub and chaparral habitat.

[3] We conducted a visual inspection of the habitat surrounding Component 5 from various locations on the site due to a lack of time, steepness of the slopes, and thickness of the native vegetation.
[4] Ibid

ENVICON did not map or describe the habitat surrounding the Component 5 site but in 2001 National Park Service (NPS) undertook an ambitious vegetation mapping effort that covers the entire Santa Monica Mountain's ecosystem including Pepperdine University and its surroundings. The NPS map identifies the native vegetation on the slope west of the Component 5 site as the laurel sumac-ashy buckwheat-black sage phase and birchleaf mountain mahogany alliance; the slope directly north of the Component 5 site dominated by the greenbark ceanothus alliance; and the slope to the east of the Component 5 site inhabited by the laurel sumac-ashy buckwheat-deerweed phase and the laurel sumac-black sage alliance (Figure 5). The NPS vegetation map comports with our site visit observations of the native habitat surrounding the Component 5 site.

Finally, the ENVICOM 2010 biological report states that "The Component 5 site's location adjacent to areas of habitat value to the north increases the likelihood that wildlife may temporarily utilize the site's resources, or move through the area." In their report ENVICOM identifies numerous species of native animals they observed on the Component 5 site as well as native animals they believe are likely to occur at the Component 5 site and its surrounding. ENVICOM observed over 16 species of native mammals including mule deer, bobcats, coyotes, raccoons, rabbits, big eared woodrats, and several species of mice. Additional mammals expected to occur in the area include badgers, mountain lions, and bats; all species that tend to be active at night and or dawn and dusk. Seth Riley, SMMNRA wildlife biologist, has been conducting mountain lion studies for over a decade. His tagging work shows that 9 mountain lions have been identified in Marie Canyon between 2002 and 2013 (Figures 6 & 7). ENVICOM did not conduct protocol level surveys for bats but lists eight species that are California species of special concern and that "to be conservative for the purposes of this analysis, ….are considered potentially present, primarily foraging above ground, and perhaps roosting in trees therein [component 5] or adjacent." Reptiles observed include side-blotched and fence lizards, and striped racer and gopher snakes. Among the reptiles ENVICOM expects to occur are alligator lizards, western skinks, common kingsnake and southern Pacific rattlesnake. The only amphibian ENVICOM observed is the Pacific chorus frog but they believe that California toads are likely in the area. A large number of birds have been observed on the site and in the area. Red-tailed hawks, Cooper's hawks, Amercian kestrels, great-horned owls, and Barn owls are year-round residents. These owls have been documented as nesting in the rock cliffs just beyond Component 5 north the waterfall in the main drainage of Marie Canyon. Numerous other birds are year round residents including California quail, killdeer, greater roadrunner, Nuttall's woodpecker, northern flicker, common poorwill, several species of hummingbirds, California thrasher spotted and California towhees, to name just a few. These animals and more are expected to occupy the ESHA surrounding component 5 and beyond.

Environmentally Sensitive Habitat Area (ESHA) Determination

Based on ENVICOM's biology reports, NPS vegetation mapping, and our site visits we have made an environmentally sensitive habitat area (ESHA) determination for the

Component 5 site and the slopes surrounding it. The definition of ESHA found in Section 30107.5 of the Coastal Act is:

> *Any area in which plants or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and development.*

And section 30240 of the Coastal Act provides direction for the protection of ESHA:

a) *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
b) *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

In 2003, in the context of the Malibu LCP the Commission made the finding that unfragmented and continuous relatively pristine native habitat in the Santa Monica Mountains rise to the level of ESHA. Dr. Dixon's March 23, 2003 memorandum states in part:

> *In the context of the Malibu LCP, the Commission found that the Mediterranean Ecosystem in the Santa Mountains is rare, and especially valuable because of its relatively pristine character, physical complexity, and resultant biological diversity. Therefore, areas of undeveloped native habitat in the Santa Monica Mountains that are large and relatively unfragmented may meet the definition of ESHA by virtue of their valuable roles in that ecosystem, regardless of their relative rarity throughout the state. This is the only place in the coastal zone where the Commission has recognized chaparral as meeting the definition of ESHA….*
>
> *For habitats in the Santa Monica Mountains, particularly coastal sage scrub and chaparral, there are three site-specific tests to determine whether an area is ESHA because of its especially valuable role in the ecosystem. First, is the habitat properly identified, for example as coastal sage scrub or chaparral? The requisite information for this test generally should be provided by a site-specific biological assessment. Second, is the habitat largely undeveloped and otherwise relatively pristine? Third, is the habitat part of a large, contiguous block of relatively pristine native vegetation?*

We find that nearly all the native habitats within the Component 5 site fail to rise to the level of environmentally sensitive habitat (ESHA) as the area is dominated by non-native and invasive species and the little native habitat that is there consists of small, fragmented areas significantly disturbed by human activities, non-native species, and

fuel modification. We concur with ENVICOM's finding that the coastal sage scrub and chaparral within the boundary of the Component 5 site do not rise to the level of ESHA. The only portion of the Component 5 site that we find rises to the level of ESHA is a the small area of riparian habitat at Marie Creek and its western two tributaries at the very northern perimeter of the site that is connected to the pristine riparian habitat outside the Component 5 boundary. In a short distance the creek habitat becomes a graded/disturbed channel that flows into the debris basin that was approved in a prior LRDP amendment and receives regular maintenance.

While most of the Component 5 site does not support ESHA, we find the western, northern, and eastern slopes surrounding Component 5 do support habitat that meets the three tests for ESHA in the Santa Monica Mountains. First, we find that the slopes are properly delineated as supporting coastal sage scrub and chaparral habitats (Figure 5). Second we find that the habitats are undisturbed and nearly pristine stands of native plant communities. And last, we find that the habitats are large areas that are in turn connected to large, contiguous blocks of undeveloped and relatively pristine habitat. This is illustrated by the figures in the Santa Monica Mountains National Recreation Land Protection Plan which identifies core habitat areas and important linkages for wildlife movement within the Santa Monica Mountains and beyond. These figures shows that the Marie Canyon watershed is connected to larger unfragmented and contiguous blocks of native habitat that in turn form a networked zone of connection within the Santa Monica Mountains that also links to the Simi Hills, Santa Susanna and San Rafael Mountains (Figure 2).

It is the unique position and surroundings of the Component 5 site that set it apart from the other sports fields on Pepperdine University campus. The Component 5 site is positioned in a bowl or amphitheatre against the slopes of the Santa Monica Mountains at the apex and northern-most edge of the developed campus; at the urban-rural (artificial light-natural light) boundary (Figure 3). The slopes surrounding the Component 5 site support native habitat that rises to the level of ESHA that in turn supports numerous native animals. Because of its topographical setting the Component 5 site is actually more isolated than a plan-view map would suggest. Animals within and around the Component 5 site, especially at night, experience the area generally as an uninhabited and natural area suitable for conducting animal business as usual.

Properties of Light and Light Measurements

Light or electromagnetic radiation that is visible to the human eye is called "visible light" and has a wavelength range from approximately 380 nanometers (nm) to about 740 nm and occurs along the electromagnetic radiation spectrum between "invisible" infrared radiation, with longer wavelengths, and "invisible" ultraviolet radiation, with shorter wavelengths (Figure 8). All electromagnetic radiation is emitted and absorbed in tiny units called photons, and exhibits properties of both waves and particles which is referred to as the wave–particle duality. Two key characteristics of light are intensity and wavelength or frequency. Light varies in its intensity (the number of photons per

unit area) and in its spectral content (expressed by wavelength)[5]. The most common measure of light intensity (the amount of light falling on a specific area) is called illuminance; the standard measure of illuminance is footcandles which express the intensity of light incident on a surface weighted for the spectral sensitivity of the human eye. Footcandle (fc) measurements place more emphasis on wavelenths of light that human eyes detect best and less on wavelengths that humans do not see as well[6]. In other words, footcandles are correlated to human brightness perception. This inherent property of footcandles limits our ability to assess the impacts of light on wildlife which are known to exhibit a wide range of light intensity and wavelength sensitivities.

Adverse impacts from artificial night light can take several forms including light trespass or spill, sky glow, and glare. Light trespass occurs when unwanted artificial light spills onto an adjacent property lighting an area that would otherwise be dark[7]. Illuminance or illumination is the measure used to detect light trespass. Sky glow and glare are measured as luminance or physical brightness (measured in footlamberts[8]). Sky glow is the bright halo that appears over urban areas at night, a product of light being scattered by water droplets or particles in the air and from reflectance of lights on objects on the ground. Sky glow is intensified when there is a low cloud ceiling or foggy conditions because light refracts off water particles in the air. Sky glow may be perceived as the presence of brightness within a field of view and can include directly viewing a light source. Glare is created by light that shines horizontally.

Animals and Light (Electromagnetic Radiation)

The pivotal role of light (electromagnetic radiation) in organismal biology raises the potential that there will be significant impacts on plants and animals from artificial night lights. The source of natural light is the sun, moon, and stars. Light is used by plants and animals to infer a wide range of information from their environment. One of the most important roles of light for both plants and animals is regulation of their biological clocks or circadian rhythms on a daily, weekly, seasonal, and annual basis. Light information that contributes to the establishment of circadian rhythms includes daylength, light intensity, and light wavelength. In animals, eyes ranging from very simple to complex are the organ that collects light (electromagnetic radiation) from the environment.

Animals typically fall into one of several patterns of daily activity. Diurnal animals are active during the day; nocturnal animals are active at night; crepuscular animals are active at dawn and dusk; and 24-hour pattern animals have activity bursts during the night, dawn, and dusk. While humans are diurnal in nature, most other mammals are nocturnal (e.g. 80% of primates, all bats), crepuscular (e.g. rabbits, rodents), or have a

[5] Hecht, E. Optics (4th Edition). 2002. Addison-Wesley Longman, Inc. 698 pgs.
[6] Rich, C. & T. Longcore (Eds.) 2006. Ecological Consequences of Artificial Night Lighting. Island Press, Washington. 458 pgs.
[7] Chepesiuk, R. 2009. Missing the Dark: Health effects of light pollution. Environmental Health Perspectives. v. 117 (1): A20-A-27
[8] Footlamberts, like footcandles, are based upon the human perception of light; that is it is weighted for human light sensitivity and the wavelengths that humans see (visible light).

24 hour pattern where they are most active at night, dawn, and dusk (e.g. ungulates, large carnivores, some smaller carnivores)[9]. Thus daily behavioral activities such as sleeping, foraging, eating, moving, and resting occur at different times for different animals such that a single habitat is partitioned into temporal niches regulated by light. Most predators are specifically adapted to hunt under particular light conditions (intensity, wavelength) and in most natural habitats, there is a distinct "changing of the guard", from a suite of animals that are active during the day to a suite of animals that are active at dusk or dawn and/or at night. Introducing artificial night lights to an area will change the ambient setting and may adversely impact animals. Likely effects of artificial night lighting on mammals include avoidance, disorientation, disruption of foraging patterns, increased predation risk, disruption of biological clocks, increased mortality on roads, and disruption of dispersal movements through artificially lighted landscapes[10].

Many amphibians as well as insects become attracted to artificial light because it simulates a full moon. This can cause them to be preyed upon more easily. Trophic levels are dynamic by nature; however, the addition of anthropogenic impacts such as artificial night lighting can cause increased fluctuations and unexpected consequences. Of substantial importance are top predators of the system which regulate the trophic interactions of the ecosystem[11]. These predators include but are not limited to mountain lions, bobcats, and coyotes. NPS has been conducting mountain lion tracking studies since 2002 (27 animals have been tagged over the course of their work) which has provided a wealth of information including that the mountain lions are most active at night, dawn, and dusk; avoid developed areas (more than 2/3rds of the GPS data points are over 1 km away from development); and travel through dark wildlife corridors in the Santa Monica Mountains (pers. comm. Seth Riley, August 12, 2013; Figure 7). Avoidance of development (artificial night lights) effectively decreases the realized range of mountain lions which can limit prey availability, increase necessary travel, and ultimately impact survival success. Areas that are avoided by medium to large sized carnivores can have an increase in the number of smaller predators which can have a negative effect on avian species of scrub communities[12]. And whereas large animals such as mountain lions (Figure 6), bobcats, and coyotes have relatively large territories, many of the smaller animals have relatively small territories and are unable to avoid development (artificial night lights).

Daylength, light intensity, and light wavelength also play a significant role in regulating patterns of seasonal life-cycle activity such as flowering in plants and migration, dispersal, hibernation, and reproduction in animals. The internal mechanism of the biological clock is responsible for the hormonal, physiological, and anatomical preparation that these activities require[13]. Although not the only parameter, the

[9] Ibid
[10] Rich & Longcore. 2006. Op Cit.
[11] Ibid
[12] California State Parks, Inland Empire District. September 2002. Urban edge effects and their relationship with the natural environment.
[13] Gaston, K.J., T.W. Davies, J. Bennie & J. Hopkins. 2012. Reducing the ecological consequences of night-time light pollution: options and developments. Journal of Applied Ecology. v. 49:1256-1266

changing length of day (photoperiod) is the most predictive environmental cue for the seasonal timing of physiology and behavior[14]. Sensitivity to the length of day is often so acute that many species can detect discrepancies in natural light as short as one minute[15]. For many species the stages of their life cycle are set by daylength; research has shown that reproduction cycles are disrupted when artificial night light interferes with species' natural detection systems[16]. Artificial night lights may also interfere with the accurate discernment of seasonal periods of weather conditions, food availability and/or predator activity which is crucial for survival of many species.

Alternation of light and dark regulates and resets the biological clock and depending on the timing, light can advance or delay circadian rhythms. The illuminance required to reset biological clocks varies from species to species; lower light levels are required to reset the clocks in nocturnal rodents than in humans[17]. In addition to daylength and light intensity, wavelength of light is a factor in the regulation of the biological clock. Blue light gives a physiological signal to humans and other organisms that it is daytime; when artificial night lights include light in the blue wavelength range, circadian rhythms can be disrupted[18]. Blue wavelengths are present in virtually all light sources so their elimination requires special lights or filters which appear amber.

While some animals with nocturnal, crepuscular, and 24 hour activity patterns may have a highly-advanced sense of smell or specialized hearing abilities such as echolocation to assist them in the dark, most of them have eyes with adaptations for night vision. The primary adaptations are size of the eye, composition of the retina, and a mirror like membrane called the tapetum lucidum. Many animals that are active at night have big eyes, with a wider pupil, larger lens and increased retinal surface to collect more natural light. For example owl's eyes fill over half of their skull. In order to block light during the day, a number of pupil shapes have evolved, the most advanced is the vertical slit such as those of many reptiles and cats[19].

Two types of photosensitive cells make up the retina; rods and cones. Nocturnal animals tend to have retina almost entirely composed of rods which leads to almost no color vision. Rod cells also have high sensitivity but low acuity; rod cells can be stimulated by very few photons but objects may appear fuzzy because many rod cells connect to a single neuron. Cone cells, on the other hand, have lower sensitivity but high acuity because the cone to neuron ratio is closer to 1:1[20]. Rod cells have the photosensitive pigment rhodopsin which is particularly sensitive to low levels of light; a

[14] Zivkovic, B. July 9, 2007. Clock Tutorial #16: Photoperiodism - Models and Experimental Approaches". A Blog Around the Clock. ScienceBlogs.
[15] Ibid
[16] Kempenaers, B., P. Borgström, P. Loës, E. Schlicht and M. Valcu. September 16, 2010. Light is the Friend of Lovers: Artificial night lightin affects songbird behaviour and reproduction. Current Biology, Published online.
[17] Revell, V.L., H.J. Burgess, C.J. Gazda, M.R. Smith, L.F. Fogg & C.I. Eastman. January 2006. Advancing human circadian rhythms with afternoon melatonin and morning intermittent bright light. Journal of Clininical Endocrinology and Metabolism. v. 91(1): 54–59.
[18] Gaston et al. 2012. Op. Cit.
[19] Land, M.F. & D.E. Nilsson. 2002 Animal Eyes. Oxford University Press, New York. 221 pgs.
[20] Rich & Longcore. 2006. Op. Cit.

tiny fraction of the light required by cone rich eyes is required to activate a rod cell during the night[21]. The tapetum lucidum is a mirror-like reflective membrane directly beneath the retina. It collects and re-emits light back to the retina, giving the rods a second chance at light absorbtion thus maximizing the little light available to them. So, although nocturnal animals see mostly crude shapes, outlines and no color, by maximizing their sensitivity to low light levels with the above adaptations, they are able to successfully hunt, feed and survive in the dark, dawn, and dusk. During the day most crepuscular and nocturnal animals are inactive to avoid over-stimulating their highly sensitive eyes[22].

Human perception of light properties is an inadequate basis for an ecological understanding of the lit environment and the potential impacts of artificial night light on wildlife. Humans need artificial lights at night because we are adapted for day activity; the human visual system is one of the least sensitive to light intensity but most accurate known among animals. Human vision can be up to four orders of magnitude less sensitive than that of other animals[23]. If human vision were not so specialized for diurnal activity, artificial lighting would not be necessary. And while human vision is limited to the visible wavelength spectrum there are animals that are sensitive to wavelengths in the ultraviolet region and animals sensitive to wavelengths in the infrared region[24].

Most animals are nocturnal, crepuscular, or operate on a 24 hour pattern and have remarkable adaptations for night life such that adding light to the night environment can range from a moderate disruption to a significant risk to survival. An important fact is the time when night lighting is most important to humans, the hours at and just after dusk and just prior to dawn, are the same hours when changing natural light levels are critical to many animals. The majority of activity of many nocturnal and all crepuscular animals tends to occur during these hours[25]. Nocturnal animals, as the name implies, are active during the night. This means they conduct their business under varying darkness levels including under clear starry skies with an illuminance value of 0.001 fc as well as under overcast night skies with an illuminance value of 0.0001 fc[26]. And under a full moon (0.01 fc), nocturnal animals change their activity patterns; prey species stay under cover and predator species do not actively hunt as much[27].

In addition to the threat of artificial night lights at the new intramural field to the resident native animals in the Marie Canyon watershed, Pepperdine University is within the footprint of the Pacific Flyway (Figure 9), and potentially within the pathway of many of the more than 60 species of waterfowl, raptors, shorebirds, and songbirds known to regularly migrate through Ventura and Los Angeles counties; traveling at night and

[21] https://www.ebiomedia.com/how-do-animals-see-in-the-dark.html
[22] Ibid
[23] Land & Nilsson. 2002. Op. Cit.
[24] Ibid
[25] Gaston et al. 2012. Op. Cit.
[26] Rich & Longcore. 2006. Op. Cit.
[27] Ibid

stopping for a time by inland and coastal creeks, wetlands, woods, and neighborhoods[28] on their northward spring and southward fall migrations. Spring migration occurs during the months of late March through May and fall migration occurs during September, October, and the first part of November. Birds migrating along this route are heading to the Canadian Arctic, Canadian plains, and Canadian boreal forest in the spring, and Mexico, South America, and Pacific Islands in the fall. It is important to note that "Pacific Flyway" is a descriptor for a phenomenon that encompasses the entire state of California and beyond and that not all areas of the state are as important as others. However, depending on the types of migrating birds, certain pathways (e.g. bordering the ocean, along valleys, etc.) will be more frequented, and certain habitats (woodlands, riparian areas, wetlands) will be more important stopovers, than others. The Component 5 site and surroundings may be used by migratory birds as a stopover site because the intramural field turf and Marie Creek and the associated riparian habitat would be attractive to migrating birds that need to rest.

The main concern with artificial night lighting at the new intramural field is its location at the outer edge of campus at the urban-rural (artificial light-natural light) boundary and the potential for night migrating birds to become confused and attracted to the lights during inclement/foggy weather. Most migratory movement occurs early in the evening so any impacts to migrating birds due to the intramural field night lighting are likely to occur during the first two to three hours after sunset[29]. Birds that migrate at night use the moon and stars for navigation. During clear weather they appear to be able to distinguish artificial lighting from light emanating from planets and stars. However, during inclement weather, birds can become confused and drawn to artificial lights. This phenomenon has been observed on numerous occasions at lighted buildings, oil platforms, and athletic fields. Once drawn into an artificial light source a number of negative outcomes including mortality can occur; birds may crash into something, circle the light source becoming exhausted, or become confused and drawn off course.

Potential Impacts of Artificial Night Lights at the Component 5 Site

The proposed artificial night-lighting for the new intramural field at Component 5 consists of six 80 foot tall poles that will each support luminaires fitted with four 1500 watt metal halide bulbs and visors that shield vertical light and limit light trespass. The elevation of the pad is 565 feet which will put the top of the lights at roughly 645 feet. There will be three poles on each side of the field. The approved area for the field will be several times larger than the existing area. The new intramural field itself will be two acres on an overall pad that is four acres in size. Existing conditions are a small field

[28] See: http://www.borealbirds.org/birdguide/map_losangeles.shtml#anchor. The Boreal Songbird Initiative is a network of conservation and birding groups interested in raising awareness in the U.S. and Canada about the importance of the boreal forest and other locations for migratory birds. They conduct migratory bird research and manage and maintain a migratory bird database.

[29] McCrary, M.D., R.L. McKernan, R.E. Landry, W.D. Wagner & R.W. Schreiber. 1982. Nocturnal Avian Migration Assessment of the San Gorgonio Wind Resource Study Area. Report Prepared for Research and Development, Southern California Edison Company, Rosemead, California through the Los Angeles County Natural History Museum Foundation, Section of Ornithology, Los Angeles, California.

with poor turf conditions and temporary lights that require a diesel generator to operate. The existing lights consist of four 25 foot tall poles each fitted with two obsolete metal halide bulbs. The new field will be illuminated by 24 new metal halide lamps while the old field is lit by a total of eight metal halide lamps. Metal halide lamps give off light across the full spectrum of visible wavelengths as well as wavelengths in the UV range and are bright white in color; they are required by the NCAA for collegiate athletic facilities based on their brightness and color character and televised broadcast needs.

In 2010 Francis Krahe & Associates Inc., Architectural Lighting Design (Krahe & Assoc.), performed an environmental lighting analysis for the Campus Life Project[30]. The executive summary of the report states "This report identifies whether the proposed CLP Components result in significant potential glare or light trespass impacts based on illumination industry standards." The report goes on to say that "The methods of analysis utilized for this evaluation are based upon the County of Los Angeles CEQA thresholds, as informed by standard practices and procedures established by the Illuminating Engineering Society of North America (IESNA)".

IESNA standards are a system of specifications related to the general lighting environment that suggest illumination limitations in footcandles (fc) or lux based upon the light level at the human eye[31]. IESNA illumination standards are widely recognized and accepted as the best design practice minimums and are used as the basis for establishing the amount and direction of light for development projects as well as for defining significant impacts. The system includes four environmental area classifications, E1-E4, with regard to ambient lighting. E1 pertains to the most naturally lit areas and is defined as "areas with intrinsically dark landscapes. Examples are national parks, areas of outstanding natural beauty, or residential areas where inhabitants have expressed a strong desire for strict limitation of light trespass"[32]. The specified limiting human eye illuminance for E1 night lighting (pre-curfew, before lights are required to be turned off) is 0.1 fc. To relate this light level to familiar visual situations, 0.1 fc is the pre-dawn light level, 0.01 fc is the light level of a clear night with a full moon, and 0.0001 is the light level of a clear starry night[33]. As discussed in detail above, most animals are active at night and/or dawn and dusk and have numerous night vision adaptations including high sensitivity to very low light levels. While laboratory research is limited, many studies have demonstrated that animals exhibit different behaviors under a full moon versus a clear starry night. Many predators don't hunt under bright moonlight because their prey stay under cover[34]. Using a threshold of 0.1 fc as the criteria for determining whether wildlife will or will not be impacted by artificial night lights is just plain wrong because many critical biological processes and animal behaviors are influenced by light levels well below this value; in fact orders of

[30] Francis Krahe & Associates Inc. Architectural Lighting Design. August 3, 2010. Draft Environmental Impact Lighting Analysis; Pepperdine University, Campus Life Project. Prepared for Pepperdine University

[31] Lewin, Ian. April 2000. Light Trespass Research. Final report to the Lighting Research Office of EPRI, (Electrical Producers' Research Institute) 3574 Atherstone Road, Cleveland Heights, OH 44121

[32] Ibid

[33] Rich & Longcore. 2006. Op. Cit.

[34] Ibid

magnitude lower (nocturnal animals are active at night at light levels as low as 0.0001 fc – see discussion above).

Krahe & Assoc. set up seven receptor sites (D, E, F, G, P, R, & S) on and around the Component 5 site to measure the illuminance and luminance of the existing lights and to model the expected values for the proposed lights (Figure 10). Their analysis assumes that the new artificial night lights at the new intramural field at the Component 5 site will create a significant impact only if they create light trespass greater than 0.1 fc into the natural areas surrounding the field. They provide no review, analysis, or basis for the 0.1 fc criteria in terms of impacts to wildlife. Instead, the value is stated to be an industry standard and is left at that. Figures 11 and 12 show the 0.1 fc threshold line (dashed red line) around the new intramural field in the east-west and north-south orientations, respectively. The 0.1 fc threshold extends minimally beyond the intramural field pad. However, illumination values for light trespass between 0.1 and 0.001 fc extend well into the ESHA surrounding Component 5[35]. Krahe and Assoc. light modeling of the proposed lights show light trespass values equivalent to brighter than moonlight emanating into the surrounding ESHA only decreasing to values equivalent to a clear starry night high on the surrounding slopes[36]. We believe that illumination in this range does pose significant adverse impacts to animals inhabiting the ESHA for the reasons discussed above and below.

We believe that brightness or luminance (sky glow and glare) of the new artificial night lights will also cause a significant adverse impact to the native animals inhabiting the ESHA on the slopes surrounding the new intramural field. Krahe & Assoc. measure brightness or luminance in footlamberts which is another metric that is weighted for human perception of light. Their analysis of luminance includes measuring the luminance of existing visible light sources and the illuminated surfaces from the view of the receptor sites. They record the most intense brightness or maximum luminance and the overall average brightness of illuminated surfaces for each receptor site. They describe contrast as the maximum luminance divided by the average brightness of illuminated surfaces. They define 30 and above as a high contrast situation and establish 30 as the threshold above which environmental impacts are expected and below which no environmental impacts are expected. And while Krahe and Assoc. calculated contrast measurements for existing lights and modeled contrast values for the proposed lights[37] they fail to provide any biological basis for the contrast of 30 criteria except that apparently contrast values above 30 are disruptive to humans. Furthermore, the Krahe & Assoc. analysis does not take into account the contribution of scattered and reflected light caused by atmospheric particles such as dust and water vapor to sky glow and glare. Pepperdine's proximity to the coast ensures that there will be many days when the air has a high volume of water vapor. Scatter and reflection are

[35] Krahe and Assoc. May, 14, 2012. Pepperdine Recreation Field North-South Lighting Calculation. Drawn by MG. Project No. EVO10. Scale ½" = 1'.
[36] Ibid
[37] Krahe and Assoc. contrast value results are as follow: 86.6, 46, 88.2, 97.3, 49.4, and 55.5 for the existing lights at receptor sites D, F, G, P, R, and S, respectively. They modeled contrast values of 23.1, 8.1, 16.1, 12.2, 13.4, and, 14.9 for the proposed artificial night lights at receptor sites D, F, G, P, R, & S, respectively.

amplified by the use of metal halide lights which put out a lot of short wavelength light (blue light) which tends to cause more scatter and reflectance than longer wavelenths of light[38].

In addition to Krahe and Assoc.'s lighting report lacking analysis specific to light impacts upon wildlife, the report also does not evaluate the unique location and topography of Component 5[39]. Night lights in this location push negative impacts associated with development and human activities farther into pristine habitat. The Component 5 area and surroundings are very dark at night. Photos of the Component 5 site taken from receptor site locations D, E, and G demonstrate the dark nature of the surrounding area (Figure 13). In our view, regardless of the exact contrast values, the proposed artificial night lights at the Component 5 site will create a large dome of light highly visible to the wildlife inhabiting the immediate slopes around the new intramural field and the greater Marie Canyon watershed area that will disrupt, deter, and disturb their natural behavior and activities. Given the topography of the area, all views of the lighted field from the adjacent habitat will be either looking down or straight-on to the dome of light. This dome of light, especially under inclement conditions, would be the defining feature at night in the Marie Canyon watershed. The effects of night lighting on wildlife are not limited to shining light into the habitat; the effects include the sheer presence of the light. Based on the location of the Component 5 site and our knowledge of the light sensitivity of animals, we find that artificial night lighting at the new intramural field will adversely impact wildlife that occupy ESHA.

In addition to the direct adverse impacts upon native animals of the artificial night lights, the lights indirectly pose the risk of significant and adverse impacts by providing the key parameter enabling high-disturbance night activities to Marie Canyon, such as competitive sports events drawing participants and spectators. These impacts include the combination of noise, lights, increased use of the adjacent parking lot, and increased traffic on Huntsinger Circle Road for attendance of events at the new intramural field. Event attendance may also produce litter and food wastes that attract wildlife, in addition to other impacts on wildlife corridor use of the riparian canyon.

Malibu High School and "Beach Chalet" (Appeal A-2-SNF-12-020, approved as proposed) are two recent examples of projects where the Commission approved sport field lighting. There are several significant differences between those cases and the proposed artificial night lighting at the Component 5 site. The most important difference is location; neither Malibu High School nor Beach Chalet are located adjacent to ESHA and both are surrounded by development. Malibu High School is surrounded by residential development and Beach Chalet is in Golden Gate Park in San Francisco surrounded by residential development on three sides. Dr. Engel evaluated the use of lights for Malibu High School and found that there were no concerns involving ESHA and associated animals. However Dr. Engel did find that migrating birds could potentially be adversely impacted by the Malibu High School football field artificial night

[38] The increased scatter from short wavelength blue light is known as Rayleigh Scatter.
[39] Urban-rural (artificial light-natural light) boundary at the northern edge of campus, at the base of the Santa Monica Mountains, surrounded by steep slopes of ESHA that support numerous native animals

lights. While the Commission did approve the artificial night lights for the Malibu High School football field, several special conditions were required including a one year avian monitoring program, a limited number of nights that the lights could be used and a limit on the number of hours of use.

In conclusion, we have determined that night lights will adversely impact the numerous species of nocturnal, crepuscular, and 24 hour activity pattern animals that occupy the ESHA surrounding the Component 5 site. Significant adverse impacts include lit area avoidance, disorientation, disruption of foraging patterns, increased predation risk, disruption of biological clocks, disruption of reproduction, and disruption of dispersal, to name a few. Any one or a combination of these impacts can lead to reduced survival and/or an increase in mortality. While the impacts of light trespass and sky glow and glare may be deemed inconsequential from a human perspective, we believe the impacts of artificial night lights at the Component 5 site will be very significant and adverse from a wildlife perspective, based on their high sensitivity to light levels and their numerous adaptations to making a living at night.

Component 5 Intramural Field Orientation and Restroom and Storage Facility Location

We recommend that the recreational amenities proposed for Component 5 be limited to day use only. Contingent to this recommendation, either field orientation is acceptable; east-west or north-south. Finally, we support the proposed location of the restroom and storage facility between the field and parking lot because it will not require additional fuel modification and reduces noise impacts and other disturbance to the surrounding ESHA.

Source: I.K. Curtis Aerial Photograph 2008.

Revised: Sep. 28, 2010

ENVICOM CORPORATION

PEPPERDINE UNIVERSITY CAMPUS LIFE PROJECT – DRAFT EIR

Aerial View of Pepperdine University Campus

FEET 0 300 600

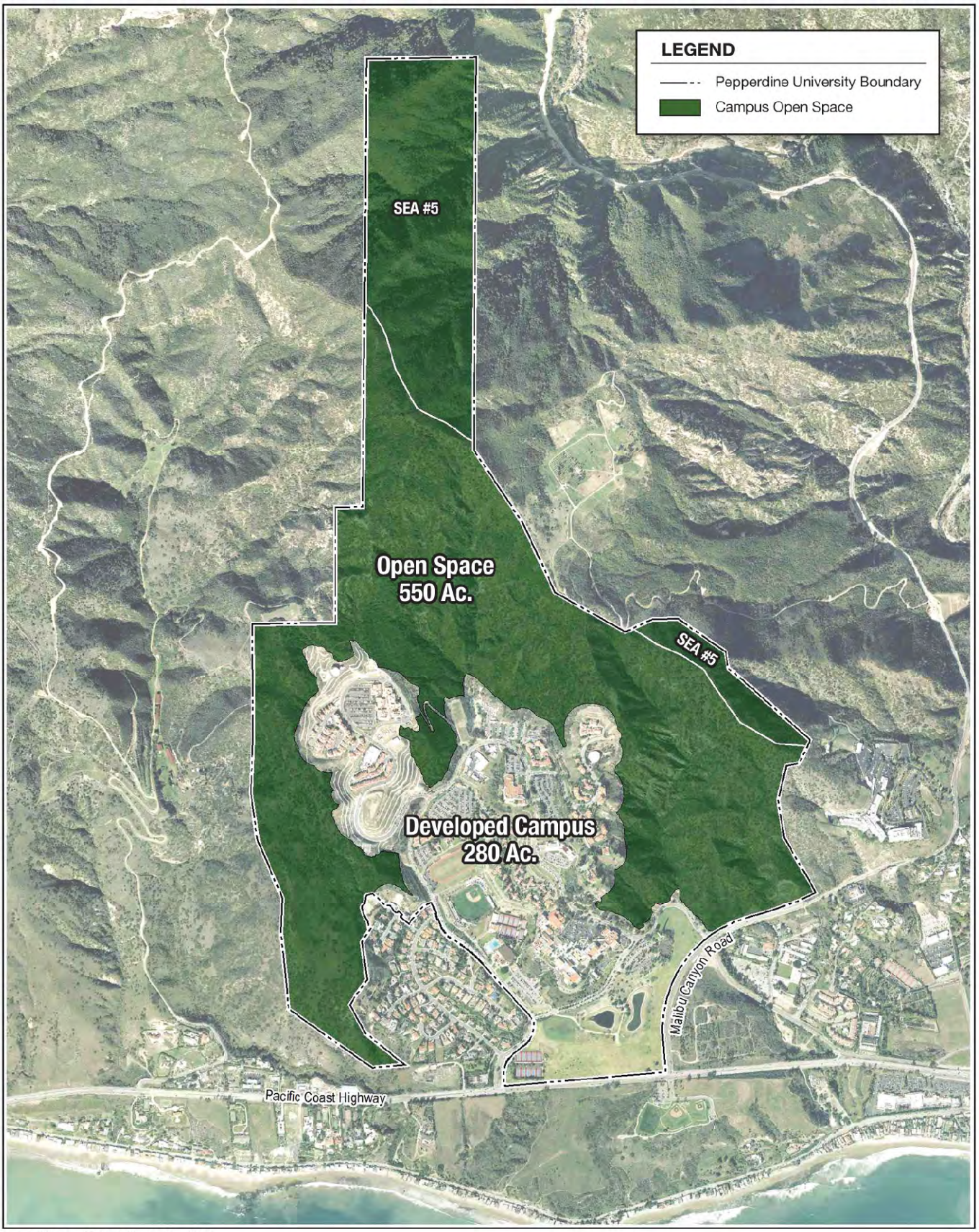
CALIFORNIA COASTAL COMMISSION

Technical Services Division - GIS Unit

DSM 8/2013

All Locations Approximate.
For Illustrative Purposes Only.
Source: Pepperdine Universidy CLP Draft EIR.

Figure 1. Campus Life Project Components 1 - 4 Circled in White; Component 5 Circled in Red.



Aerial Source: I.K. Curtis Services Inc., 2006.

PEPPERDINE UNIVERSITY CAMPUS LIFE PROJECT

ENVICOM CORPORATION

Developed Campus & Open Space

0 750 1,500 Feet

FIGURE 1

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All Locations Approximate.
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Source: Pepperdine Draft EIR.

Figure 2. Aerial Photograph of Pepperdine University Campus and Surroundings

Aerial photograph taken in 1984 showing the topography and amphitheatre-like position of the Component 5 site (circled in red).

Aerial photograph taken in 2006 showing the topography and amphitheatre-like position of the Component 5 site.

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Figure 3.

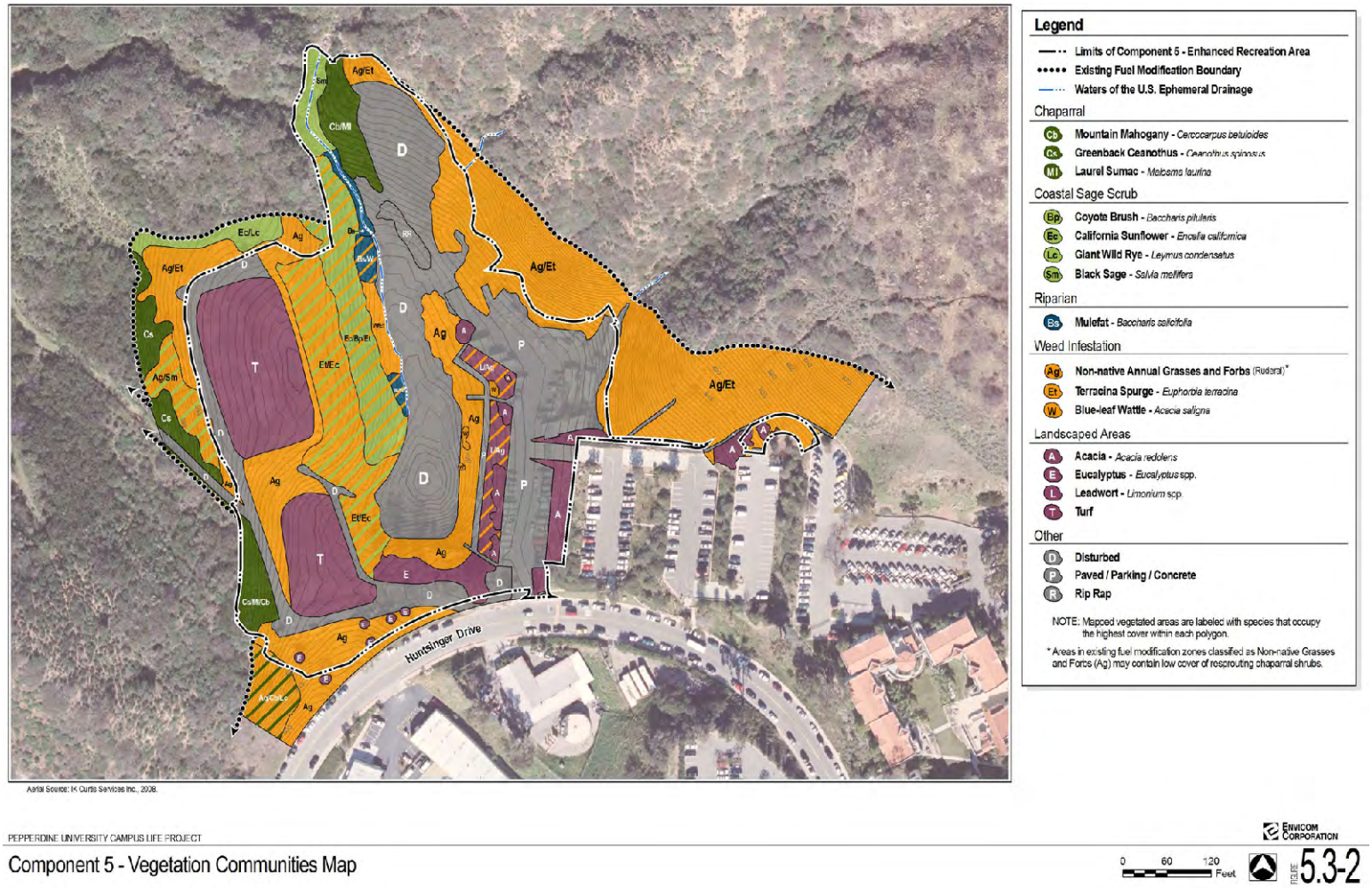

Figure 4. ENVICOM (figure 5.3-2 from CLP Draft EIR Bio Section) Vegetation Map of the Component 5 Site.

All Locations Approximate.
For Illustrative Purposes Only.

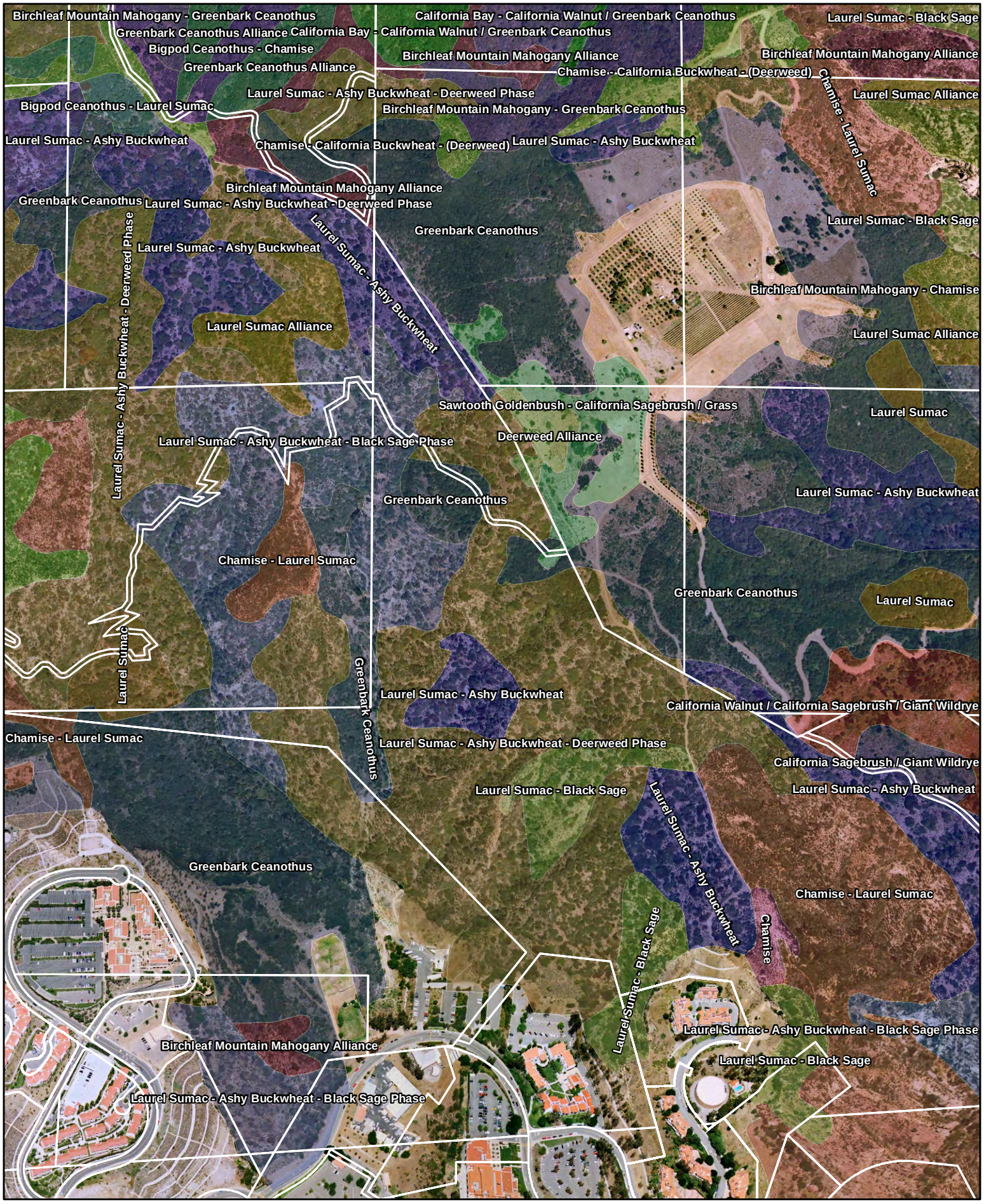

Figure 5. National Park Service vegetation map of area surrounding the Component 5 site.

Priliminary Draft.
All Locations Approximate.
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Source: NPS 2007, NAIP 2005.

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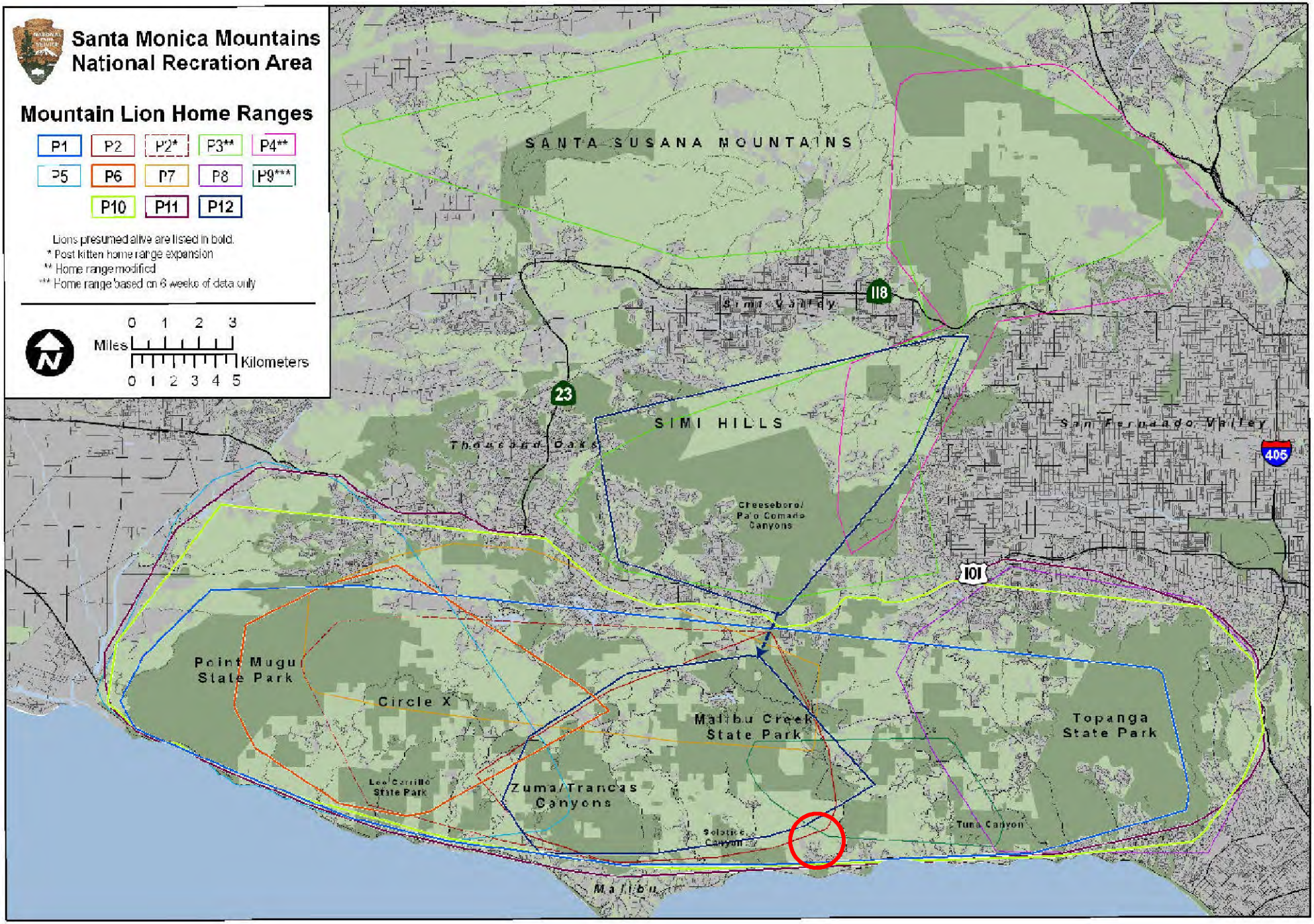

Figure 6. Mountain lion territories (homeranges) within the SMMs derived from tagged mountain lions. Location of Pepperdine Unitversity circled in red.

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All Locations Approximate.
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Source: SMMNRA

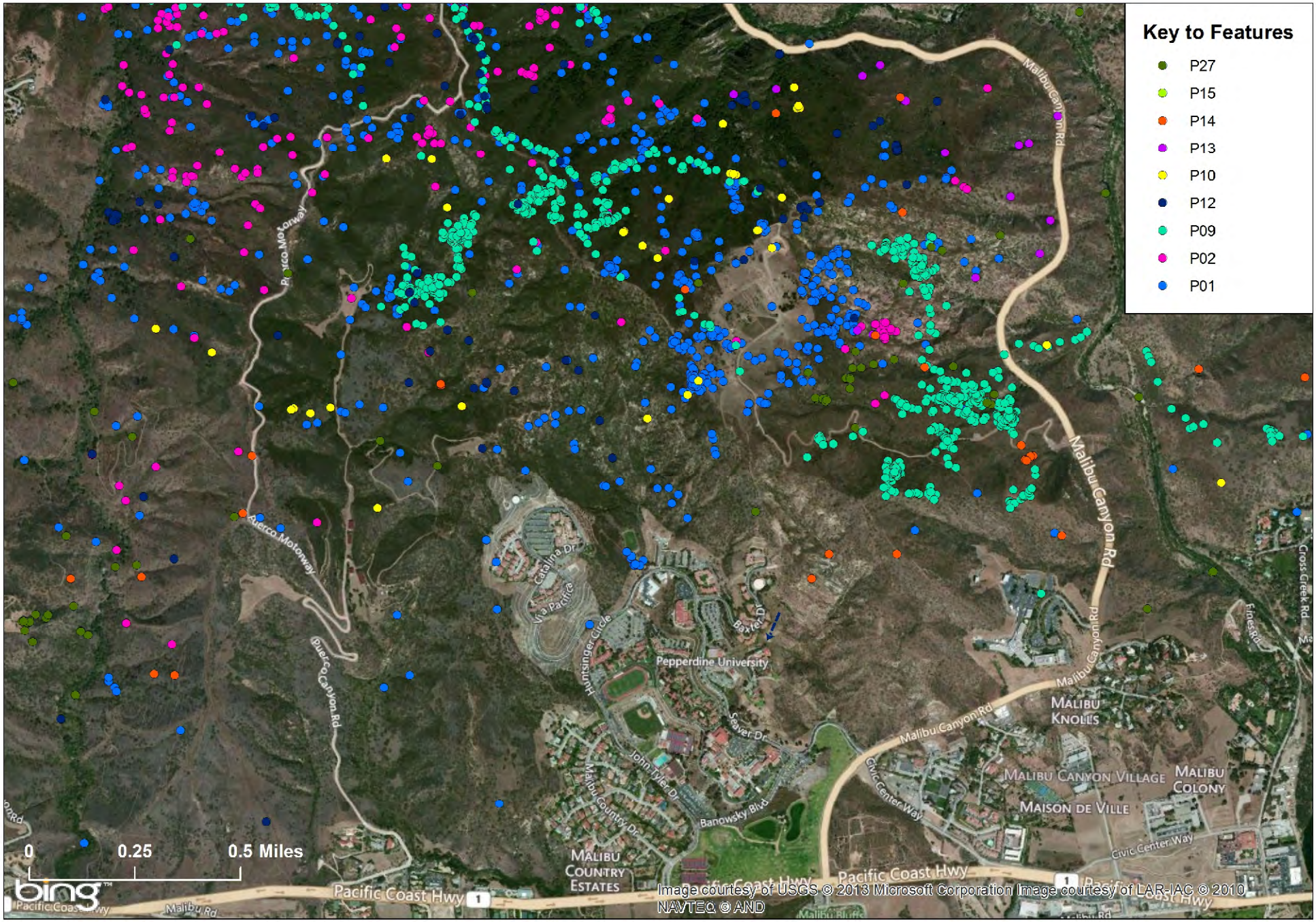

Figure 7. Mountain lion point locations in Marie Canyon watershed – data obtained from NPS – from tagged mountain lion program.

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All Locations Approximate.
For Illustrative Purposes Only.
Source: SMMNRA

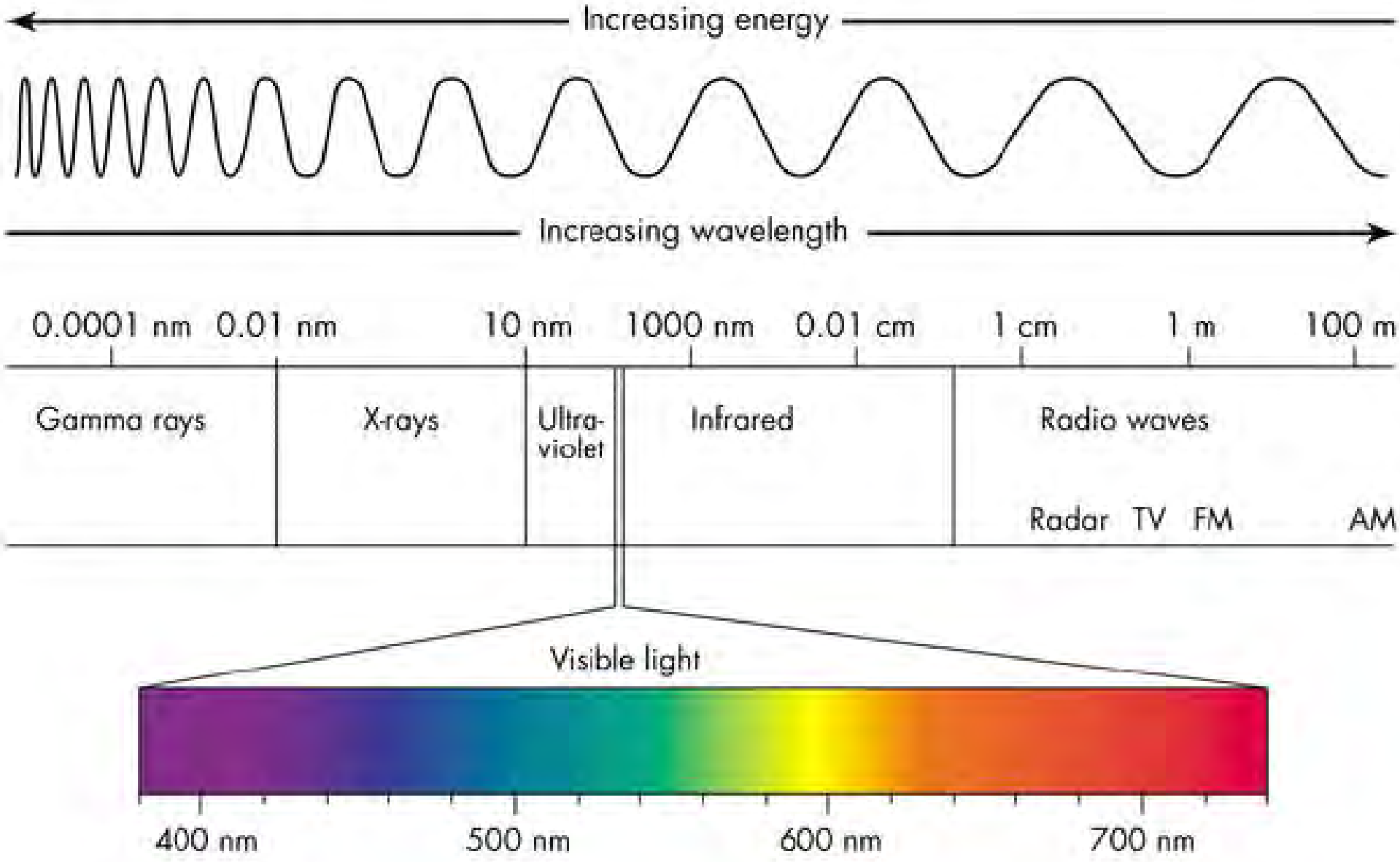

Figure 8. Electromagnetic radiation spectrum.

All Locations Approximate.
For Illustrative Purposes Only.

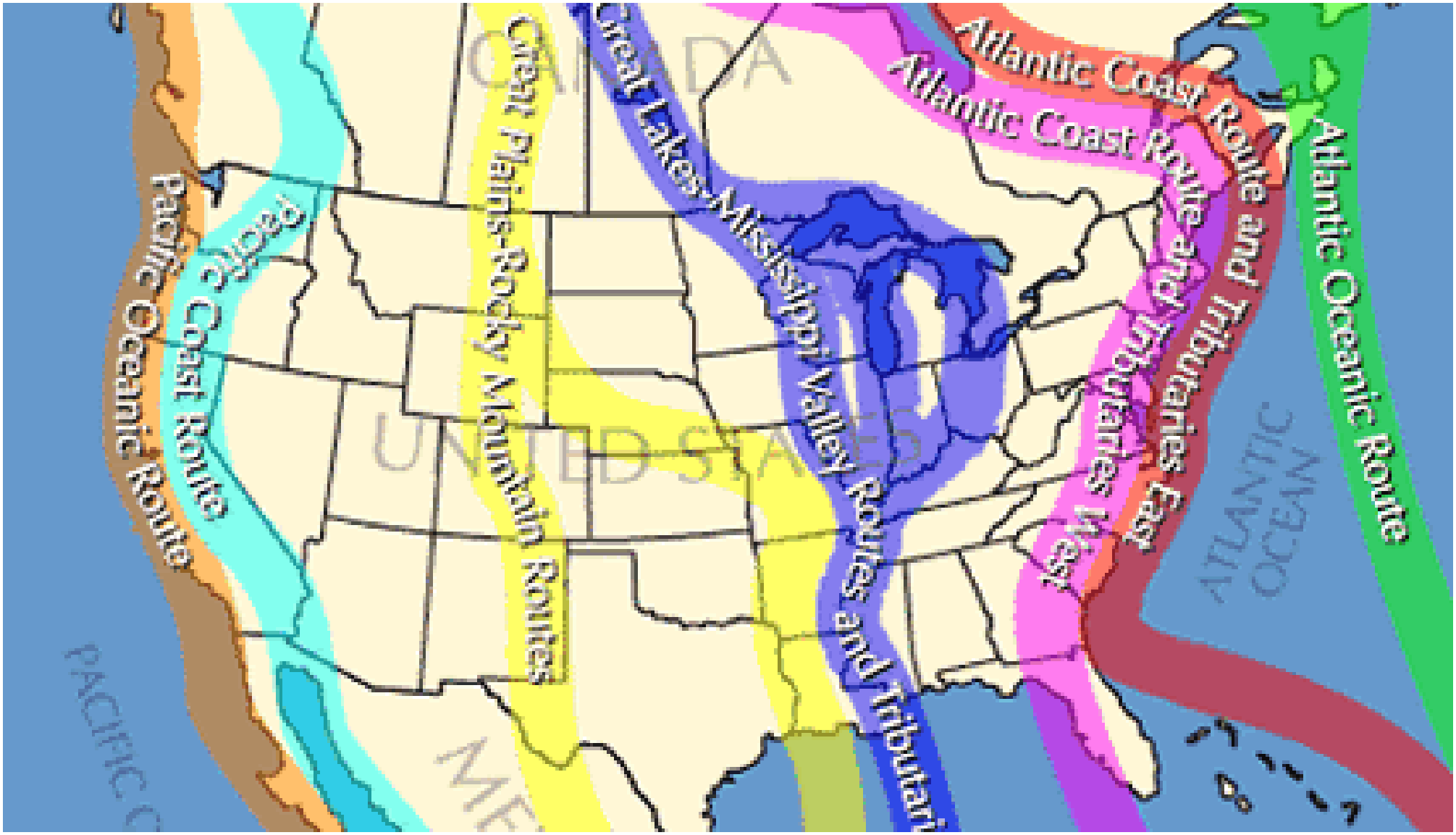

Figure 9. Pacific Flyway, note Coastal and Oceanic routes.

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All Locations Approximate.
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Sourcehttp://www.borealbirds.org/birdguide/map_losangeles.shtml#anchor

Figure 10. Receptor site locations. Figure 4 from Krahe & Assoc. Inc. Lighting Analysis.

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All Locations Approximate.
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Source: Krahe & Assoc. Inc. Lighting Analysis.

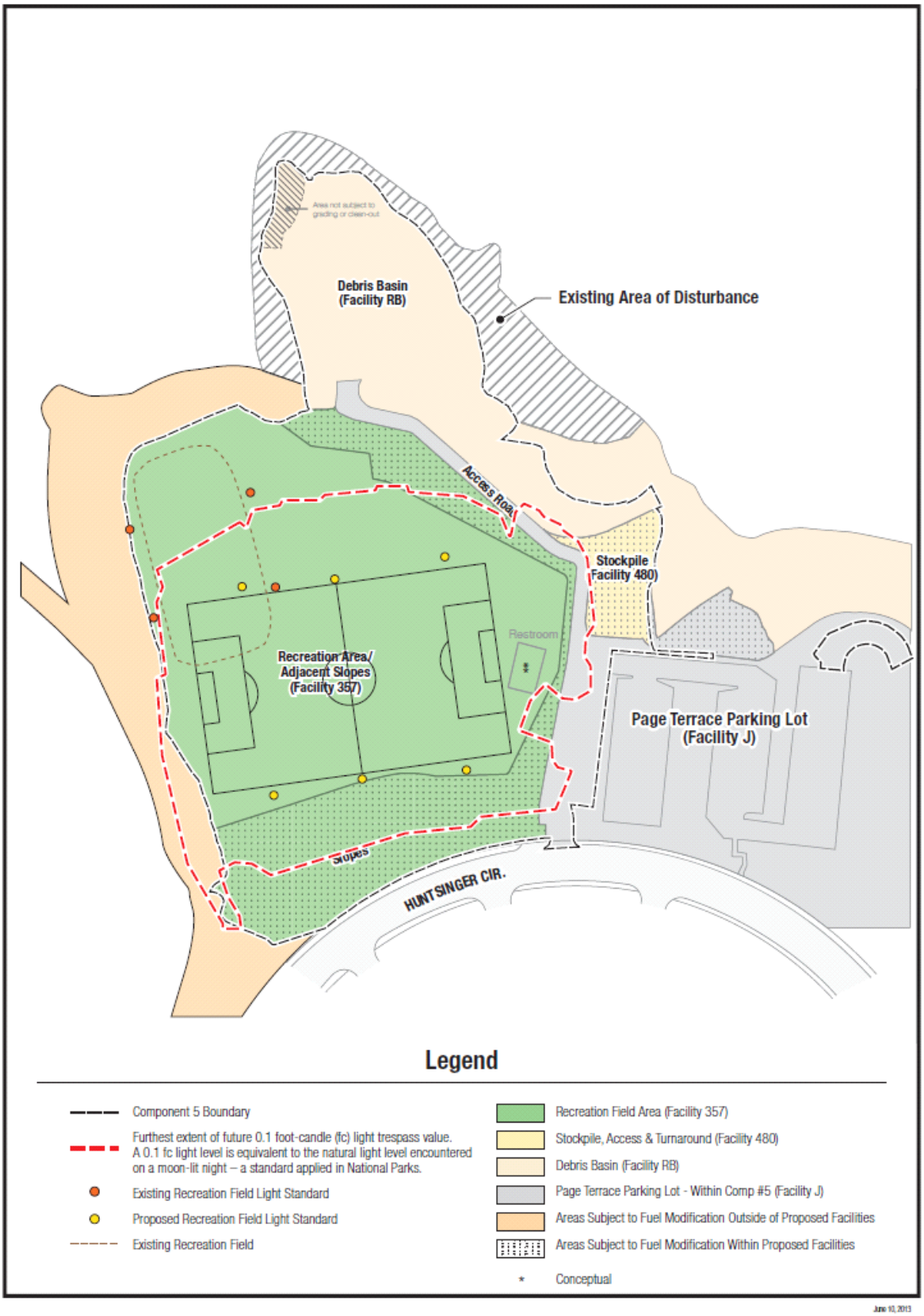

Figure 11. 0.1 fc line (red dashed) around proposed E-W intramural field orientation.

All Locations Approximate.
For Illustrative Purposes Only.
Source: Krahe & Assoc. Inc. Lighting Analysis.

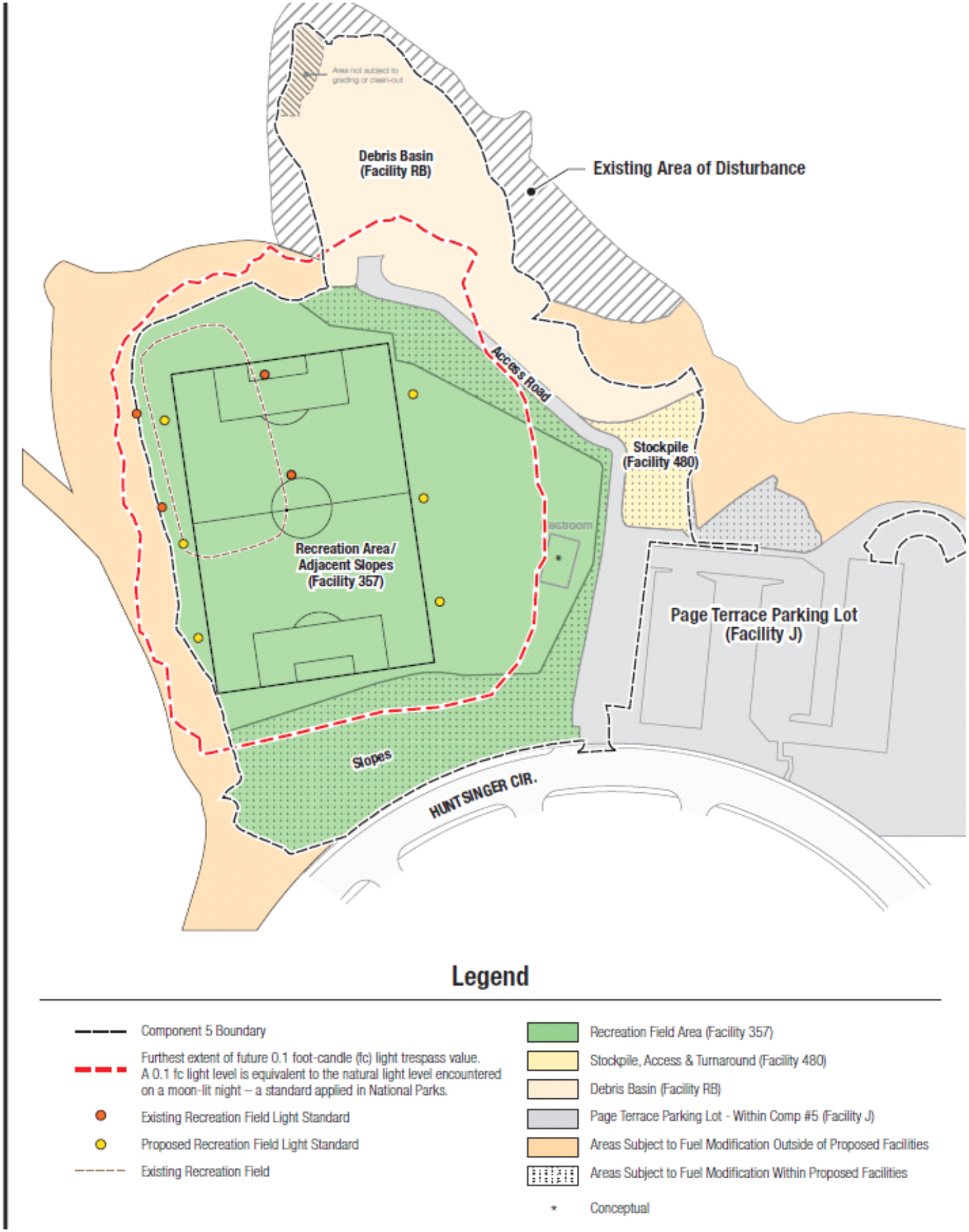

Figure 12. 0.1 fc line (dashed red) around proposed N-S intramural field orientation.

All Locations Approximate.
For Illustrative Purposes Only.
Source: Krahe & Assoc. Inc. Lighting Analysis.

Figure 18: Receptor Site D, Nighttime View (component site 5 indicated by dashed box)

Figure 22: Receptor Site E, Nighttime View

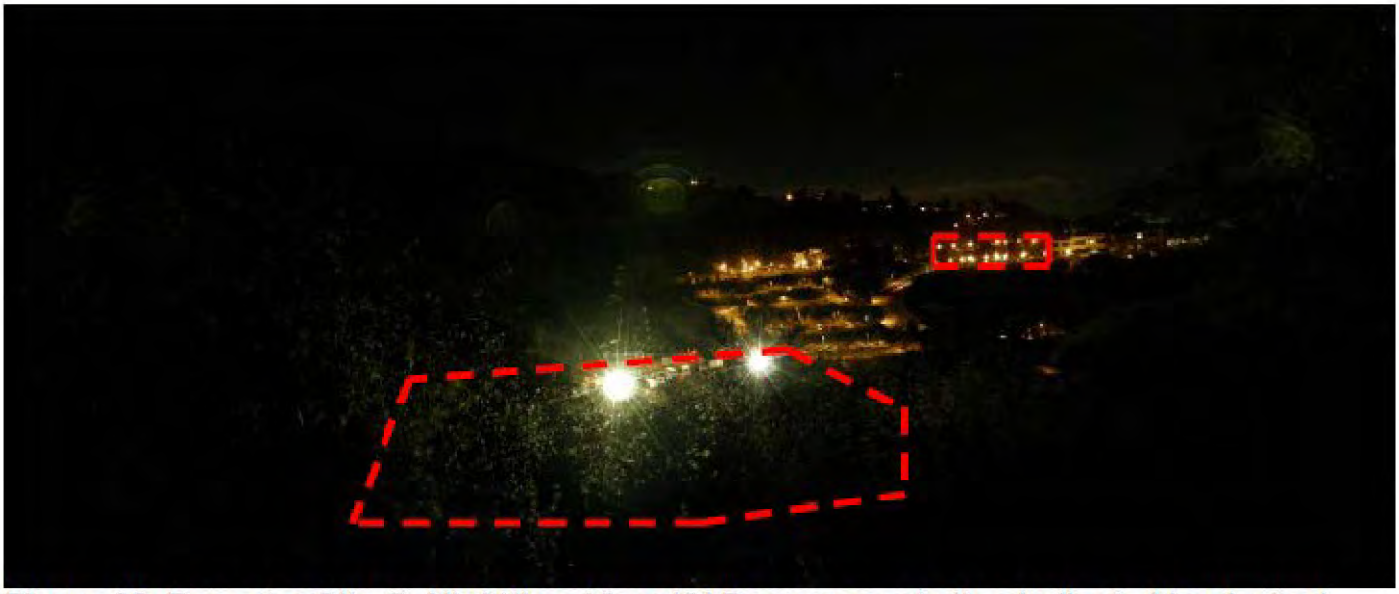

Figure 30: Receptor Site G, Nighttime View (CLP component sites indicated by dashed box)

Figure 13. Photographs from three receptor site (D, E and G) views around the Component 5 site illiustrating the dark nature of the surroundings.

All Locations Approximate.
For Illustrative Purposes Only.
Source: Krahe & Assoc. Inc. Lighting Analysis.