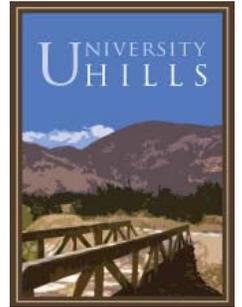


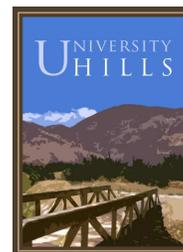
Section 4

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# Design Guidelines



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# DESIGN GUIDELINES

## Introduction

The University Hills Design Guidelines provide general criteria for architecture, landscaping, entry monumentation, walls and fences, and other design elements in order to ensure a high quality development and strong community character. The overall goal of these Design Guidelines is to create an attractive and distinct community within the City of San Bernardino.

It is important to note that these Design Guidelines are not intended to be strictly enforced but instead are general and illustrative, to be used to evaluate development proposals. However, every development within University Hills must incorporate the particular attention to detail reflected in these guidelines and the intent of these guidelines must be met in order for a project to be approved.

The Master Developer will establish a Design Review Committee (Committee) to ensure that the quality design envisioned in the Specific Plan is carried out throughout the development. All applicable proposals in University Hills will be reviewed by the Committee for consistency with these Design Guidelines. Further discussion on the Committee can be found in Chapter 6, *Implementation*.

## Format

The Design Guidelines are arranged to first address aspects at the community-wide level and then at the project level. The community-wide design guidelines address the layout and design of the community and landscape and streetscape treatment. At the project specific level, the guidelines address building details such as orientation, massing, and architectural treatment.



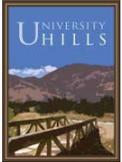
*Bioswales have been designed throughout University Hills to aid in stormwater infiltration.*

## Community Wide Design Guidelines

Community structure guidelines apply to University Hills as a whole. They are intended to create a strong community identity through the use of consistent streetscape, entry monumentation, landscaping, and lighting elements.

### Landscape Theme

The University Hills landscape has been designed to encompass the natural beauty of the surrounding environment and elements of sustainability. Plant materials have been chosen based on the area's environmental conditions as well as the aesthetics they will bring to the community. The landscape is designed to enhance the walkability of the community by leading residents to parks, open space, and community gathering areas. The Conceptual Landscape Plan for University Hills is shown on Figure 4-1.



**Figure 4-1:  
Conceptual  
Landscape Plan**



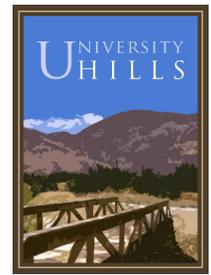
**LEGEND**

-  Primary Entry Monument
-  Secondary Entry Monument
-  Neighborhood Marker
-  Fuel Modification Zone A
-  Fuel Modification Zone B
-  Fuel Modification Zone C

Note: This illustration is conceptual in nature and is intended to show the range of facilities accommodated within the feature and potential arrangement of improvements. The exact size, configuration, and level/type of the improvements will be determined during the grading and building permit process.



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## Entries and Monuments

The character of the community and neighborhood entries should be simple and restrained according to an identifiable hierarchy within University Hills. Entries and monuments are intended to enhance the community architectural theme and provide community identity.

The entry treatments described below provide the desired quality of the entry and monument types. Conceptual locations for entry monuments within University Hills can be found on Figure 4-1. The exact design, configuration, and content of each will be determined in detailed site plans at the tract map level.

### Primary Entry Monumentation

Primary entry monuments are the most prominent entries into University Hills and represent the most significant design treatment. Primary entry monuments are provided at two key locations: along Campus Parkway and Little Mountain Drive. Primary entry monuments will be provided on one side of the roadway. The landscaping at the primary entry, in concert with the signage, lighting, and hardscape elements, will form the scenic gateway into University Hills.

The monumentation should incorporate distinctive signage, attractive landscaping, and distinguishing elements. These may consist of a stone veneer wall and landscaping that includes a large specimen tree. Please see Figure 4-2 for primary entry monument concepts.

### Secondary Entry Monumentation

In addition to the primary entry monuments, University Hills will feature smaller monuments intended to announce a transition between residential neighborhoods or provide visual interest along a street or intersection.

Secondary entries should consist of small-scale pilaster monuments in distinctive landscaped areas behind the sidewalk. Secondary entries should reflect the character and materials of the primary entry monument using trees, shrubs, groundcover, signage, and lighting. Please see Figure 4-3 for a neighborhood entry conceptual illustration.

### Neighborhood Markers

Neighborhood markers identify individual residential neighborhoods and major recreational amenities at significant intersections. Neighborhood markers may be decorative walls or pilaster monuments set in distinctive landscaped areas behind the sidewalk to improve intersection visibility and provide a visual cue to help identify the community. The materials and signage will reflect the character and materials of the primary and secondary entry monuments and shall be consistent throughout the community. Please see Figure 4-4 for a neighborhood marker conceptual illustration.

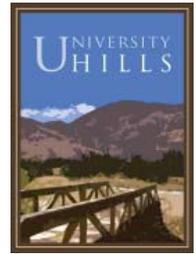


*Neighborhood entries should use natural materials and reflect the design of primary entries.*

# Design Guidelines

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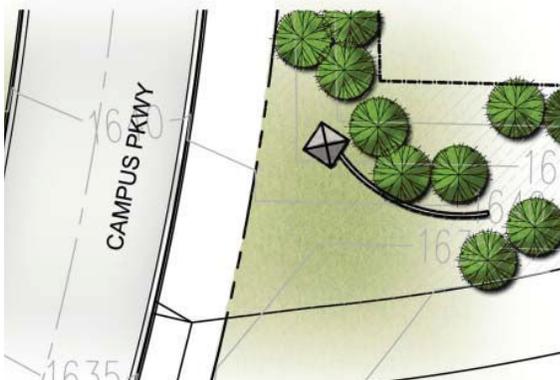
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**Figure 4-2: Primary Entry Conceptual Illustration  
(Campus Parkway & Little Mountain Drive)**



**PLAN VIEW**



**LOCATION MAP**

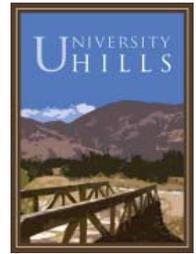


Note: This illustration is conceptual in nature and is intended to show the range of facilities accommodated within the feature and potential arrangement of improvements. The exact size, configuration, and level/type of the improvements will be determined during the grading and building permit process.

NOT TO SCALE



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**Figure 4-3: Secondary Entry  
Conceptual Illustration**



**PLAN VIEW**



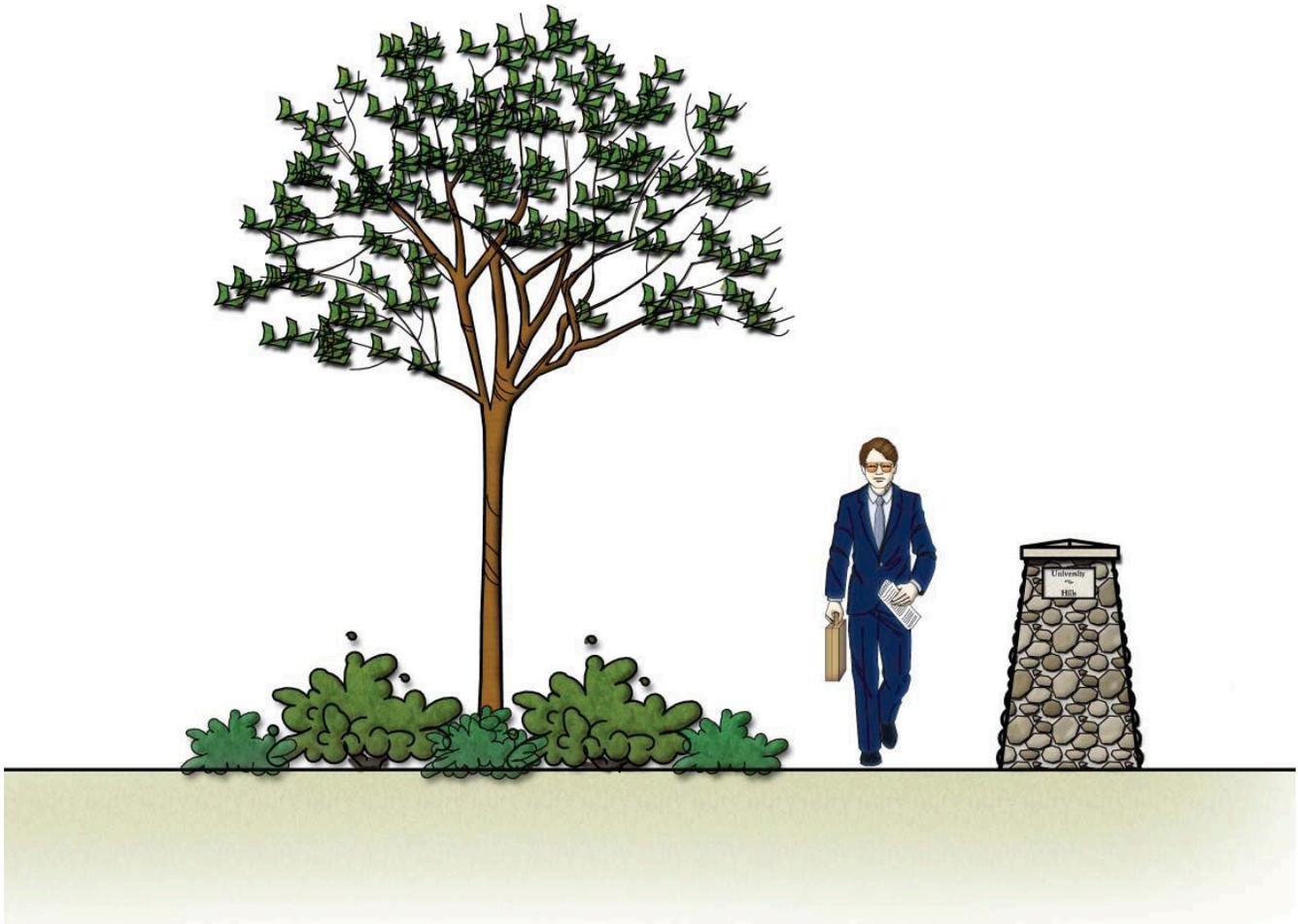
NOT TO SCALE

Note: This illustration is conceptual in nature and is intended to show the range of facilities accommodated within the feature and potential arrangement of improvements. The exact size, configuration, and level/type of the improvements will be determined during the grading and building permit process.



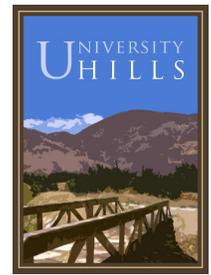
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## Figure 4-4: Neighborhood Marker



Note: This illustration is conceptual in nature and is intended to show the range of facilities accommodated within the feature and potential arrangement of improvements. The exact size, configuration, and level/type of the improvements will be determined during the grading and building permit process.

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## Pedestrian and Bicycle Connectivity

- Pedestrian and bicycle routes along roadways should incorporate pedestrian amenities such as benches, bike racks, shade structures, and lighting where appropriate.
- Pedestrian connections should link residential neighborhoods with recreation areas.
- Bike racks should be located at strategic points throughout the open space system, such as playgrounds, parks, and other recreational amenities, to encourage nonvehicular circulation.
- Trails should be clearly marked with consistent signage and well lit with bollard lighting as appropriate.



*Create attractive and safe pedestrian connections in University Hills.*

## Landscaping

Landscape within University Hills will be planted with combinations of evergreen and deciduous canopy trees with flowering evergreen shrubs and groundcovers. It is intended that the landscape provide a theme and continuity throughout University Hills, enhance desirable views, screen undesirable views, beautify and control erosion of graded slopes exposed to public views, preserve existing landscape material (whenever possible), and enhance interfaces between graded and natural open space areas. Conceptual landscaping for roads within University Hills can be found in the typical street cross-sections and plan views that are illustrated in Figures 3-2 through 3-9 in Chapter 3.

- Streetscape elements, such as landscaping, lighting, street furniture, and signage, should create an attractive, consistent, and cohesive community image.
- Streetscape elements, such as lighting, landscaping, and street furniture, should complement the surrounding architectural styles.
- Special patterned paving should be provided at important intersections and trail crossings within the Specific Plan area.
- All landscaping shall comply with the approved trees, shrubs, and groundcovers listed in the Landscape Plant Palette, Tables 3-8 and 3-9, and the fire protection plan in Chapter 3.
- Landscaping along major roadways and at project entries should be tasteful and consistent to create an attractive and cohesive community identity. Formal plantings of nonnative species may be used at key entries and intersections to highlight these areas.
- Water usage should be minimized through the planting of native and low-water species and the utilization of water-efficient and drip irrigation systems.
- As practical, use medians and parkways for water treatment and to reduce runoff.



*Landscaping plays a critical role in the character of a development and must be thoughtfully integrated into a community.*

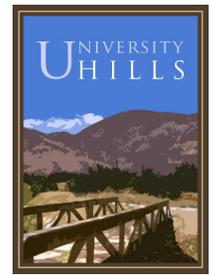
## Walls and Fences



*Perimeter walls (top) and view fencing (bottom) should blend in with the surrounding landscape and architecture.*

Walls and fences within University Hills will predominantly be located around the perimeter boundaries of each residential planning area where it interfaces with open spaces, roads, parks, or off-site land uses. The walls and fences throughout University Hills are major visual elements and shall be carefully designed to complement the overall community theme.

- Solid walls and fences should not dominate the street scene. They should only be used when necessary for noise attenuation, privacy, and shielding of incompatible adjacent uses.
- Wall faces that are visible to the public should be constructed of attractive materials and finished with architectural detailing or articulation. The incorporation of high quality materials and surface articulation are strongly encouraged. Walls and/or wall surfaces not visible to the public do not need the same high level of detail.
- Pilasters should be incorporated into wall design, especially at entries and important community intersections. Pilaster placement shall conform to the City of San Bernardino Municipal Code.
- Trees, vines, and landscaping should be used to soften the visual appearance of the walls.
- Where solid walls are necessary, split-face block, stone, or materials with similar visual qualities should be used.
- Long, monotonous walls are to be avoided. Walls should be modulated with breaks, recesses, and offsets, especially at entries and important intersections. Long walls should be made more attractive and visually interesting through the incorporation of surface articulation and pilasters.
- View fences provide a visually attractive alternative to solid walls and fences. They allow for safety and privacy while preserving views and creating a more visually appealing neighborhood. View fences should be used instead of solid walls when feasible, especially when facing onto parks and trails.
- View fences should incorporate visually attractive materials such as tubular steel, decorative metal, and/or stone (or faux-stone). Glass or acrylic panels are not permitted. If the site conditions permit, the first two to three feet of a combination view fence shall be a concrete block wall, with the base portion of the wall being split-face block, stone, or materials with similar visual qualities.
- Thematic fencing (e.g., split-rail fencing constructed of woodcrete) may be used as a separation between decomposed granite paths adjacent to roads. These instances shall be evaluated on a case-by-case basis by the governing agency. Thematic fencing should be three to four feet high, depending on slope and site conditions.



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## Lighting

Lighting within University Hills is intended to help define vehicular and pedestrian circulation patterns, provide safe pedestrian movement, distinguish community entries and activity areas, and contribute to the overall landscape theme of the community. The goal is to provide a sense of place by varying fixtures and illumination levels. Due to the proximity of University Hills to the planned CSUSB observatory at Badger Hill, the use of lighting within the community shall not be excessive.

- Lighting along alleys within individual residential projects may develop unique lighting standards, provided that the selected lighting fixture style is used consistently throughout the project, and is complementary to the style selected for the University Hills community as a whole.
- Attractive and consistent lighting elements should be provided along roadways within the neighborhood. The height, brightness, and spacing of the lighting elements should be appropriate to the scale and speed of the roadway.
- Lighting fixtures should be compatible with the architectural styles of surrounding buildings and yet consistent throughout the community.
- Entry areas (both pedestrian and vehicular), the clubhouse, and highly used recreation areas shall be creatively lit to develop a sense of place and arrival.
- All exterior lights shall be shielded and focused to minimize spill light into the night sky or adjacent properties.
- The lighting concept of the entry monuments is to illuminate the sign graphics and gently wash the site elements, walls, and pilasters with light.
- Lighting standards should be consistent with City safety and illumination requirements for rural areas.



## Design Guidelines

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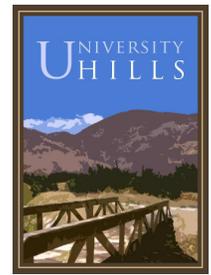
- Wall-mounted lighting fixtures shall be selected according to the individual style of the building.
- Exterior lighting on homes should be set to automatic timers.
- Provide low-contrast lighting, and use low-voltage fixtures and energy-efficient bulbs, such as compact fluorescent (CFL) and light emitting diode (LED) bulbs.
- Refer to *Chapter 5, Sustainability Guidelines*, for additional standards and guidelines pertaining to lighting within University Hills.

### Recreation Areas

- Recreation and open space areas should be designed to accommodate the needs of different ages and abilities.
- Canopy trees should be used to provide shade. Informal groupings create visual interest and are encouraged.
- Ample outdoor furniture should be provided. This furniture should match the surrounding architectural styles, materials, and colors.
- A combination of hard and soft paving may be used depending on the function of the recreational amenity.
- Active areas may utilize turf, grasses, and ornamental plantings. Passive areas should primarily be composed of drought-tolerant species.
- The clubhouse and other common buildings should exhibit a high level of quality and attention to detail on all visible sides of the building.

### Slopes

- Grading shall comply with the City of San Bernardino Grading Ordinance.
- Cut-and-fill earthwork should be balanced within each project.
- Where feasible, grading shall be minimized by following the natural ground contours.
- Man-made landforms shall be graded to avoid unnaturally sharp or straight edges and planes. The top and toe of graded slopes shall be rounded to avoid harsh machine-made appearance.
- Significant natural vegetation should be retained and incorporated into the project whenever feasible.
- All graded slopes shall be stabilized and planted with the approved trees, shrubs, and groundcovers as listed in the Landscape Plant Palette.



## Residential Design Guidelines

Building-level design guidelines provide important design criteria for structures within University Hills.

### General

- Architectural Style
  - The massing, character, and detailing of the architectural styles should be as authentic to the selected styles as possible. However, contemporary adaptation of traditional vernacular styles is acceptable.
  - The choice of architectural expression must be derived primarily from the respective building typology (e.g., row towns, courtyard buildings, single-family homes). Architectural styles should be accurate and appropriate for the building typology. Refer to the Architectural Styles section at the end of this chapter.
  - Use architectural elements that form an integral part of the building and avoid ornamentation and features that appear to be cheap and tacked on.
- Building Orientation
  - Use residential entrances to activate the street, and utilize elements such as canopies, porches, stoops, trellises, and courtyards as transitional spaces between the private and public realms.
  - Orient buildings to face onto streets, parks, and open spaces/trails. This orientation will create more attractive, safe, and pedestrian-friendly streetscapes and public spaces.
- Variety and Aesthetic Quality
  - A variety of single-story heights and profiles should be provided while stepping back second-story massing where appropriate. Create identity and interest by varying floor plans and unit types.
  - Adjacent homes of the same architectural style should not have identical elevations or colors. Rather, a rich variety of architectural styles, elevations, colors, and detailing is encouraged.
  - Porches, detailed entries, and stoops add to the character of a neighborhood and should be incorporated. These features should be varied along the street to create visual interest. If possible, these features should project forward of a front-entry garage door.
  - Entry features, such as gates, trellises, arches, and arbors should be employed to add visual interest and variety within the neighborhood.



*Entrances should be oriented towards open spaces, such as a green court or courtyard.*

# Design Guidelines

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*Vary roof forms, materials, and colors as well as entry features to add variety to a neighborhood.*

- Variation in floor plans, unit types, roof forms, colors, and materials adds character and visual interest to a neighborhood. Two identical units may not be placed adjacent to each other.
- Exercise creativity and individual expression in conceiving and interpreting architectural form.
- Apply massing breaks, such as eroded building corners and entry courts, to promote visibility and allow block transparency. Create variety in building mass by providing adequate vertical and horizontal offsets.

## ■ Environmental Considerations

- Where possible, building articulation and form should be expressive of and driven by environmental and site conditions such as solar orientation, views, noise, prevailing winds, and local climate. Plan forms that employ features such as courtyards, plazas, and patios are encouraged.
- Builders are encouraged to incorporate sustainable design features. Refer to Chapter 5, *Sustainability*, for more detailed guidelines

## Building Level

### ■ Enhanced Architectural Treatment

- Enhanced architecture is encouraged for planning parcel edges along neighborhood streets and parks. Special architectural treatment, such as towers, enhanced entries and roof forms, window trim exterior details, and wall finishes, should be used at street corners and other important site locations, such as at the end of view corridors.
- Buildings plotted at corner locations become important design features. These areas are focal points in the streetscape and as such should be places for architectural elements such as articulation, corner glazing, color, and material accents.

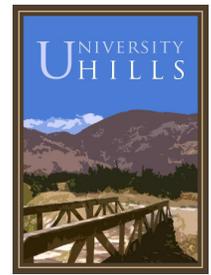
### ■ Roofs

Rows of homes seen from a distance or along arterial roads are perceived by their contrast against the skyline or background. The dominant impact is the shape of the building and roofline. The building mass and rooflines should be articulated to express a variety of conditions and to minimize the visual impact of repetitious flat planes, similar building silhouettes, and similar ridge heights. This should be accomplished by designing a discernibly different roof for each home plan.

- Roof forms of each home should be appropriate to the architectural style.
- A variety of roof forms is encouraged to provide visual interest to the neighborhood and to avoid a monotonous roofline that is visible from CSUSB and surrounding residential neighborhoods.



*Use varied setbacks, rooflines, and architectural styles to create visual interest in a neighborhood.*



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- Overly complex and distracting roof forms are discouraged.
  - High-quality composition, concrete, or clay tiles should be used in conjunction with the style of the home.
  - Visually prominent skylights and roof vents are prohibited on sloped roofs facing public streets.
- Garages
    - The front elevation should focus on the home, not the garage.
    - Garage wall planes on front elevations should be furred out a minimum of six inches.
    - Garage door surrounds should be articulating with trellises, trim, enhanced materials, or other methods to help minimize the architectural impact of the garage door.
    - Garage door appearance should be varied by using door patterns, colors, and windows appropriate to individual architectural styles.
    - Multistoried “canyon-like” effect within alleys shall be avoided by providing massing and vertical and horizontal offsets of primary architectural elements and rooflines. Where possible, ground-floor building setbacks should be varied to provide modulation in the line of garage doors.
- Colors and Materials
    - Color schemes should be appropriate to the architectural style. Color should be used to add variety and richness to the architecture. Color changes should occur at inside corners only.
    - Each elevation should have a minimum of three colors.
    - Each neighborhood shall have a minimum of three different roof colors and profiles.
    - Use materials, colors, and details to enrich building character and emphasize human scale by employing rich, durable, and high quality finishes at the street level.
    - Individual single-family homes shall not have identical color schemes adjacent to one another.
    - Materials shall be fire resistant per the fire protection plan in Chapter 3.
- Articulation and Detailing
    - Articulate elements such as roof overhangs, canopies, and parapets to add interest to building silhouettes.
    - Varied architectural detailing and projections should be used to accentuate specific features and ensure a visually pleasing and varied experience. Architectural projections may include elements such as cantilevered massing, secondary roof changes, niches in plan, and bay windows.

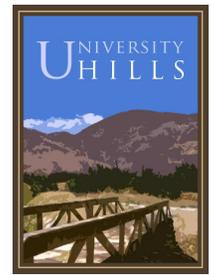
# Design Guidelines

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*Vertical and horizontal offsets of facades and rooflines help to soften the edge of buildings fronting alleys.*

- Provide articulation and rhythm of windows, doors, and balcony openings, using a variety of devices such as canopies, awnings, or railings.
- The inclusion of balconies is encouraged for both aesthetic and practical purposes. They are useful in breaking up large wall planes, offsetting floors, providing shade, creating visual interest, and adding human scale to a building. Balconies also provide the practical advantage of extending living areas to the outdoors and providing elevated spaces and views. Balconies should be designed as integral elements with details, eaves, supports, and railings consistent with the architectural style and other elements of the building design.
- Trash collection, service, and loading areas must be located and designed so that service vehicles have clear and convenient access and do not block adjacent vehicular or pedestrian circulation or vehicular parking. Final location of loading/service areas will be approved by the City during the review process.
- Screening
  - Storage and maintenance areas and other ancillary uses shall be screened from public view whenever reasonably possible.
  - Accessory structures, such as storage areas, refuse receptacles, mechanical equipment, parking structures, backflow preventers, loading docks, security fences, and similar uses can seriously detract from the visual quality of an area. Therefore, care must be taken to minimize the visual impact of these uses through site design and visual shielding. When possible, these uses should be located away from roadways and public views, behind buildings, or in enclosed structures. Effective shielding methods include landscaping, berms, walls and fences, and ornamental screening.
  - Accessory structures should be designed to look like a continuation or extension of the primary structure. They should have architectural detailing and landscaping similar to the primary structure.
  - Any equipment mounted on the roofs shall be screened to minimize its visibility from the street.
- Multifamily Residential Treatment
  - Use a variety of architectural features and detailing methods to differentiate adjacent units. Features such as articulated entry features (porches and stoops), bay windows, and chimneys are encouraged.
  - Large multiple-family dwellings should have articulated façades, including recesses and architectural detailing, to avoid a monotonous streetscape.

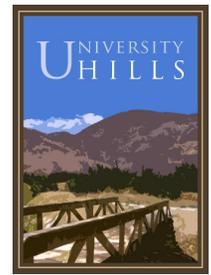


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- In multifamily developments, adjacent buildings should have varied setbacks, floor plans, color and material palettes, and architectural detailing.
  - In multifamily developments, the architectural building edge should be used in place of walls whenever feasible.
  - Buildings should be designed and sited with a strong physical relationship to public areas of the community.
  - Pedestrian access and connections to public sidewalks, trails, and open space shall be emphasized when developing site plans.
  - All alleys shall be designed to include landscaping at the building edges.
  - Valley gutters are not permitted within the centerline of the alley. Gutters shall be constructed along the perimeter of the alley.

# Design Guidelines

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## Menu of Architectural Styles

The architectural style for University Hills is not predetermined by this Specific Plan and a single style is not envisioned for the entire project. Instead, a range of complementary architectural styles may be used to create diversity and interest. The following menu provides a suggested range of complementary styles that are appropriate for the vision and types of uses and buildings proposed. Other styles may be used as long as they are compatible in terms of form, scale, and materials and are appropriate for the building type and use. The menu describes the typical elements that characterize the features of each architectural style and is intended to guide the review of projects. The menu is not an exhaustive list of required features and some variations may be used as long as the integrity of the chosen style is maintained.

# Design Guidelines

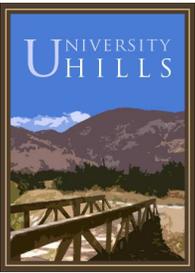
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## *Urban Contemporary Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Asymmetrical massing</li><li>• Vertical or horizontal building articulation</li></ul>
Entry	<ul style="list-style-type: none"><li>• Stoop entry at ground level</li><li>• Recessed entry</li></ul>
Roof	<ul style="list-style-type: none"><li>• Flat or shed roof</li><li>• 0–24” overhangs</li><li>• Standing-seam metal roof accents</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Light sand finish stucco</li><li>• Fiber-cement siding</li><li>• Metal siding accents</li><li>• Brick veneer</li></ul>
Details	<ul style="list-style-type: none"><li>• Metal canopies</li><li>• Simple trim</li><li>• Storefront windows</li></ul>

Typical Elevation





*Urban Contemporary Style Elements*



*Metal siding accents*



*Brick veneer*



*Metal canopies and entry stoops*



*Flat roofs*



*Fiber-cement siding*



*Asymmetrical massing*



*Simple trim*



*Vertical building articulation*

# Design Guidelines

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## *Santa Barbara Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Asymmetrical massing</li><li>• Simple plan</li><li>• Arched arcades</li></ul>
Entry	<ul style="list-style-type: none"><li>• Covered porch</li><li>• Recessed entry</li><li>• Arcade</li></ul>
Roof	<ul style="list-style-type: none"><li>• Gable roof with approximate pitch of 5:12</li><li>• Widely overhanging eaves (open)</li><li>• Tight rake</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Red tile roof</li><li>• Light sand stucco finish</li><li>• Smooth stucco finish</li></ul>
Details	<ul style="list-style-type: none"><li>• Chimneys with decorative cap</li><li>• Decorative metal or wood balconies</li><li>• Decorative patterned tile</li><li>• Decorative metal window grills</li><li>• Textured wood doors</li><li>• Recessed windows</li></ul>

Typical Elevation



*Santa Barbara Style Elements*



*Textured wood door*



*Smooth whitewashed stucco*



*Decorative metal*



*Tight rake*



*Decorative chimney cap*



*Asymmetrical massing*



*Decorative patterned tile*



*Balcony*



*Recessed entry*



*Covered arch at entry*

# Design Guidelines

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## *Spanish Colonial Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Asymmetrical massing</li></ul>
Entry	<ul style="list-style-type: none"><li>• Covered porch</li><li>• Arcade</li><li>• Detailed door surround</li></ul>
Roof	<ul style="list-style-type: none"><li>• Gable or hip roof with approximate pitch of 4:12-5:12</li><li>• Little or no overhang</li><li>• Exposed rafter tails</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Concrete S-tile or barrel tile roof</li><li>• Light sand stucco finish</li><li>• White and light earth tones</li><li>• Smooth stucco finish</li></ul>
Details	<ul style="list-style-type: none"><li>• Chimney with decorative cap</li><li>• Decorative shutters</li><li>• Decorative metal window grills</li><li>• Vertical window proportions</li><li>• Arched window or door openings</li><li>• Textured wood doors</li></ul>

Typical Elevation



*Spanish Colonial Style Elements*



*Little or no roof overhang at rakes*



*Vertical window proportions*



*Decorative shutters*



*Decorative metal grills*



*Detailed door surround*



*Decorative chimney cap*



*Arched window/door openings*



*Covered arcade at entry*



*Asymmetrical massing*

# Design Guidelines

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## *Monterey Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Cantilevered covered balcony at the second floor</li></ul>
Entry	<ul style="list-style-type: none"><li>• Entry covered by balcony above</li></ul>
Roof	<ul style="list-style-type: none"><li>• Shallow gable roof with approximate pitch of 5:12</li><li>• Shed roof break over balcony with an approximate pitch of 3.5:12</li><li>• Exposed rafter tails</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Concrete S-tile or flat tile roof</li><li>• Light sand stucco finish</li><li>• Siding at second story</li><li>• Brick or stone wainscot at the first floor</li></ul>
Details	<ul style="list-style-type: none"><li>• Chimneys with decorative cap</li><li>• Decorative metal or wood balconies</li><li>• Decorative patterned tile</li><li>• Decorative metal window grills</li></ul>

Typical Elevation



**Monterey Style Elements**



*Cantilevered balcony with articulated floor joists*



*Decorative shutters*



*Exposed rafter tails*



*Shallow gabled roof pitch*



*Second-story balcony*



*Balcony-covered entry*



*Siding at second floor*



*Wood corbels with decorative metal balcony railing*

# Design Guidelines

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## *Tuscan Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Informal building forms</li><li>• Asymmetrical massing</li></ul>
Entry	<ul style="list-style-type: none"><li>• Arched door treatments</li></ul>
Roof	<ul style="list-style-type: none"><li>• Shallow pitched gabled or hip roofs (approximately 5:12 pitch)</li><li>• Exposed rafter tails</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Concrete S-tiles</li><li>• Light sand finish stucco in rich earth tones</li><li>• Rustic stone/brick veneer</li></ul>
Details	<ul style="list-style-type: none"><li>• Decorative shutters</li><li>• Decorative metal details</li><li>• Decorative metal or wood balcony railing</li><li>• Arched windows and window treatments</li></ul>

Typical Elevation



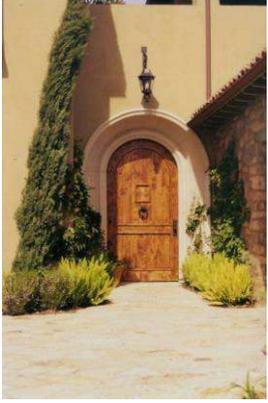
*Tuscan Style Elements*



*Rustic stone veneer*



*Asymmetrical massing*



*Recessed/arched door treatments*



*Arched windows*



*Balcony with decorative metal railings*



*Light sand finish stucco in rich earth tones*



*Decorative shutters*



*Decorative metal detail*



*Informal building forms*

# Design Guidelines

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## *Italianate Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Symmetrical or asymmetrical building massing</li><li>• Varied building massing</li></ul>
Entry	<ul style="list-style-type: none"><li>• Full or partial width front porch</li></ul>
Roof	<ul style="list-style-type: none"><li>• Shallow pitched gable or hip roofs (approximately 3.5:12–4:12 pitch)</li><li>• Large overhangs of 12–24” with decorative brackets below</li><li>• Parapet with detailed cornice</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Concrete flat-tile or asphalt-shingle roof</li><li>• Light sand finish stucco in rich earth tones</li><li>• Rustic stone veneer</li><li>• Quoins at corners, window, or entry doors</li><li>• Stone or brick accents</li></ul>
Details	<ul style="list-style-type: none"><li>• Dentals or brackets at eaves</li><li>• Paired or triple windows</li><li>• Pediment window and door treatments</li><li>• Rusticated base</li></ul>

Typical Elevation



*Italianate Style Elements*



*Asymmetrical building massing*



*Deep overhangs with decorative brackets below*



*Arched door treatment*



*Covered entry*



*Shallow-pitched hip roofs*



*Pediment window*



*Quoins*



*Dentils at eaves*



*Light sand finish stucco in rich earth tones*

# Design Guidelines

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## *California Craftsman Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Symmetrical or asymmetrical plan form</li></ul>
Entry	<ul style="list-style-type: none"><li>• Full-/or partial-width front porch</li></ul>
Roof	<ul style="list-style-type: none"><li>• Shallow-pitched front, side, or cross gable roofs (approximately 3.5:12-4:12 pitch)</li><li>• Large overhangs of 12-24" with decorative brackets below</li><li>• Exposed rafter tails</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Concrete flat-tile or asphalt-shingle roof</li><li>• Light sand finish stucco with siding accents</li><li>• Stone or brick accents</li></ul>
Details	<ul style="list-style-type: none"><li>• Battered, square, or 4-post columns</li><li>• Bracket or knee braces at gabled ends</li><li>• Paired or triple windows</li></ul>

Typical Elevation



*California Craftsman Style Elements*



*Stone accents*



*Exposed rafter tails*



*Battered columns with stone base*



*Stucco with siding accents*



*Shallow-pitched roofs with deep overhangs*



*Paired and tripled windows*

# Design Guidelines

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## *Provence Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Symmetrical or asymmetrical building massing</li></ul>
Entry	<ul style="list-style-type: none"><li>• Arched door treatments</li><li>• Shallow porch</li><li>• Quoins at entry doors</li></ul>
Roof	<ul style="list-style-type: none"><li>• Steep pitched hip and gable roofs (approximately 6:12–12:12 pitch)</li><li>• Short 0–12” overhangs</li><li>• Curved/varying roofline</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Concrete flat-tile or asphalt-shingle roof</li><li>• Light sand finish stucco in rich earth tones</li><li>• Rustic stone veneer</li><li>• Quoins at corners, windows, and entry doors</li><li>• Stone and brick accents</li></ul>
Details	<ul style="list-style-type: none"><li>• Decorative shutters</li><li>• Decorative metal details</li><li>• Decorative metal or wood balcony railing</li><li>• Dormers</li><li>• Arched window and door treatments</li></ul>

Typical Elevation



*Provence Style Elements*



*Arched window and door treatments*



*Curved and varying roofline*



*Quoins*



*Decorative pot shelves*



*Decorative shutters*



*Rich earth tones*



*Rustic stone veneer*



*Shallow porch*



*Steep pitched hip and gabled roofs*

# Design Guidelines

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## *Folk Victorian Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Simple plan</li><li>• Simple roof forms</li></ul>
Entry	<ul style="list-style-type: none"><li>• Full-/or partial-width front porch</li></ul>
Roof	<ul style="list-style-type: none"><li>• Gable roofs (approximately 6:12–9:12 pitch)</li><li>• 12–18” overhangs</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Concrete flat-tile or asphalt-shingle roof</li><li>• Light sand finish stucco with vertical or horizontal siding accents</li></ul>
Details	<ul style="list-style-type: none"><li>• Decorative shutters</li><li>• Roof dormers</li><li>• Decorative elements at gables</li><li>• Shaped wood columns with spindle work</li><li>• Bay window</li></ul>

Typical Elevation



**Folk Victorian Style Elements**



*Bay window*



*Decorative shutters*



*Simple roof forms*



*Stucco with siding accents*



*Full-width front porch*



*Shaped wood columns with spindle work*



*Partial-width front porch*



*Roof dormers*



*Decorative elements at gables*

# Design Guidelines

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## *European Cottage Style*

Style Elements	Standard
Form/Massing	<ul style="list-style-type: none"><li>• Asymmetrical building massing</li><li>• Recessed 2<sup>nd</sup> or 3<sup>rd</sup> floor</li></ul>
Entry	<ul style="list-style-type: none"><li>• Articulated door surround or covered porch</li></ul>
Roof	<ul style="list-style-type: none"><li>• Hip and gable roofs (approximately 4:12–8:12 pitch)</li><li>• 16–18" overhangs</li><li>• Tight rake</li></ul>
Materials and Colors	<ul style="list-style-type: none"><li>• Concrete flat-tile or asphalt roof shingle</li><li>• Light sand finish stucco</li><li>• Rustic stone veneer</li><li>• Stone or brick wainscot</li></ul>
Details	<ul style="list-style-type: none"><li>• Decorative shutters</li><li>• Roof dormers</li><li>• Chimneys</li><li>• Tower elements</li><li>• Planter boxes and pot shelves</li></ul>

Typical Elevation



*European Cottage Style Elements*



*Stone wainscot*



*Decorative pot shelves*



*Recessed second floor*



*Asymmetrical massing*



*Articulated door surround*



*Hip and gable roofs*



*Tower element*



*Decorative shutters*



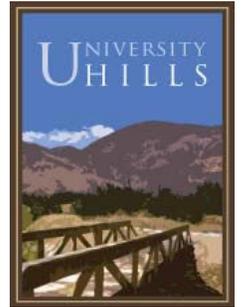
*Tight rake*

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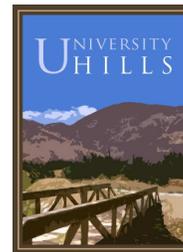
Section 5

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# Sustainability



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## SUSTAINABILITY GUIDELINES

University Hills is committed to creating a sustainable, resource-efficient community. To that end, this Specific Plan addresses sustainable and green building practices for the individual building as well as overall community design. The desire to achieve sustainability is particularly manifested in the level of commitment in the clubhouse and Attached Residential areas. As detailed later in this section, the land owner is committed to ensuring that the clubhouse and Attached Residential areas incorporate green building features.

These Sustainability Guidelines are organized into six major topic areas:

- Site Design and Community Planning
- Green Infrastructure
- Landscaping
- Building-Level Sustainability
- Resource Conservation
- Construction Practices: Erosion and Dust Control
- Commitment to Sustainable Building Practices

A *Sustainability Resource Guide* offering a consolidated list of providers and entities that offer sustainability programs immediately relevant to the University Hills Specific Plan can be found at the end of this chapter.

### Intent and Application

These guidelines are intended to contribute to the development of a sustainable and resource-efficient community, exceeding what would be achieved from standard compliance with the current Uniform, International, and National Building Codes, and City and County ordinances. Development within University Hills will occur from a perspective that sees current local, state, and national requirements as a starting point rather than an ultimate goal.

These guidelines apply to all development within University Hills and establish a framework that will be used to evaluate how proposed developments meet the objectives for sustainable development. It is incumbent upon project applicants to demonstrate how they will comply with these guidelines through the development review process.

The pursuit of already established sustainable best management practices, such as LEED, ComfortWise, and EnergyStar Home, is strongly encouraged for all construction, but only required for construction in the Attached Residential, faculty housing, and clubhouse areas. These certification programs guarantee the achievement of a minimum performance standard. For maximum flexibility,

### Sustainability

Sustainability is “meeting the needs of the present without compromising the ability of future generations to meet their own needs,” as generally defined by the 1987 Brundtland Report of the United Nations World Commission on Environment and Development.

Incorporating sustainable design from the earliest stages has benefits for both the builder and future occupants. Many sustainable design principles have minimal cost impacts if incorporated early in the design phase, and initial costs can frequently be offset by reduced construction time and long-term operations and maintenance savings. In addition, sustainable neighborhood design and green homes are a desirable amenity for many potential home buyers who are often willing to pay a premium to live in a resource-efficient house and community.

# Sustainability Guidelines

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*Plan natural pedestrian or multiuse trails throughout the community. This bioswale trail demonstrates how green infrastructure and natural drainage provides opportunities for pedestrian and recreational amenities along with minimizing storm water runoff.*



*Clustering homes utilizes land efficiently and reduces site disturbance, freeing space for recreational uses and common open space that enhance the community.*

the master developer and builders will implement sustainable building and development practices most appropriate to the specific context within University Hills. In any event, these and other programs can serve as a framework for environmentally sensitive development. For a list of additional providers and entities that offer green building and sustainability programs, see the Sustainability Resource Guide provided at the end of this chapter.

As other programs and standards evolve, the University Hills Sustainability Guidelines may evolve as well to ensure that the goal of sustainability is met. In some cases, topics and issues are described in general terms to allow for the incorporation of new technologies as they are developed.

These Sustainability Guidelines are based upon overarching and measurable performance standards. There are a number of ways to meet the performance standards and these guidelines include both required measures and flexible Best Management Practices (BMPs).

## Overarching Performance Standards

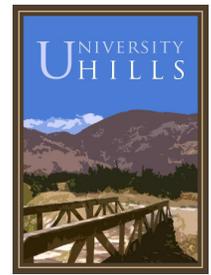
Development in University Hills shall comply with the following Performance Standards:

- All buildings shall exceed Title 24 standards (2005) for energy efficiency by 15%
- Development in University Hills shall reduce potable water consumption for irrigation by 25%, as calculated from a mid-summer baseline case.
- Development in University Hills shall use 15% less potable water than the baseline calculated for a typical building (not including irrigation).

## Site Design and Community Planning

There are many sustainable development practices relating to site design and community planning that can be implemented from the early stages of a project. Some of the most cost-efficient and cost-saving sustainable development practices are implemented at a large scale, and thus afford benefits throughout the whole community. Measures as simple as orienting sites and lots to take full advantage of the sun for daylighting can be achieved with little or no cost impact. Development in University Hills will generate innovative and context-sensitive design solutions that lay a framework of sustainability for the entire life of the project and enhance residents' quality of life.

- Required—Cluster homes and other nonresidential buildings to reduce site disturbance and preserve land for other uses such as open space, parks, or recreation, as represented in Figure 2-9, *University Hills Land Plan*.



- Required—As shown in Figure 2-9, limit the reach of construction activities and minimize development footprints.
- Suggested BMP—As feasible, orient buildings so that the long axis of the building is oriented east–west to maximize the opportunity for north- and south-facing windows. Sunlight entering through north-facing windows provides indirect, diffused light with low heat gain for the building, reducing cooling costs during summer months. Also, minimizing the area of roof and wall facing west reduces the amount of solar radiation absorbed during the summer season. In addition, south-facing windows are a key design feature for winter months as they receive about 90 percent of optimal winter solar heat gain, reducing energy needed for heating and cooling.
- Required—Plan streets and lot layouts on an east–west axis, as represented in Figure 2-9, *University Hills Land Plan*, so that shading of streets and homes by trees is maximized. Shading reduces the heating of pavement and buildings by the sun, thereby reducing the trapping of heat by paved areas and the energy needed for cooling interiors. An east–west street layout also maximizes the opportunity for optimal building orientation for passive solar techniques, with the long axis of the building oriented east–west.
- Suggested BMP—Increase tree canopy and place trees strategically to reduce energy demand for adjacent buildings, enhance roadway safety, and provide for a more aesthetically pleasing environment.
- Suggested BMP—Allow narrow streets to reduce paved area and make them easier to shade by trees.
- Required—Incorporate walking and bicycling paths, as represented on Figure 3-11, *Trails, Parks, and Open Space Plan*, to provide transportation alternatives and contribute to a healthy lifestyle. Ensure connections and access for pedestrian and bicycle paths to nonresidential uses and recreational facilities.



*Bioswales are an effective green infrastructure technique that serves a dual purpose; they not only provide a cost-effective alternative to traditional stormwater drainage systems, they also function as landscaping buffers.*



*Permeable paving materials allow water and air to filter through to the ground underneath, reducing stormwater runoff and associated need for standard drainage infrastructure.*

## Green Infrastructure

Embracing an approach to green infrastructure is intended to counterbalance the effects of more traditional land development patterns and associated infrastructure that often fragments and degrades natural open spaces and ecosystems with minimal consideration to long-term sustainability. Green infrastructure integrates natural systems, and capitalizes on opportunities for creating multipurpose systems, thereby using land and resources more efficiently.

Implementing green infrastructure and related methods for watershed management improves water quality, conserves water, and reduces runoff volumes as well as peak flows and durations. In addition to these direct benefits to the watershed, implementing such methods also benefits the quality and availability of biological habitat, provides energy conservation by reducing the

# Sustainability Guidelines

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heat trapping and impervious areas of typical land development, and can be aesthetically pleasing.



*Parking lots constructed of permeable paving materials and permeable paving products that allow for turf or other plant materials to grow are examples of methods for reducing stormwater runoff and the need for standard drainage infrastructure.*

- Required—Collect rainwater on site through the use of stormwater management practices such as the incorporation of infiltration basins and bioswales.
- Required—As shown on Figure 2-9, *University Hills Land Plan*, maintain natural drainage corridors to provide open space buffers for wildlife, vegetative cover for wildlife movement, and infrastructure systems for drainage and ground water recharge.
- Suggested BMP—Grade property to divert stormwater flow to permeable areas, following natural drainage contours to the greatest extent possible.
- Suggested BMP—Where applicable, create curb cuts to allow stormwater flows to drain to permeable or landscaped areas.
- Suggested BMP—Where possible, use pervious or open grid paving for driveways, walkways, plazas, and parking areas. Implement small-scale design features throughout the development, such as “Hollywood” or dual-track driveways for single-family homes.
- Suggested BMP—Use pervious paving materials wherever possible to reduce the negative effects of stormwater runoff and to facilitate groundwater recharge.
- Suggested BMP—Utilize bioswales, particularly with native or drought-tolerant grasses, to collect and filter water runoff.

## Landscaping

Sustainable landscaping practices and techniques help promote water conservation and reduce water demand as well as help to control water and irrigation costs. Efficient irrigation techniques help reduce water demand while sustainable landscape design can lead to the reduction of the heat-island effect (the absorption of solar heat in paved surfaces), improved environmental habitat, and reduced overall maintenance and replacement cost.

- Required—Install high efficiency, xeriscape irrigation systems to reduce the amount of water devoted to landscaped areas, such as drip and bubbler irrigation and low-angle, low-flow nozzles on sprayheads.
- Required—Install and correctly program automated irrigation systems to reduce water use.
- Required—Install properly programmed EvapoTranspiration (ET) based controllers on homeowner’s properties, which are weather based controllers with greater efficiency. In addition, supply homeowners with information on how to properly program their controller using the Metropolitan Water District’s guidelines as a reference tool.

- Required–Install moisture sensors and other similar irrigation technology to ensure that landscaping is watered only as needed.
- Required–Employ the use of water budgets for landscape irrigation to monitor and regulate outdoor water usage.
- Required–Plant selection should be based on species that are drought tolerant, heat resistant, and hardy. Native plant material should also be closely examined and considered for most landscape areas. Sources of reference for such plant materials can be obtained from the Metropolitan Water District and the California Department of Water Resources. Plant selection should strive to use up to 75 percent water-wise/drought-tolerant, native, or Mediterranean plant materials.
- Required–Prohibit the use of large turf areas in landscaping by substituting water-conserving native groundcovers or perennial grasses, shrubs, and trees.
- Required–Landscaped areas installed by individual builders shall not exceed 20 percent turf. For example, landscaped common areas within cluster or attached residential areas would use a combination of drought-tolerant landscaping and xeriscaping to reduce turf areas to no more than 20 percent. Exceptions include open space parks and similar recreation areas in which open grass areas are a planned amenity.
- Required–Turf shall not be planted on slopes and in irregularly shaped areas, with the exception of no-mow grasses, to avoid oversaturation that might harm the structural integrity of slope. Instead, plant material that can be used for erosion control should be used.
- Required–Trails shall be constructed of pervious materials such as decomposed granite or existing earth.
- Required–Group plants with similar water requirements together, a technique known as hydrozoning. A plant reference is available from the California Department of Water Resources.
- Suggested BMP–Increase tree cover in developed areas to reduce solar heat gain into buildings and to reduce the amount of heat absorbed by paved areas. In general, plant drought-tolerant or native tree species around and near buildings, walls, windows, and paved areas. Plant deciduous trees on the south side of buildings to allow for increased solar heat gain in winter months (reducing energy needed for heating interiors) and shading in summer months (reducing energy needed for cooling interiors).
- Suggested BMP–Provide ample tree cover (e.g. 50% parking shade coverage within 10 years) in parking lots for shading and to reduce the amount of heat absorbed by paved parking areas. Evergreen trees that provide year-round shade are particularly useful for minimizing absorption of heat.
- Required–Minimize disruption of and preserve existing trees and plants on site throughout the planning, design, development, and construction processes.



*An example of the type of landscaping that would be appropriate in University Hills is the California buckwheat (*Eriogonum fasciculatum*), which is a drought-tolerant, flowering perennial native to California that attracts butterflies and birds. This species is great for erosion control in dry areas and requires little or no water.*

# Sustainability Guidelines

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- Suggested BMP–Mulch planting beds and apply compost and environmentally friendly fertilizers to promote healthy topsoil, maximize plant growth, and reduce plant replacement. This will also reduce the need for longer or more frequent irrigation run times.

## Building-Level Sustainability

There are many sustainable building practices and techniques that offer safe and healthy living environments. Materials and actions that improve indoor air quality and the comfort of homes as well as reduce the impacts of light pollution are critical to community health and well-being.

### Building Materials

- Suggested BMP–Use 20 percent locally manufactured and produced building materials, defined as materials manufactured or produced within a 500-mile radius of the project.
- Suggested BMP–Strive to utilize a minimum of 50 percent sustainable and recycled wood for wood building components and flooring materials, such as engineered or FSC-certified wood (Forest Stewardship Council).
- Suggested BMP–Strive to utilize rapidly renewable or recycled building materials and products for at least 5 percent of the total value of materials. Flooring alternatives like bamboo, wheatboard, and cork are rapidly renewable materials. Linoleum, exposed concrete, and recycled-content ceramic tiles are also desirable materials.
- Suggested BMP–Encourage the installation of insulation with at least 75 percent recycled content, such as cellulose, newspaper, or recycled cotton.



*Solar panels are one of many sustainable features that can be built into University Hills.*



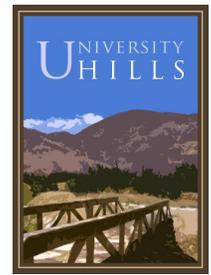
*Reduce light pollution (top) by installing lighting fixtures that direct light downward or only where it is needed (bottom).*

### Indoor/Outdoor Air Quality

- Required–Use only flooring and insulation products that are low emitters of volatile organic compounds (VOC) and formaldehyde.
- Required–Use only low- and zero-VOC paints, finishes, adhesives, caulks, and other substances to improve indoor air quality and reduce the harmful health effects of off-gassing.
- Suggested BMP–All homes should use only gas fireplaces to minimize smoke from wood burning fireplaces and pollutants (e.g. CO, NO, and VOC's).

### Lighting

- Required–Reduce light pollution by avoiding outdoor lighting where it is not needed and providing adequate as opposed to excessive lighting.



- Required—Utilize shielded fixtures, avoiding overhead lighting of areas such as walkways.
- Required—Provide low-contrast lighting, and use low-voltage fixtures and energy-efficient bulbs, such as compact fluorescent (CFL) and light emitting diode (LED) bulbs.
- Required—Use automated occupancy sensors in non-residential buildings that automatically shut off lights when rooms are unoccupied.
- Required—Direct outdoor lighting downward and include this restriction in the HOA/CC&Rs.
- Required—Flashing lights, except for those related to public safety or intended to warn of potential public hazard or danger, are prohibited.
- Required—Design lighting plans to be sensitive to the planned CSUSB observatory on nearby Badger Hill. Follow guidelines suggested by the International Dark Sky Association ([www.darksky.org](http://www.darksky.org)). Factors to be considered in sensitive lighting design include those listed above as well as the mounting height of the lighting luminaire above the ground, the horizontal spacing of one pole to the next, and the cutoff angle of the luminaire. Include nighttime lighting restrictions in the HOA/CC&Rs.



## Energy-Efficient Appliances and Fixtures

- Required—Install water and energy saving fixtures and appliances, such as showerheads, toilets, washing machines, clothes dryers, refrigerators, and dishwashers certified as EnergyStar compliant.
- Required—Use only high efficiency toilets and waterless urinals to reduce water usage.
- Suggested BMP—Install built-in recycling centers in homes next to trash bins to offer convenient and clean methods for separating recyclables from trash.
- Required—Install re-circulating hot water systems to reduce the need to heat water, or tankless water heaters that heat water as needed instead of storing hot water in tanks, thus reducing standby energy use.
- Required—Utilize a minimum insulation value of R30 in ceilings.
- Required—Install programmable thermostats in all units.
- Required—Assure solar access for energy collection along locations such as roofs, walls, and patio/window overhangs.

*By taking into account solar orientation of the building, overhangs and other devices placed on the exterior of buildings reduce direct sunlight into interiors, lowering heat gain and the amount of energy needed for cooling.*



*Operable windows allow residents to utilize natural air flow through interiors, reducing energy needed for cooling.*

## Building Envelope

- Suggested BMP—As practical, design windows that are taller and start closer to the ceiling to optimize daylighting of interiors.
- Suggested BMP—Consider installing light shelves, architectural features that bounce light further into interiors, to optimize daylighting.

# Sustainability Guidelines

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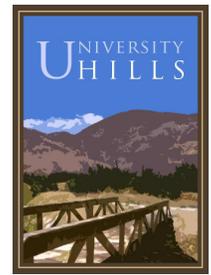
- Suggested BMP–As practical, utilize external shading strategies, such as protection of glazed fenestration, eyebrows, and appropriately sized eave overhangs.
- Suggested BMP–Install architectural features that increase daylighting, such as light shelves that bounce light farther into interior spaces, to reduce the need for additional electrical light.
- Required–Install radiant barriers to reduce summer heat gain and winter heat loss. Radiant barriers consist of a highly reflective material, such as aluminum, that prevents radiant heat from being absorbed by the interior of the home.
- Required–Use natural ventilation techniques, such as operable windows, to take advantage of airflow for cooling interiors, reducing the amount of energy needed for cooling.
- Suggested BMP–Consider the use of “cool roofs,” which are painted with a highly reflective coating or employ light-colored materials, or “green roofs,” vegetated areas on roofs that contain plants in engineered soil, to cool building interiors and increase stormwater retention.

## Resource Conservation

Actions that increase water and energy efficiency and conserve resources offer tremendous cost savings to both builders and future residents. Through techniques such as building design that maximizes shading and insulation, high performance HVAC systems, and use of natural daylighting, a substantial reduction in energy use can be achieved. The use of high performance appliances and irrigation systems that minimize water and energy use can substantially impact the amount of resources that flow into and out of the community.

### Water

- Required–Install only low water consumption, EnergyStar-compliant appliances and fixtures.
- Required–Install only sensor operated faucets in nonresidential buildings.
- Suggested BMP–Install dual flush or other toilets using less than 1.6 GPF.
- Suggested BMP–Install waterless urinals in nonresidential buildings.
- Suggested BMP–Install faucets and showerheads using 2.5 GPM or less.
- Required–Use water-saving landscaping techniques, such as drip irrigation systems and drought tolerant plant species. (For a more detailed list of water-saving techniques and practices see the Landscaping section of this chapter.)



## Energy

- Required–Use methods of energy conservation. For residential units, consider incorporating techniques outlined in Southern California Gas Company’s Builder Resource Guide and other applicable resources. Also, consider appropriate solar building orientation to augment efforts toward energy conservation.
- Required–Install only energy-efficient windows, such as models with spectrally selective low-e glass and with wood, vinyl, or fiberglass frames.
- Suggested BMP–Consider designing homes to facilitate and accommodate photovoltaic cells for solar electric power, and ensure solar access for these homes. Solar-heated hot water is one efficient way to reduce energy needed for household activities.
- Suggested BMP–Distribute hot water efficiently through homes, minimizing the distance between hot water heaters and fixtures.
- Required–Install only energy-efficient lighting products, such as compact fluorescent bulbs.
- Required–Incorporate building materials that take advantage of heat storage or thermal mass to reduce energy needed for heating and cooling interiors. Materials such as concrete, masonry, and wallboard store heat absorbed during the day and slowly release it throughout the evening, thereby moderating indoor temperatures over a 24-hour period.
- Suggested BMP–Encourage participation in energy efficiency rebate programs offered by utility providers and government agencies.



*Energy efficient lighting products, such as this compact fluorescent (CFL) bulb, use 75 percent less energy and last 10 times longer than standard incandescent bulbs.*

## Heating, Ventilation and Air Conditioning (HVAC)

- Required–Design and install HVAC systems according to the standards provided by the Air Conditioning Contractors of America (ACCA) handbooks or other comparable high-performance HVAC standards.
- Required–Install sealed-combustion/sealed-duct furnaces and water heaters for increased efficiency and indoor air quality.
- Required–Install only EnergyStar-qualified ceiling fans to circulate air, improve comfort, and reduce the demand on heating and cooling systems.

## Construction Practices: Erosion and Dust Control, Materials Reuse and Landfill Diversion

There are many ways to reduce the impact of construction practices on the site, surrounding areas, and the environment in general. Integrating salvaged or refurbished materials from the site back into the project is an effective and cost-efficient way to minimize resources needed for transporting materials during the construction process. Using salvaged or refurbished materials also contributes to landfill diversion, thus reducing the amount of material created during the construction process that is transported to landfills.

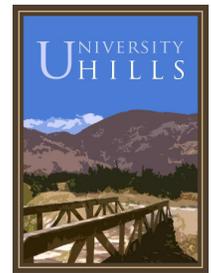
- Suggested BMP—Strive to exceed the landfill diversion requirements of AB 939, which requires at least 50 percent diversion of materials generated during construction.

In addition, soil erosion and fugitive dust can negatively impact the project site and surrounding areas during construction phases. Soil, cement wash, asphalt, oil, and other hazardous debris from construction sites often make their way into the San Bernardino County storm drain system and flow untreated into local waterways. Although erosion and dust resulting from construction practices are already regulated by San Bernardino County's National Pollutant Discharge Elimination System (NPDES) permit program and the South Coast Air Quality Management District's (SCAQMD) Rule 403 regarding fugitive dust, it is encouraged that all construction practices in University Hills strive to retain the integrity of the land beyond what is required by local, state, and federal regulations.

Many measures can be followed to reduce soil erosion and the release of particulates into the air. See the SCAQMD's Rule 403 for required dust control measures. Also, refer to the information provided through the San Bernardino County Stormwater Pollution Prevention program, as well as other local agencies, for best management practices to reduce construction impacts on soil, air, and water quality.

Beyond these required practices, individual builders in University Hills are required to develop an Erosion Control Plan tailored to the specific site context, and exceeding the referenced standards. An Erosion Control Plan that addresses erosion control and stormwater management, and their interrelationship is optimal. Several strategies to be addressed in an Erosion Control Plan that exceeds minimum standards include:

- Statement of erosion control and stormwater control objectives
- Comparison of postdevelopment stormwater runoff conditions with predevelopment conditions



- Description of all temporary and permanent erosion control and stormwater control measures implemented on the project site
- Description of the type and frequency of maintenance activities required for the chosen erosion control methods

## Commitment to Sustainable Building Practices

To reinforce the commitment to sustainable building practices, all construction within the Attached Residential, faculty housing, and clubhouse areas is required to achieve LEED certification. LEED certification must be achieved prior to issuance of the certificate of occupancy for the first building.

At the Specific Plan level, it is not possible to pinpoint the exact measures that will be used; however, LEED includes a flexible menu of options that can be used to achieve certification. This menu will be used to achieve the most cost effective and appropriate systems/features for University Hills. The LEED certification process involves an independent review of all construction and building plans to verify the chosen approaches.

## Trip Reduction

In addition to the energy efficiency that can be realized through building design, fixtures, and appliances, University Hills includes several features that are intended to reduce the number of vehicular trips. This has many benefits, including reduced congestion and pollution levels. The following features are discussed in other sections of the Specific Plan but are highlighted here to reinforce the commitment to sustainability embodied in University Hills.

- Development in University Hills is limited to 42 percent of the total site. Development is concentrated near the clubhouse, recreational amenities, and CSUSB, which will help reduce the need to use the car.
- Class II bicycle parking will be provided at the clubhouse and onsite parks,
- The onsite trail system promotes non-vehicular access throughout the project and to offsite destinations.
- The clubhouse at University Hills is only  $\frac{3}{4}$  mile to the transit station at CSUSB. This transit station is the end of Omnitrans BRT line, a major regional transit hub.
- The developer has committed to allowing transit passes and materials to be sold/available at the clubhouse.
- The developer has also committed to working with Omnitrans and CSUSB to accommodate shuttle service in University Hills. A potential route and stops have been offered through this Specific Plan.

# Sustainability Guidelines

## Sustainability Resource Guide

This table presents a consolidated list of available programs, resources, and potential funding sources to assist the master developer and individual builders in implementing the sustainability guidelines presented in this Section. Since the programs and efforts of the various agencies and providers that serve the University Hills community may change over time, it is encouraged to check with the relevant entity for current programming and incentives.

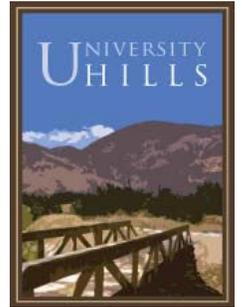
**Table 5-1 Sustainability Resource Guide**

Provider	Program	Description	For More Information
<b>Energy</b>			
Southern California Edison (SCE)	Sustainable Communities Program	For multiple building and/or mixed-use projects. Provides design assistance, training, education, and financial incentives relating to energy efficiency, demand response, and self-generation.	<a href="http://www.sce.com">www.sce.com</a>
SCE and Southern California Gas Company	Savings By Design	For nonresidential projects. Provides design assistance, energy analysis, and financial incentives.	<a href="http://www.socalgas.com/business">www.socalgas.com/business</a>
Southern California Gas Company	Advanced Home Program ( Part of ENERGY STAR New Homes Program)	For residential projects. Offers financial incentives through either a performance-based or measure-based approach.	<a href="http://www.socalgas.com/construction/ahp/">http://www.socalgas.com/construction/ahp/</a> <a href="http://www.sce.com/RebatesandSavings/">http://www.sce.com/RebatesandSavings/</a>
California Energy Commission	New Solar Homes Partnership (NSHP)	For new residential construction. Financial incentives for production homes with solar panels as a standard feature and that exceed Title 24 by 15%.	<a href="http://www.gosolarcalifornia.ca.gov/nshp">www.gosolarcalifornia.ca.gov/nshp</a>
<b>Infrastructure</b>			
No current programs; see policies and strategies outlined earlier in this chapter. Also see resource listed below.			
Fuscoe Engineering and City of Irvine Redevelopment Dept.	Sustainable Travelways Guidelines	Guidelines for street development created in partnership with the Orange County Fire Authority for the Great Park Community.	<a href="http://www.cityofirvine.org/depts/cd/redevelopment/">http://www.cityofirvine.org/depts/cd/redevelopment/</a>
<b>Water and Wastewater</b>			
Metropolitan Water District	California Friendly Homes; California Friendly Landscape	General provisions and design standards for residential landscaping.	<a href="http://www.bewaterwise.com">www.bewaterwise.com</a>
<b>Building Level</b>			
U.S. Green Building Council	LEED (Leadership in Energy and Environmental Design)	Sustainable community and building-level rating system.	<a href="http://www.usgbc.org">www.usgbc.org</a>
U.S. Department of Energy	ENERGY STAR	Certifies homes and products for energy efficiency.	<a href="http://www.energystar.gov">www.energystar.gov</a>

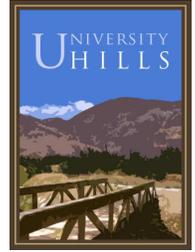
Section 6

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# Implementation and Administration



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## IMPLEMENTATION

All specific plans must contain a “program of implementation measures, including regulations, programs, public works projects, and financing measures” pursuant to California Government Code, Section 65451(a)(4).

This section sets forth the procedures needed to implement the approved Specific Plan and the procedures required for all subsequent amendments, if necessary.

### Administering the Plan

The University Hills Specific Plan shall comply with all procedural requirements cited in the City of San Bernardino Development Code, Chapter 19.64, Specific Plans. Whenever the regulations contained in this Specific Plan conflict with the regulations of the City of San Bernardino Development Code, the provisions of this Specific Plan shall take precedence.

### Responsibility

Following approval of this Specific Plan by the Planning Commission and City Council of the City of San Bernardino, the City’s Director of Development Services shall be responsible for administering the provisions of the University Hills Specific Plan in accordance with the provisions of this Specific Plan, the State of California Government Code, and the Subdivision Map Act. All necessary permits and approvals shall be processed through the City’s existing permit and application processes as noted in Article IV, *Administration*, of the Development Code.

### Applicability

All development within the Specific Plan area shall comply with the requirements and standards set forth in this document. Where conflicts exist between the following standards and those found in the City of San Bernardino Development Code, the standards contained in this document shall apply. The provisions of the City of San Bernardino Development Code shall apply to any area of site development, administration, review procedures, environmental review, landscaping requirements, and parking regulations not expressly addressed by this Specific Plan document.

## Interpretations

It is recognized that changes in the project may be necessary as a result of review of more detailed site plans, design plans, architectural plans, landscape plans, and infrastructure plans by the City. When there is a question or ambiguity regarding the interpretation of any provision of this Specific Plan, the Director of Development Services has the authority to interpret the intent of such provision. In interpreting this Specific Plan, the City's Director of Development Services shall give consideration to the Vision and Guiding Objectives of this Specific Plan while ensuring that development can proceed in accordance with the terms and objectives of this Specific Plan and the approved tentative map.

The Director of Development Services may, at his/her discretion, refer interpretations to the Planning Commission for its consideration and action. Such a referral shall be accompanied by specific details, information, and analysis that tie the information to the Director's decision. The Planning Commission shall make similar findings in conjunction with its decision. The Planning Commission action may be appealed to the City Council.

All interpretations made by the Director of Development Services may be appealed to the Planning Commission in accordance with the appeal procedures set forth in the City's Development Code.

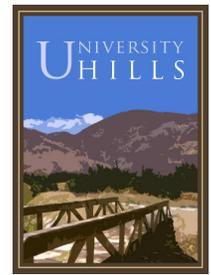
## Specific Plan Amendment

It is anticipated that certain modifications to the Specific Plan text and/or exhibits may be necessary during the development of the project. Any modifications to the Specific Plan shall occur in accordance with the amendment process described in this section. These amendments, should they occur, are divided into two categories, major and minor amendments.

Depending on the nature of the proposed Specific Plan amendment, additional environmental analysis may be required, pursuant to the California Environmental Quality Act (CEQA).

## Major Amendments

If, after making written and factual findings, an amendment is deemed major by the Director of Development Services, it will be processed in the same manner as the original Specific Plan. Specific Plan amendments shall be processed in the same manner as zoning reclassifications under Chapter 19.64, Specific Plans, of the City of San Bernardino Development Code. This requires Planning Commission and City Council approval.



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## Minor Adjustments

Minor amendments include simple modifications to text or exhibits that do not: change the meaning, intent, or materially alter the nature or scope of the Specific Plan; increase the maximum density; or exceed the allowable total units of the Specific Plan. Minor adjustments include, without limitation, minor changes in locations of streets, public improvements, or infrastructure; minor changes in the configuration or size of parcels; density transfers (as described below); minor modification of land use boundaries; changing the land use designation for Planning Areas 15 and 23 to Open Space and Internal Slopes (as described below) in the event that development does not occur or only occurs on a portion of the Planning Area and modifying the fire protection plan accordingly; and interpretations that facilitate or streamline the approval of unlisted uses that are similar in nature and impact to listed uses.

Minor modifications may be accomplished administratively by the Director of Development Services, using the spirit and intent of the University Hills Specific Plan as a guide. The decision of the Director of Development Services may be appealed to the Planning Commission and City Council.

## Severability

If any section, subsection, sentence, clause, or phrase of this Specific Plan, or future amendments or additions hereto, is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this plan.

## Internal Design Review

Attention to detail and design quality is a fundamental aspect of University Hills. Accordingly, in addition to the reviews and permitting required by the City, University Hills has established its own, independent review process to ensure the desired quality of development.

## University Hills Design Review Committee

All applicable proposals in University Hills shall be reviewed and approved by the University Hills Design Review Committee (the Committee) prior to submittal of an application to the City. The purpose of the Committee is to ensure that the quality of design envisioned in this Specific Plan is carried throughout the development process and to streamline City review. The Committee shall be established by the Master Developer and may include builders, architects, landscape architects, and others in the development, building, and design professions.

# Implementation

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The Committee shall review applicable projects for consistency with the Specific Plan design guidelines with the intent of ensuring that each new development proposal conveys the desired quality, character, and appropriate compatibility of architectural styles, and complies with the standards of the Specific Plan. The Committee shall meet every two weeks or as necessary to expedite review.

The following development proposals are subject to review by the Committee:

- Initial subdivisions, tract maps, site plans, and architectural plans (floor plans, elevations, landscape plans)
- Initial signage programs

Subsequent structural and façade changes, building additions, and sign changes shall be reviewed and approved by the City of San Bernardino.

## Internal Design Review Process

***Step One—Conceptual Design Review Meeting.*** At this informal meeting, the Committee will review and provide feedback on the conceptual design direction of each proposal.

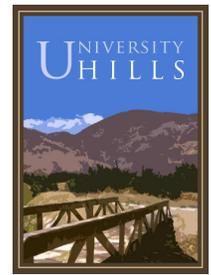
### Step One Submittal Requirements

- Provide fully dimensioned, ¼-inch-scale floor plans and elevations for each style/product proposed.
- Show each floor plan on a lot indicating front, side, and rear setbacks.
- Show landscape concepts for each floor plan on the site plan.
- Provide a draft signage program, if appropriate.

***Step Two—Design Development Meeting.*** In this meeting, the proposal representative shall present the final design package to the Committee, who will review the drawings and discuss how the design has changed to respond to their initial input. The Committee will respond within three working days with their decision to approve the project and to proceed to City submittal or provide suggestions for additional revisions.

### Step Two Submittal Requirements

- All site plans shall be prepared by a California registered architect and landscape plans shall be prepared by a California registered landscape architect.
- Provide fully dimensioned ¼-inch-scale floor plans and elevations for each style/product proposed.
- Provide a final site plan showing front, side, and rear setbacks from the property line.
- Provide all plans and addendum elevations for corner lots or special conditions clearly labeled as such.



- Provide a landscape plan for each concept.
- Provide a signage plan for each concept, if appropriate.

**Step Three—City Submittal.** Upon approval, a letter of transmittal will be prepared by the Committee to document that the project has met the internal design review process, complies with the design guidelines of the Specific Plan, and adheres to the desired character and quality of University Hills. The letter of transmittal will accompany all submittals to the City. The Committee should make the following findings, if applicable, in the letter of transmittal:

- The design and layout of the proposed development is consistent with the University Hills Specific Plan.
- The design and layout of the proposed development will not interfere with the use and enjoyment of neighboring developments, or pedestrian and vehicular circulation.
- The architectural design of the proposed development is aesthetically pleasing and will provide the quality of development envisioned by this Specific Plan.
- The design of the proposed development will provide a desirable environment for its tenants and neighbors through the use of materials, texture, and color in an aesthetically pleasing manner.
- The proposal meets or exceeds the special requirements of this Specific Plan.

## Location of Land Use Designations

The locations of the land use designations are approximate. Minor changes in boundary alignment and use location are permissible with approval by the Director of Development Services. However, the intended development character and density/unit restrictions described in this Specific Plan shall be maintained.

## Transfer of Units

The ability to transfer residential units provides flexibility to respond to market demands and physical realities while ensuring that the vision and guiding objectives of the University Hills Specific Plan are maintained. Residential unit transfers are allowable within the Specific Plan subject to the following criteria:

- Any unused residential units from an entitled/developed Planning Area may be transferred to another residentially designated Planning Area per the provisions of this section, except that units may not be transferred into Planning Area 15, the Large-Lot Detached residential area north of the South Branch of the San Andreas Fault.

# Implementation

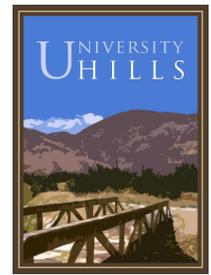
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- Residential unit transfers are permitted; however, 1) the maximum number of residential units in the Specific Plan area shall not exceed 980 units; and 2) the maximum density listed for any Planning Area shall not be exceeded.
- The maximum residential density may not exceed 20 dwelling units per adjusted-gross acre without approval by the Planning Commission.
- The residential unit transfers shall be administratively reviewed and approved by the Director of Development Services. The Director's findings may be appealed to the Planning Commission and, subsequently, to the City Council.
- The units from Planning Area 15 may be transferred to other Planning Areas within University Hills if detailed geologic investigations determine that development in the area is not feasible. If it is determined that building in all or a portion of Planning Area 15 is not feasible and/or the units are transferred to another Planning Area, then the land use for Planning Area 15 shall revert to Open Space and, as necessary for slope stability and grading, Internal Slopes. Development of the water storage tank in Planning Area 23 is only necessary if development occurs in Planning Area 15. If development does not occur in Planning Area 15, then the land use for Planning Area 23 shall revert to Open Space.
- Residential units may not be transferred into any nonresidential land use category (e.g., Public Park and Open Space) or into Planning Area 15, the Large-Lot Detached residential area north of the South Branch of the San Andreas Fault.
- If the number of units transferred results in a decrease in the Planning Area's density to that of another land use category, the land use designation and governing standards in that Planning Area shall be changed to match the corresponding land use category. As an example, if the transfer decreases the density in the "sending planning area" from A to MDA, then the MDA designation and standards shall apply.

## Phasing, Capital Improvements, and Maintenance

### Infrastructure Improvements

Within University Hills, the developer(s) will be responsible for constructing/funding their fair share of required on-/and off-site infrastructure improvements, such as water lines, sewers, storm drains, recycled water lines, and streets. All infrastructure improvements will be developed in conjunction with the roadway improvements.



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## Development Phasing

University Hills is expected to be developed starting in 2011 and built out in approximately 2016. It is anticipated that the following sequence will be followed during the buildout of University Hills:

### Phase 1

- Backbone circulation plan detailed on Figure 3-1, *Vehicular Circulation Plan*, except for the system need to serve Planning Area 15, north of the San Andreas Fault.
- Clubhouse
- California Walnut Grove Linear Park
- Conceptual master grading plan detailed on Figure 3-26, *Conceptual Grading Plan*, except for the grading of Planning Area 15, north of the San Andreas Fault.
- Backbone water system detailed on Figure 3-27, *Conceptual Water Plan*, necessary to serve the 1720 and 1880 pressure zones excluding the system necessary to serve pressure zone 2040 (Planning Area 15, north of the San Andreas Fault).
- Backbone drainage system detailed on Figure 3-28, *Conceptual Drainage Plan*, excluding the drainage system necessary to serve Planning Area 15, north of the San Andreas Fault.
- Backbone sewer system detailed on Figure 3-29, *Conceptual Sewer Plan*, excluding the sewer system necessary to serve Planning Area 15, north of the San Andreas Fault or as noted below in Optional Phase 1.

### Optional Phase 1

- The backbone sewer system necessary to serve Planning Areas 16, 17, 18, 19, and 20 will be developed in conjunction with development in those Planning Areas.
- Planning Area 17 (half-acre park) will be developed in conjunction with development of Planning Area 18.
- Planning Area 19 (half-acre park) will be developed in conjunction with development of Planning Area 20.
- Planning Area 1, Glider Park, will be developed in conjunction with development of Planning Areas 2, 3, and 4.

### Subsequent Phases

- Development of Planning Area 15 will only occur if detailed geologic investigations determine that development in the Planning Area is feasible.
- The grading, circulation, water, sewer, and drainage systems necessary to serve Planning Areas 15 will occur in conjunction with any development of that Planning Area.

# Implementation

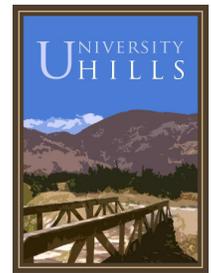
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It should be emphasized that the phasing program described in this section is a projection based on a judgment of future planning and market factors. Therefore, this phasing program is not to be taken as a compulsory development sequence. Development area sequencing may change as the result of future conditions that neither the City nor the developer has knowledge of as of the date of this submittal.

However, the basic standards will not change and are required to be complied with regardless of shifts in the composition of each development phase. The developers of property within University Hills will be required to comply with all grading, drainage, and road improvements as specified in the Specific Plan.

## Maintenance

The creation and operation of a maintenance assessment district(s) will be an important factor in maintaining the aesthetic quality of University Hills. Maintenance responsibilities may be divided between a Master Homeowners Association, Neighborhood Associations, Landscape and Lighting Maintenance District(s), and/or other maintenance mechanisms. The public and private entities are described below and in Table 6-1, *Maintenance Plan*.



**Table 6-1 Maintenance Plan**

Type	Developed By	Maintained By	Owned By
<b>Streetscape</b>			
Community Roadways (arterials, secondary arterials, and collectors)	Master Developer	City of San Bernardino	City of San Bernardino
Neighborhood Roadways (local streets)	Master Developer	City of San Bernardino	City of San Bernardino
Private Streets	Guest Builder	HOA	HOA
Community Roadway Medians (arterials, secondary arterials, and collectors)	Master Developer	City of San Bernardino	LLD/HOA/ City of San Bernardino
Neighborhood Roadway Medians (local streets)	Guest Builder	City of San Bernardino	LLD/HOA/ City of San Bernardino
Alleys	Guest Builder	HOA	HOA
Community and Secondary Entries	Master Developer	HOA	HOA
Street Lighting (community and neighborhood roadways)	Master Developer	City of San Bernardino	LLD/HOA/ City of San Bernardino
Community Walls and Fences	Master Developer	HOA	HOA
Interior Neighborhood Walls and Fences	Guest Builder	Homeowner	Homeowner
<b>Parks and Open Space</b>			
Glider Park	Master Developer	HOA/LLMD	City of San Bernardino
Clubhouse	Master Developer	HOA	HOA
Regional Multipurpose Trail	Master Developer	City of San Bernardino	City of San Bernardino
Land Laboratory	CSUSB	CSUSB	CSUSB
Public Trails in the Land Laboratory	Existing	LLMD	City of San Bernardino
California Walnut Grove Linear Park	Master Developer	LLMD	City of San Bernardino
Badger Creek Open Space Area	Master Developer	City of San Bernardino	City of San Bernardino
Fuel Modification Zones	Master Developer	LLMD	LLMD
<b>Infrastructure</b>			
Water systems (on- and off-site)	Master Developer	City of San Bernardino	City of San Bernardino
Nonpotable water systems	Master Developer	City of San Bernardino	City of San Bernardino
Sewer systems (on- and off-site)	Master Developer	City of San Bernardino	City of San Bernardino
Drainage systems (on- and off-site)	Master Developer	City of San Bernardino/SBCFC	City of San Bernardino/SBCFC

**Notes:**

Certain facilities and improvements may be subject to reimbursement agreements.

LLD = Landscape and Lighting District or special maintenance district

HOA = Homeowners Association (Master or Neighborhood)

SBCFC = San Bernardino County Flood Control

LLMD=Landscape and Lighting Maintenance District

CSUSB=California State University, San Bernardino

## ***Master Homeowners Associations***

Common areas identified within the Specific Plan shall be owned and maintained by a permanent private maintenance organization. Common areas owned and maintained by the Master Homeowners Association may include common recreation areas, open space, circulation systems, landscaped easements, landscaped areas at entryways and roadways, paseos, and amenities such as the clubhouse.

## ***Neighborhood Homeowners Associations***

In certain residential areas of the project, smaller “neighborhood” homeowners associations may be created to provide maintenance for common areas and facilities that only benefit residents who reside in the immediate area.

## ***Open Space and Parks***

Open space and parks not directly associated with a particular neighborhood shall be the responsibility of a landscape and lighting district or a public facilities maintenance district.

## ***Project Roadways***

All public roadways shall be incorporated into the City’s system of roads for operation and maintenance. All private roads shall be owned and maintained by either the Master Homeowners Association or a Neighborhood Association.

## **Financing Strategies**

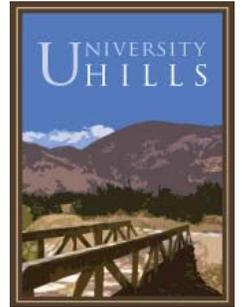
The financing of construction, operation, and maintenance of public improvements and facilities will include a combination of financing mechanisms. However, the developer shall ultimately be responsible for all fair-share costs associated with implementing the project, including but not limited to the costs of providing infrastructure and complying with all mitigation measures, conditions of approval, and other requirements of the project.

Various financing strategies may be used to fund the public facility improvements specified by the Specific Plan. Financing may involve a combination of impact fees and exactions, special assessment districts, landscaping and lighting districts, community facilities districts, and other mechanisms as agreed to by the developer and City.

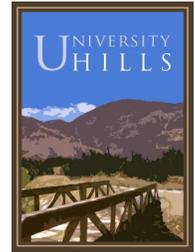
The City and developer will cooperate to ensure that the public facilities are built in accordance with all requirements of the Specific Plan. A Development Agreement and conditions of approval may be used to facilitate this process.

# Appendices

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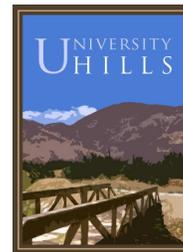
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## APPENDIX A: GLOSSARY OF TERMS

**Accessory living quarters:** Living quarters within an accessory building for the sole use of persons employed on the premises or for temporary use by guests of the occupants of the premises, having no kitchen or cooking facilities and not rented or otherwise used as a separate dwelling.

**Accessory use:** A use incidental and subordinate to the principle use of a lot or building located on that lot.

**Acres, gross:** The entire acreage of a site. Gross acreage is calculated to the centerline of proposed bounding streets and to the edge of the right-of-way of existing or dedicated streets.

**Acres, net:** The portion of a site that can actually be built upon. The following are not included in the net acreage of a site: public or private road rights-of-way, public open space, and publicly owned floodways.

**Apartment:** A room or suite of rooms in a multiple dwelling, designed for, intended for, suitable as a residence for, and/or occupied by one household unit.

**Bikeways:** A term that encompasses bicycle lanes, bicycle paths, and bicycle routes.

**Buildout:** Development of land to its full potential or theoretical capacity as permitted under current or proposed planning or zoning designations.

**Density, residential:** A measurement of the number of permanent residential dwelling units per acre of land. Densities specified may be expressed in units per gross acre or per net developable acre. (See “Acres, gross” and “Developable acres, net.”)

**Developable acres, net:** The portion of a site that can be developed and is assumed for the purpose of density calculations. This area would include the building pad but not public or private road rights-of-way and flood control channels.

**Developable land:** Land that is suitable for structures and can be developed without hazards to, and disruption of, or significant impact on natural resource areas.

**Dwelling unit:** A room or group of rooms (including sleeping, eating, cooking, and sanitation facilities, but not more than one kitchen), that constitutes an independent housekeeping unit, occupied or intended for occupancy by one household on a long-term basis.

## Appendix

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**Family:** (1) Two or more persons related by birth, marriage, or adoption (Census Bureau); (2) An individual or a group of persons living together who constitute a bona fide single-family housekeeping unit in a dwelling unit, not including a fraternity, sorority, club, or other group of persons occupying a hotel, lodging house or institution of any kind (State of California).

**Granny flat:** See "Second unit."

**Household:** All those persons (related or unrelated), who occupy a single housing unit. (See "Family.")

**Housing unit:** The place of permanent or customary abode of a person or family. A housing unit may be a single-family dwelling, a multifamily dwelling, a condominium, a modular home, a mobile home, a cooperative, or any other residential unit considered real property under state law. A housing unit has, at least, cooking facilities, a bathroom, and a place to sleep. It also is a dwelling that cannot be moved without substantial damage or unreasonable cost. (See "Dwelling unit," "Family" and "Household.")

**Intensity, building:** For residential uses, the actual number or the allowable range of dwelling units per net or gross acre.

**Land use classification:** A system for classifying and designating the appropriate use of properties.

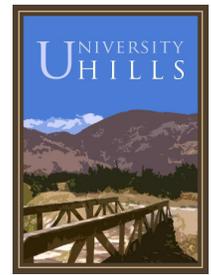
**Median:** The dividing area, either paved or landscaped, between opposing lanes of traffic on a roadway.

**Neighborhood:** A grouping of residential, commercial, service, and recreational uses that are related by their orientation, design, or access points.

**Nonconforming use:** A lawful use of a building or land, or any part thereof, existing at the time of the adoption of this title that does not conform to the regulations for the district in which it is located as set forth in this title.

**Open space land:** Any parcel or area of land or water that is essentially unimproved and devoted to an open space use for the purposes of (1) the preservation of natural resources, (2) the managed production of resources, (3) outdoor recreation, or (4) public health and safety.

**Open space, private:** Those areas within the development that are designed and intended to be used exclusively by the individual homeowner. Private open space includes patios, balconies, fenced private yards, and other private areas. It may also include ground floor patios or courtyards, second- or third-floor balconies or decks, and rooftop decks. Private open space may be covered, but must be open on at least one side.



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**Open space, common:** Those areas designated for the use and enjoyment of all residents and developed for recreational or leisure time activities. These common areas may include game courts, swimming pools, garden grounds, landscaped areas, sauna baths, tennis courts, basketball courts, volleyball courts, putting greens, play lots, and clubhouse facilities.

**Parcel:** A lot in single ownership or under single control, usually considered a unit for purposes of development.

**Parkland:** Land that is publicly owned or controlled for the purpose of providing parks, recreation, or open space for public use.

**Parking, shared:** A public or private parking area used jointly by two or more uses.

**Parking area, public:** An open area, excluding a street or other public way, used for the parking of automobiles and available to the public, whether for free or for compensation.

**Parks:** Open space lands for the primary purpose of recreation.

**Parkway:** A piece of land between the rear of a curb and the front of a sidewalk usually used for planting low ground cover and/or street trees, also known as a “planter strip.”

**Recreation, active:** A type of recreation or activity that requires the use of organized play areas including, but not limited to, softball, baseball, football and soccer fields; tennis and basketball courts; and various forms of children’s play equipment.

**Recreation, passive:** Type of recreation or activity that does not require the use of organized play areas and includes multipurpose trails and picnic areas.

**Right-of-way:** A strip of land occupied or intended to be occupied by certain transportation and public use facilities, such as roads, railroads, and utility lines.

**Second unit:** A self-contained living unit either attached to or detached from the primary residential unit on a single lot. A “granny flat” is one type of second unit intended for the elderly.

**Street, alley:** A public way at the rear or side of property not exceeding 30 feet in width and for the use of pedestrians and/or vehicles, that affords only a secondary means of access to the abutting property.

**Street, arterial:** A roadway that supports medium to higher speeds (30–55 mph), medium to higher capacity (10,000–50,000 average daily trips) and provides intra- and intercommunity travel and access to the regional highway and freeway system. Access to community arterials should be provided at

collector roads and local streets, discouraging direct access from parcels to existing arterials.

***Street, collector:*** A relatively low speed (25–30 mph), relatively low volume (5,000–20,000 average daily trips) street that provides circulation within and between neighborhoods. Collectors usually serve short trips and are intended for collecting trips from local streets and distributing them to the arterial network.

***Street, local:*** A low-speed (15–25 mph), low-volume (less than 5,000 average daily trips) street that provides circulation within neighborhoods. Local streets provide direct access to fronting properties and are not intended for through-traffic. Local streets are typically not shown on the Circulation Plan, Map, or Diagram.

***Streets, major:*** The transportation network that includes a hierarchy of freeways, arterials, and collectors to service through traffic.

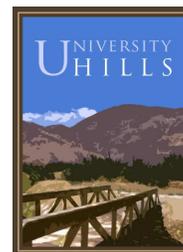
***Street, private/private road:*** Privately owned (and usually privately maintained) motor vehicle access that is not dedicated as a public street. Typically the owner posts a sign indicating that the street is private property and limits traffic in some fashion. For density calculation purposes, private roads are excluded when establishing the total acreage of the site.

***Streets, through:*** Streets that extend continuously between other major streets in the community.

***Structure:*** Anything constructed or erected that requires a location on the ground (excluding swimming pools, fences, and walls used as fences).

***Subdivision:*** The division of a tract of land into defined lots, either improved or unimproved, which can be separately conveyed by sale or lease, and which can be altered or developed. “Subdivision” includes a condominium project as defined in Section 1350 of the California Civil Code and a community apartment project as defined in Section 11004 of the Business and Professions Code.

***Zoning:*** The division of a city or county by legislative regulations into areas, or zones, that specify allowable uses for real property and size restrictions for buildings within these areas; a program that implements policies of the General Plan.



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## APPENDIX B: GENERAL PLAN CONSISTENCY ANALYSIS

As expressed in the General Plan, a basic long-term strategy for San Bernardino is to capitalize upon its “gems” to enhance the City’s character, image, and economic situation. CSUSB is one of these gems and the General Plan Vision states:

*...Our City will be known for its recreational attractions, cultural resources, universities, safe and attractive neighborhoods, economic opportunities, and its extraordinary location next to the San Bernardino Mountains and along the trails of the Santa Ana River and Cajon Wash.*

And,

*How many cities can boast of two significant places of higher learning? Proud? We sure are. San Bernardino Valley College and California State University, San Bernardino are untapped assets with the potential to expand opportunities for personal and economic growth and create social, recreational, and cultural opportunities for our residents and businesses...*

This appendix provides a brief analysis of how the University Hills Specific Plan directly implements this vision and the goals of the City of San Bernardino General Plan (adopted November 1, 2005).

In addition to the City’s Vision, University Hills is also located within the University District Specific Plan, which directly implements the General Plan. The University District Specific Plan acts as the umbrella document for a 6,375-acre area, of which University Hills is a part. The intent of the University District Specific Plan is to “lay a foundation for the integration of the University into the surrounding community.” Accordingly, the University Hills Specific Plan has been created with the input and participation of CSUSB staff through several workshops and meetings. The guiding vision, objectives, and land plan for University Hills were developed in collaboration with CSUSB staff.

This analysis focuses on the applicable goals of the General Plan and University District Specific Plan.

## Land Use

### General Plan Goals

*Goal 2.1: Preserve and enhance San Bernardino's unique neighborhoods. (Land Use)*

*Goal 2.2: Promote development that integrates with and minimizes impacts on surrounding land uses. (Land Use)*

*Goal 2.3: Create and enhance dynamic, recognizable places for San Bernardino's residents, employees, and visitors. (Land Use)*

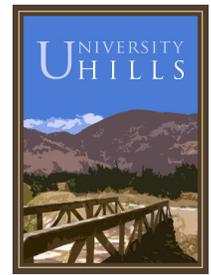
*Goal 7.3: Meet the educational needs of the City's residents and integrate our higher educational facilities into the fabric of the community. (Public Facilities and Services)*

University District Specific Plan. The General Plan integrates policies from the University District Specific Plan to reinforce the desire to integrate CSUSB with the surrounding community. The following policies from the General Plan and University District Specific Plan specifically relate to the University District Specific Plan:

- *Develop a seamless connection between the community and University through access, physical improvements such as landscaping, streetscape, signage and art, and street naming.*
- *Market the art and cultural facilities that the University and surrounding community have to offer. Tie the curriculum of the University and the art and cultural programs of the community together.*
- *Enhance the regional recreational link with the University.*
- *Offer a range of housing types to accommodate a wide range of population, including University faculty and staff.*

### Specific Plan Response

The General Plan and Zoning designations for the project site are Specific Plan. In 1993, the City Council approved the Paradise Hills Specific Plan for the project site. The Paradise Hills project land plan proposed extensive grading and development within the middle and upper reaches of Badger Canyon, however, that project was never built. In addition to the General Plan designating the project site as a Specific Plan, the Land Use Plan in the City's Land Use Element designates the lower (southern) portion of the site for Residential Suburban (RS) uses with a density of 4.5 units per acre (7,200 square foot lots), and the northern portion (i.e., north of the San Andreas Fault and in the middle and upper reaches of Badger Canyon) for Residential Low (RL) development at 3.1 units per acre. The steep slopes surrounding Badger Creek are designated as Open Space (OS).



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The General Plan Land Use Map also indicates the northern portions of the site are in a Hillside Management Overlay (HMO) zone as well as a Foothill Fire Zone Overlay A & B which is required to “mitigate the spread of wildfires, help to minimize property damage, and reduce the risk to the public health and safety” (General Plan Table LU-2). The University Hills site is also within the University Village Specific Plan which designates the project site for residential uses consistent with the Paradise Hills Specific Plan.

The University Hills Specific Plan replaces the Paradise Hills Specific Plan and includes a new land use map, zoning districts, development standards, design guidelines, and infrastructure requirements for the development of the site. The following elements of the Specific Plan promote the land use goals of the General Plan:

- Placing housing in close proximity to CSUSB.
- Accommodating up to 60 faculty units, which will create a direct and long-lasting relationship with CSUSB.
- Orienting the development and clubhouse toward CSUSB.
- Allowing CSUSB to share conference facilities in the clubhouse.
- Dedicating approximately 235 acres of permanent open space to CSUSB as a “land laboratory.”
- Carefully weaving University Hills into its physical surroundings by clustering development on the lower slopes and away from physical hazards, preserving significant drainage ways.
- Allowing residents the opportunity to live, work, and play in the immediate area. This reduces the need to use the automobile, which in turn reduces congestion, improves air quality, fosters walking, and improves overall health and wellness.

University Hills accommodates 980 residences situated in several neighborhoods, which are separated by open space corridors, drainage ways, and sloped areas and interconnected by a series of trails and roadways.

Development is focused onto approximately 170 acres, or 42 percent of the total site. Development is mainly concentrated south of the South Branch of the San Andreas Fault on the lower portions of the site where the average slopes are generally below 15 percent. North of the South Branch of the San Andreas Fault, approximately 235 acres, or 58 percent of the site, remains undeveloped and is designated as permanent open space. It will be dedicated to CSUSB for use as a laboratory to study the local biology, habitat, and geology. The compact design limits the development footprint so that open lands are maximized; natural drainage ways are maintained and incorporated into the design of the project as open space amenities; landscaping and hazards are avoided or mitigated.

The land laboratory contains a variety of native plant species; natural drainages, including Badger Creek; and the San Andreas Fault system . The proximity of these features to the CSUSB campus provides unique educational opportunities.

It is envisioned that the biology, geology, geography and environmental studies, and science education departments would be the primary users of the land laboratory, but it could be used by other disciplines.

University Hills is designed and programmed to create a long-term and synergistic relationship with CSUSB. In particular, University Hills directly responds to input from the University through the provision of land for faculty housing, the 235-acre land laboratory, pathways, bike lanes, and the California Walnut Grove Linear Park.

In addition, University Hills is designed to minimize the impacts of light intrusion and spillover. CSUSB is contemplating building an observatory on Badger Hill immediately adjacent to University Hills. To help preserve a dark nighttime sky, this Specific Plan includes strict controls on the type and design of lighting.

## Circulation

### General Plan Goals

*Goal 6.1: Provide a well-maintained street system. (Circulation)*

*Goal 6.2: Maintain efficient traffic operations on City streets. (Circulation)*

*Goal 6.3: Provide a safe circulation system. (Circulation)*

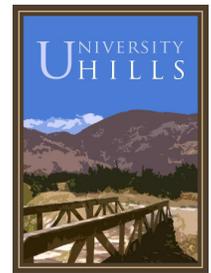
*Goal 6.6: Promote a network of multi-modal transportation facilities that are safe, efficient, and connected to various points of the City and the region. (Circulation)*

University District Specific Plan. The following policies from the General Plan and University District Specific Plan relate to the University Hills Specific Plan:

- *Develop a seamless connection between the community and University through access, physical improvements such as landscaping, streetscape, signage and public art.*
- *Encourage the development of trolley/transit connections between the University and downtown and the MetroLink station at the Santa Fe Depot.*
- *Develop efficient vehicular and pedestrian access within the University village.*

### Specific Plan Response

University Hills includes a multifaceted circulation system that will allow a variety of mobility options. The following elements of the Specific Plan promote the circulation goals of the General Plan:



- 
- Placing housing, specifically faculty housing, in close proximity to CSUSB.
  - Including facilities/amenities that will be used by CSUSB, such as the land laboratory and conference facilities.
  - The provision of a portion of the regional multipurpose trail, a regional multipurpose pathway, which in University Hills follows the South Branch of the San Andreas Fault and runs the length of the project.
  - Providing pathways that directly connect the site with CSUSB, regional trail systems, and the San Bernardino National Forest.

University Hills forges a direct relationship with CSUSB, which will attract faculty and place housing and educational facilities adjacent to the University. Specifically, the 60 faculty units, orientation toward CSUSB, shared conference facilities in the clubhouse, and land laboratory will help reduce automobile trips.

The University Hills Specific Plan consists of a hierarchy of streets, including collector and local roads that provides a comprehensive and connected street network. Access to the project site will be provided via an extension of Campus Parkway to the western area of the site, and via an extension of Little Mountain Road to the eastern area of the project site.

University Hills also includes a rich system of bicycle and pedestrian trails that interconnect all neighborhoods and provide connections to the surrounding areas and region. Most significantly, the South Branch of the San Andreas Fault is utilized for the regional multipurpose trail, which runs the length of the project. In addition, several natural drainage ways and sloped areas are used as open space corridors and pathways. Little Mountain Road and Campus Drive include pedestrian paths and bike lanes connecting to CSUSB and the region.

University Hills is also committed to reducing vehicular trips through the increased use of local transit. CSUSB is currently studying the feasibility of providing shuttle service within approximately one mile of the campus. University Hills supports the establishment of a local shuttle service and, if the service comes to fruition, will accommodate a shuttle route and stops.

## Housing

### General Plan Goals

*Goal 3.1: Facilitate the development of a variety of types of housing to meet the needs of all income levels in the City of Sand Bernardino. (Housing)*

*Goal 3.3 Assist in the development of adequate housing to meet the needs of low and moderate-income households. (Housing)*

University District Specific Plan. The following policies from the General Plan and University District Specific Plan relate to the University Hills Specific Plan:

- *Offer a range of housing types to accommodate a wide range of population, including University faculty and staff.*
- *Ensure that quality housing is developed in the surrounding community.*

### Specific Plan Response

University Hills offers a mixture of housing types that accommodate a range of the market spectrum, including first-time buyers, young singles and couples, families, empty-nesters, seniors, and CSUSB faculty. University Hills accommodates residential choices ranging from detached residential homes, small-lot detached homes, townhouses, and stacked flats. Because there will be a diversity of product types and sizes, University Hills will provide an equally wide range of housing prices. While not earmarked as affordable housing, the higher density units are typically offered at a price that is more affordable than single-family detached units. Most important, University Hills accommodates up to 60 units for CSUSB faculty housing. This array of housing choices has the benefit of attracting teachers to the community and strengthening the ties between the City and University.

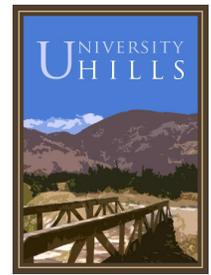
The University Hills Specific Plan includes strict development standards and design guidelines that will ensure quality development and long-term maintenance of the project.

## Economic Sustainability

### General Plan Goals

*Goal 4.14: Enhance, maintain, and develop recreational, cultural, entertainment, and educational facilities within the City. (Economic Development)*

University District Specific Plan. The following policies from the General Plan and University District Specific Plan relate to the University Hills Specific Plan:



- 
- *Market the University and surrounding community with the intention of becoming recognized as a “university town.”*
  - *Market the art and cultural facilities that the University and surrounding community have to offer. Tie the curriculum of the University and the art and cultural programs of the community together.*

## **Specific Plan Response**

University Hills is committed to contributing to the economic sustainability of San Bernardino. To this end University Hills provides educational and recreational uses, including:

- Enhancing the University Village concept described in the General Plan.
- A vital connection to CSUSB through the provision of faculty housing, the land laboratory, trails, conference facilities, and the California Walnut Grove Linear Park.
- A 235-acre land laboratory, containing a variety of native vegetation species, natural drainages, and the San Andreas Fault system, providing the CSUSB campus educational opportunities and the community of San Bernardino permanent open space.

University Hills is specifically designed to reinforce the relationship with CSUSB and the San Bernardino Mountains. University Hills also provides land for faculty housing, the 235-acre land laboratory, and shared conference facilities. This will reinforce the vital relationship between the community and CSUSB and attract faculty to live in San Bernardino, which will then help improve the City's economic situation.

## Community Design

### General Plan Goals

*Goal 2.5: Enhance the aesthetic quality of land uses and structures in San Bernardino. (Land Use)*

*Goal 5.3: Recognize unique features in individual districts and neighborhoods and develop a program to create unifying design themes to identify areas throughout the City. (Community Design)*

*Goal 5.4: Ensure individual projects are well designed and maintained. (Community Design)*

*Goal 5.5: Develop attractive, safe, and comfortable single-family neighborhoods. (Community Design)*

*Goal 5.6: Ensure that multi-family housing is attractively designed and scaled to contribute to the neighborhood and provide visual interest through varied architectural detailing. (Community Design)*

*Goal 12.8: Preserve natural features that are characteristic of San Bernardino's image. (Natural Resources and Conservation)*

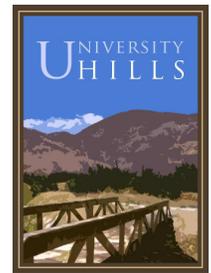
University District Specific Plan. The following policies from the General Plan and University District Specific Plan relate to the University Hills Specific Plan:

- *Ensure that quality housing is developed in the surrounding community.*

### Specific Plan Response

University Hills will enhance the aesthetic quality of San Bernardino and provide an example of high quality design through:

- Sensitive design that meshes into the site's surroundings.
- Unique entries that create a recognizable identity and sense of arrival.
- An interconnected system of open spaces that serve multiple purposes as drainage courses, pedestrian pathways, recreational and visual amenities, and separations between neighborhoods.
- On-site educational and interactive elements such as the land laboratory and California Walnut Grove Linear Park.
- Distinctively designed residences set among a system of unified lighting, streetscape, landscape, parks, and community signage.
- Strict development standards and design guidelines in the Specific Plan that will ensure quality development and long-term maintenance of the project.



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Development is concentrated onto approximately 42 percent of the total site, mainly on the lower portions of the site where the average slopes are generally less than 15 percent. The compact design also limits the development footprint so that open lands are maximized; natural drainage ways are maintained and incorporated into the design of the project as open space amenities; landscaping and hazards are avoided or mitigated. Development on ridgelines and steep slopes is avoided so that views of the mountains are not impacted. In addition, Badger Hill restricts or blocks views of the developed areas of University Hills from many vantage points.

The University Hills Specific Plan provides criteria for architecture, landscaping, entry monumentation, walls and fences, and other design elements in order to ensure a high quality development and strong community character. The overall goal of the Specific Plan is to create an attractive and distinct community within the City of San Bernardino.

University Hills creates a long-term, synergistic relationship with CSUSB through the provision of land for faculty housing, the 235-acre Land Laboratory, pathways, bike lanes, and the California Walnut Grove Linear Park. In addition, University Hills is designed to help preserve a dark nighttime sky, which will benefit the potential observatory on Badger Hill and the habitat of the adjacent San Bernardino National Forest.

To ensure that the quality of design envisioned in this Specific Plan is maintained throughout the development process, all applicable proposals in University Hills will be reviewed and approved by the University Hills Design Review Committee prior to submittal of an application to the City. The Committee will review applicable projects for consistency with the Specific Plan design guidelines with the intent of ensuring that each new development proposal conveys the desired quality, character, and appropriate compatibility of architectural styles, and complies with the standards of the Specific Plan.

The creation and operation of a maintenance assessment district(s) will be an important factor in maintaining the aesthetic quality of University Hills. Maintenance responsibilities may be divided between a Master Homeowners Association, Neighborhood Associations, Landscape and Lighting Maintenance District(s), and/or other maintenance mechanisms.

## Utilities and Public Services

### General Plan Goals

*Goal 2.7: Provide for the development and maintenance of public infrastructure and services to support existing and future residents, businesses, recreation, and other uses. (Land Use)*

*Goal 9.1: Provide a system of wastewater collection and treatment facilities that will adequately convey and treat wastewater generated by existing and future development on the City's service area. (Utilities)*

*Goal 9.3: Provide water supply, transmission, distribution, storage, and treatment facilities to meet present and future water demands in a timely and cost effective manner. (Utilities)*

*Goal 9.4: Provide appropriate storm drain and flood control facilities where necessary. (Utilities)*

*Goal 9.5: Provide adequate and orderly system for the collection and disposal of solid waste to meet the demands of new and existing development in the City. (Utilities)*

*Goal 9.6: Ensure an adequate, safe, and orderly supply of electrical energy is available to support existing and future land uses within the City on a project level. (Utilities)*

*Goal 9.7: Ensure an adequate supply of natural gas is available to support existing and future land uses within the City at a project level. (Utilities)*

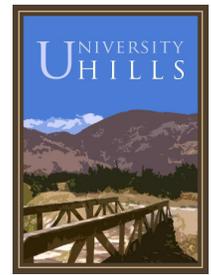
*Goal 9.8: Ensure the operation and maintenance of telecommunications systems to support existing and future land uses within the City. (Utilities)*

*Goal 9.10: Ensure that the costs of infrastructure improvements are borne by those who benefit. (Utilities)*

### Specific Plan Response

University Hills has been designed with a careful attention to the provision of services and infrastructure. According to initial studies, there is adequate supply, capacity, and facilities to accommodate the buildout of University Hills.

***Dry Utilities.*** University Hills will be served with electric, gas, solid waste collection, telephone cable, and Internet (data) from companies serving the City of San Bernardino. The utility providers, including the Gas Company, Southern California Edison, Verizon, and Charter Communications, have indicated the ability to provide service to University Hills.



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**Water.** University Hills is within the City of San Bernardino Municipal Water Department (SBMWD) service area for potable water services. The primary source of water will be the existing Sycamore 1 reservoir, located east of the development.

**Drainage.** University Hills maintains the significant drainage courses on-site to carry most of the off-site water through the site to existing drainage facilities. On-site drainage is accommodated in a combination of drainage swales and underground storm drains, which are based on the current guidelines of the City of San Bernardino and SBCFCD. The proposed storm drain system for University Hills will reduce the risk of flooding within the project through the following:

- The proposed storm drain system will be able to convey the runoff to downstream discharge points.
- Construction of the storm drain system will ensure the conveyance of the 100-year runoff away from the project site and the conveyance of off-site flow through the site and to existing flood control facilities, thereby eliminating flooding hazards.

**Sewer.** The University Hills project lies within the City of San Bernardino sanitary sewer service area. Discussion with staff at the Development Services Department, Public Works Division, indicated that the project will connect to an existing sewer trunk line at the intersection of Northpark Boulevard and Little Mountain Drive. The sewer facilities will be designed and constructed in accordance with the City of San Bernardino standards and specifications and in accordance with the *Standard Specifications for Public Works Construction* (latest edition).

In addition, the infrastructure that crosses earthquake faults is carefully designed to handle earthquakes and surface ruptures.

Within University Hills, the developer(s) will be responsible for constructing/funding their fair share of required on-/and off-site infrastructure improvements, such as water lines, sewers, storm drains, recycled water lines, and streets. All infrastructure improvements will be developed in conjunction with the roadway improvements.

## Parks, Trails, and Open Space

### General Plan Goals

*Goal 8.1: Improve the quality of life in San Bernardino by providing adequate parks and recreation facilities and services to meet the needs of our residents. (Parks, Recreation, and Trails)*

*Goal 8.2: Design and maintain our parks and recreation facilities to maximize safety, function, beauty, and efficiency. (Parks, Recreation, and Trails)*

*Goal 8.3: Develop a well-designed system of interconnected multi-purpose trails, bikeways, and pedestrian paths. (Parks, Recreation, and Trails)*

University District Specific Plan. The following policies from the General Plan and University District Specific Plan relate to the University Hills Specific Plan:

- *Enhance the regional recreational link with the University.*

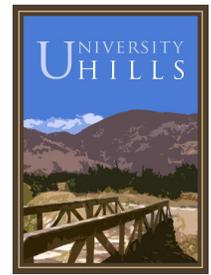
## **Specific Plan Response**

Maximum buildout of the University Hills Specific Plan would accommodate 980 units and a population of approximately 3,283 residents. Based on the City's standard of 5 acres of parkland per 1,000 residents, full buildout of the Specific Plan would result in the need to provide 16.4 acres of parkland or an equivalent fee in lieu of dedicated parkland. University Hills exceeds the City's requirement and provides approximately 247 total acres of public and private parkland and trails.

University Hills is focused onto approximately 170 acres, or only 42 percent of the total site, and is mainly concentrated south of the South Branch of the San Andreas Fault on the lower portions of the site where the average slopes are generally below 15 percent. North of the South Branch of the San Andreas Fault, approximately 235 acres, or 58 percent of the site, remains undeveloped and will be used by CSUSB as a land laboratory.

University Hills contains approximately 10 acres of parks, including a 2-acre private community clubhouse, a 5-acre California Walnut Grove Linear Park, two neighborhood parks, and the 2.1-acre Glider Park. Glider Park provides a safe approach zone for the hang gliders landing at the adjacent Andy Jackson Airpark. The community clubhouse will also be available to CSUSB staff with reservations.

University Hills will be integrated and linked both internally and with surrounding uses. Direct access to the land laboratory will be served via trails and on-/off-site trailhead parking. Within the developed areas, slopes and drainage ways will be used as pathways and open space corridors. University Hills provides an important link for the regional multipurpose trail. Within University Hills this trail follows the South Branch of the San Andreas Fault and runs the length of the project.



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## Safety

### General Plan Goals

*Goal 2.8: Protect the life and property of residents, businesses, and visitors to the City of San Bernardino from crime and the hazards of flood, fire, seismic risk, and liquefaction. (Land Use)*

*Goal 7.1: Protect the residents of San Bernardino from criminal activity and reduce the incidence of crime. (Public Facilities and Services)*

*Goal 7.2: Protect the residents and structures of San Bernardino from the hazards of fire. (Public Facilities and Services)*

*Goal 10.6: Protect the lives and properties of residents and visitors of the City from flood hazards. (Safety)*

*Goal 10.7: Protect life, essential lifelines, and property from damage resulting from seismic activity. (Safety)*

*Goal 10.9: Minimize exposure to and risks from geologic activities. (Safety)*

*Goal 10.10: Protect people and property from the adverse impacts of winds. (Safety)*

*Goal 10.11: Protect people and property from urban and wildland fire hazards. (Safety)*

### Specific Plan Response

University Hills contains several significant natural features that have made safety a special concern in the design of the community. Significantly, the San Andreas Fault system runs the length of the project, natural drainage courses cut through the project, and wildland fire is a threat.

***Seismic Safety.*** The San Andreas Fault system, which includes three active faults, runs through the project site. Prior to the creation of the land plan, a geologist conducted extensive on-site studies and trenching to pinpoint the locations of faults within University Hills. The fault trends were precisely located and surveyed for the establishment of structure setback lines from the edge of the fault. Development in University Hills is sited to avoid the fault and comply with the setback lines. Development is required to comply with the latest building codes, which are designed to resist damage from seismic shaking.

***Drainage and Flooding.*** Because University Hills sits on an alluvial plain on the slopes of the San Bernardino Mountains, flooding and drainage is a critical factor. The site itself is located on a sort of island, sandwiched between two

## Appendix

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major drainage areas that direct most of the off-site drainage around the project site. Consequently, the site itself receives a limited volume of storm flows and flooding hazards are not as great as might otherwise be anticipated.

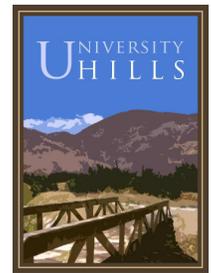
At a regional level, the watershed draining into the project site is surrounded by Devil's Canyon to the west and north and Waterman Canyon to the east and south, which take the majority of flows from the upper San Bernardino Mountains around University Hills. Locally, drainage primarily goes to Devil's Canyon to the northwest and Sycamore Canyon to the east. Devil's Canyon drains into the existing flood control facilities and continues along Campus Parkway. Sycamore Canyon drains into the existing flood control basin east and south of the project site before continuing south into a covered, concrete-lined channel that crosses Northpark Boulevard in Little Mountain Drive.

The total on-/off-site area draining into the project site is approximately 900 acres. The most significant on-site drainage is contained within Badger Canyon, which drains an area of approximately 460 acres. Badger Canyon cuts through the middle of the project site and between the western and eastern development areas. It drains into the existing North Badger Basin at the base of Badger Hill. The University Hills site itself drains into both the Badger and Sycamore basins. Approximately 70 percent of the site drains in a westerly direction to the Badger Basin and the remaining 30 percent of the tributary area flows east toward the Sycamore basin.

Portions of Badger Canyon are classified as being within the 100-year flood zone. University Hills is designed so that the flood plain is maintained and development is prohibited within a 100-year flood zone.

**Wildland Fire.** Because of the adjacent San Bernardino National Forest, steep slopes, and high winds, the University Hills area is at risk from wildland fires. To ensure the safety of lives and property, a detailed fire analysis was conducted and an extensive fire protection plan was developed for University Hills that will protect development from wildland fires. Significant provisions of the fire protection plan include:

- The protection of structures through the use of noncombustible exterior building materials, restriction on the use of cornice and eave vents, fire sprinklers, and compliance with the most current fire codes.
- Greater levels of structure protection on the perimeters of the project.
- Placement of streets on the perimeter of the project to provide a firebreak and a first line of defense against fires.
- Adequate access and maneuverability for fire protection vehicles.
- Careful placement of fire hydrants and design of structures to facilitate fire suppression efforts and fire hose access.
- Strict landscape and use zones, called fuel modification zones, which include private yards and extend approximately 120 to 230 feet from



structures. Within the fuel modification zones, there are restrictions on the type, spacing, irrigation, and maintenance of landscaping.

- Clear disclosure to potential homebuyers of the fire threat, preventative measures, and individual responsibilities.
- Clear delineation of and maintenance responsibilities for the fuel modification zones.
- Aggressive program to educate residents on the fire threat, landscaping requirements, and maintenance responsibilities.

**High Winds.** The City of San Bernardino experiences periods of high winds, especially in the Cajon Pass and at the bottom of canyons. University Hills is included in the City's designated High Wind Area, which has certain appropriate building standards. Development in University Hills is required to comply with the building standards for this area and will be designed and oriented to avoid the creation of wind tunnels that concentrate gusts in corridors. Wind breaks in the form of landscaping, walls, or other architectural features can be used to provide protection from strong winds.

## Environmental Sensitivity

### General Plan Goals

*Goal 2.6: Control development and the use of land to minimize adverse impacts on significant natural, historic, cultural, habitat, and hillside resources. (Land Use)*

*Goal 10.4: Minimize the threat of surface and subsurface water contamination and promote restoration of healthful groundwater resources. (Safety)*

*Goal 10.5: Reduce urban run-off from new and existing development. (Safety)*

*Goal 12.1: Conserve and enhance San Bernardino's biological resources. (Natural Resources and Conservation)*

*Goal 12.2: Protect riparian corridors to provide habitat for fish and wildlife. (Natural Resources and Conservation)*

*Goal 12.3: Establish open space corridors between and to protected wildlands. (Natural Resources and Conservation)*

*Goal 12.5: Promote air quality that is compatible with the health, well-being, and enjoyment of life. (Natural Resources and Conservation)*

*Goal 12.6: Reduce the amount of vehicular emissions in San Bernardino. (Natural Resources and Conservation)*

*Goal 13.1: Conserve scarce energy resources. (Energy and Water Conservation)*

*Goal 13.2: Manage and protect the quality of the City's surface waters and ground water basins. (Energy and Water Conservation)*

### **Specific Plan Response**

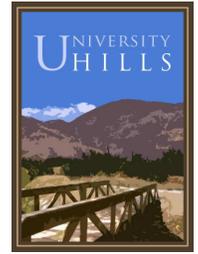
University Hills is committed to creating a sustainable, resource-efficient community. Accordingly, the University Hills Specific Plan includes an innovative commitment, at the planning stage, to sustainable practices. It includes guidelines that address sustainable and green building practices for the individual building as well as overall community design.

The sustainability guidelines address the use of active and passive energy and resource conservation measures—such as efficient landscaping and building designs—and utilization of other green building techniques/materials. The land plan for University Hills is based on this commitment. In particular, development is focused on only 42 percent of the total site near the clubhouse, recreational amenities, and CSUSB, which will help reduce the need to use cars. In addition, significant drainage corridors are preserved and incorporated as open space, recreational amenities, and fire protection zones.

Of particular importance, the land owner has committed to ensuring that construction in the Attached Residential, faculty housing, and clubhouse are certified as Leadership in Energy and Environmental Design (LEED®) by the United States Green Building Council.

Another critical sustainability issue is water and watershed management. University Hills includes the following elements to address the critical issues of water conservation, water quality, and watershed management:

- The compact design limits the development footprint; open lands that can absorb runoff are maximized.
- Natural drainage ways are maintained and incorporated into the design of the project as open space amenities.
- Landscaping and irrigation materials and methods are designed to increase efficiency and minimize water demand.
- Efficient, water-conserving technologies, such as low-flow toilets, are used.
- Drainage outlets, bioswales, and other permeable surfaces will be designed to control urban runoff pollutants caused by the development of the project.



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## APPENDIX C: FIRE PROTECTION PLAN

## Appendix

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# Fuel Modification Installation and Maintenance Program

## **University Hills** San Bernardino, CA



## Contents

- **Report Introduction**
- **General Geographic Description**
- **Fire History**
- **Fuel Modification Program**
- **Zone Configuration**
- **Wildland Interface Fuel Types**
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- **BEHAVE Fuel Model Run Locations**
- **Wind Patterns and Structure Alignment**
- **Fire Behavior (BEHAVE) Outputs**
- **BEHAVE Calculation Results Analysis**
- **Building Construction Material Requirements**
- **Report Summary**

# University Hills

## San Bernardino, CA

### Report Introduction

We have prepared this report for the San Bernardino City Fire Department (SBFD). The report is a vegetation wildfire analysis, to justify the landscaping performance of the fuel modification installation and maintenance program for the University Hills planned community. The study takes into consideration many factors such as the vegetative fuels, topography, weather, and wind/structure placement alignments during a wild fire burning towards the development from the surrounding perimeter areas. The report will show the severity level in which a wild fire under these factors could impact the proposed development and why fuel modification is one of the major fire protection features for a residential development.

The fire behavior analysis in this report projects fire behavior results based on a worst case scenario for this development. By using the worst case scenario fire conditions, we expect that future fires with less extreme factors than we are projecting would produce reduced fire behavior spread and intensity. We used a scientific approach to describe a fire hazard assessment and expected wildland fire behavior results. Our computer projections simulate a fire burning within the native vegetative fuels directly outside the boundaries of the fuel modification zones because the entire fuel modification zone is replanted and permanently irrigated. This report will also demonstrate how code conforming fuel modification zones will do their part to help protect the future community.

The report describes how the development meets or exceeds requirements set forth in the Foothill Fire Zone Building Standards (Chapter 15.10 of the San Bernardino Municipal Code), Building Safety Enhancement Area Building Standards (Chapter 15.11 Municipal Code), Chapter 19.15 (City Of San Bernardino Development Code), and City Fire Code (MC-1130).

## **General Geographic Description**

The proposed 404-acre development is located in a Hazardous Fire Area in the City of San Bernardino. The project will be located north of the California State University San Bernardino campus on the opposite side of Badger Hill. The development project is at the bottom of a large flat valley that is slightly sloping south, away from the San Bernardino Mountains towards the base of Badger Hill.



The development will be bordered by combustible vegetation mostly on the north and west sides. The south side of the development will mostly be considered to built-out due to the Devils Canyon Diversion Levees, a Reservoir, large irrigated slopes, and an existing development located on the extreme south-east side. The land which will be developed will be relatively flat with slight undulations. The site currently is covered with low growing highly combustible plant species listed on the mandatory removal list, which is shown on the fuel modification plan. All existing on-site vegetation will be removed.



(Figure 1) On the south bottom left is the Levee. Bottom center is a reservoir. The south middle will be large re-landscaped areas. On the extreme right is an existing residential development. Badger hill completely separates the development and the University.

## Fire History

The property burned in the recent “Old Waterman” fire in 2003. The site contained mostly northern mixed chaparral and sage scrub, prior to the recent Old Waterman fire.

## Fuel Modification Program

The Fuel Modification Maintenance Program (FMMP) described in this report meets San Bernardino Fire Department (SBFD) minimum fuel modification code requirements. The codes enforced by the SBFD for fuel modification were developed to handle the exact type of wildland fuels that will be interfacing with this future development. The future community will be entirely bordered by fuel modification zones on all sides of the development. In many locations, landscaped areas extend well beyond the fuel modification zones, out towards the wild land areas.

The FMMP also requires regular and annual maintenance responsibilities by the LLMD. The requirement to do maintenance will reside in the communities CC and R’s rules and regulations recorded documents. The fuel modification on-going maintenance requirements will be on the fuel modification plans for inspection by SBFD and for use by the landscape maintenance company. The developer will distribute the approved plans and maintenance requirements directly to the LLMD at the required FMMP maintenance turnover meeting. The SBFD shall be present at the maintenance turnover.

## Zone Configuration

### Irrigated Zone “A”.

This Zone is to be located on a graded area at the top or base of a slope. The zone is the last 10 to 20 feet of private homeowner’s flat yards adjacent to the ridge or toe of slope and is directly adjacent to the LLMD “B” fuel modification zone. Zone”A” is maintained by the homeowner and/or the LLMD, only non-combustible construction is allowed within Zone “A”. No tree canopies are allowed within 10 feet of structures when the tree is within a fuel modification zone. The objective is to prevent spread of fire to or from a structure. Vegetation shall be maintained to prevent a path for fire to reach the structure.

### Irrigated Zone “B”.

The Zone begins at the homeowners property line at the toe or ridge of a slope and extends 50 to 150 feet further outward away from the structures towards the native vegetation. The area is cleared, replanted with higher fire resistive plants, and permanently irrigated with only plants listed on the precise planting plans that SBFD approved. Plants are originally installed conforming to approved plant types and code required horizontal and vertical spacing arrangements. See the fuel modification plan for more details. Zone “B” is maintained by the LLMD.

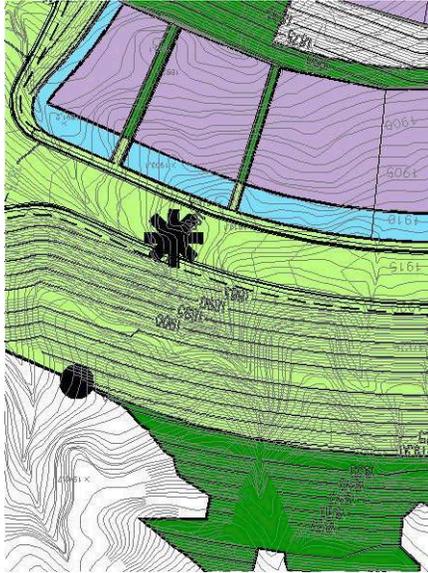
### For Both Zones:

- No highly combustible plant species allowed within the zones (see the fuel modification plan)
- Horizontal and vertical plant spacing specifications are required
- Dead and dying material removed regularly
- Only non-combustible construction is allowed

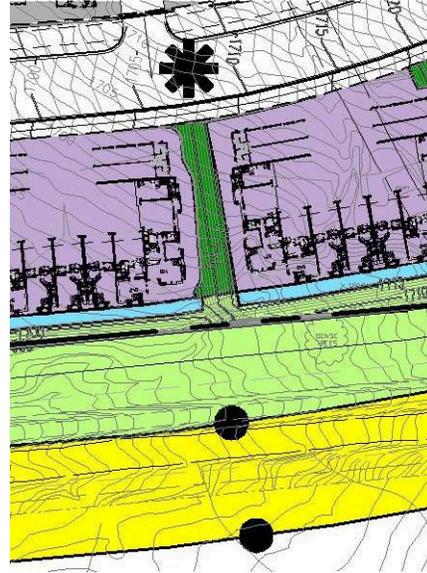
The fuel modification maintenance code provisions are copied onto the fuel modification plans. Notes on the fuel modification plans detail the maintenance requirements.

**Thinning Zone C:**

The C Zone extends an additional 50-70 feet beyond Zone B; the remaining vegetation is to be thinned 50%. For this project, the vegetation will be thinned (maintained by the LLMD) a minimum of 50 feet beyond Zone B surrounding the developed areas except for portions of the North and North East sides of the project which will maintain an extended 150' plus Zone B.



**“A” and “B” Zone Example**



**“A”, “B” and “C” Zone Example**

## Wildland Interface Fuel Types

The type and amount of fuels on the open slopes surrounding the future development are generally:

- Native grasses from 1-2' in height. 40%
- Sage scrub shrubs 3- 4' in height. 40%
- Chaparral tree-form shrubs from 4-15' in height. 10%
- Trees (Oak, Elderberry, Riparian willow species) 10%

These fuels (except for the Oak and Willow species) are considered highly combustible in the native setting and could be analyzed for their fire performance based on many factors.



(Figure 2) BEHAVE Sage/Buckwheat shrub fuel model So Cal 18 is present in the photo and will surround the fuel modification zones. (We will calculate the fire spread using a worst case fuel model 4.)

1. Aids to Determining Fuel Models for Estimating Fire Behavior, Hal E. Anderson. General Technical Report INT-122 April 1982. United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401.

2. BEHAVE Plus: Fire Behavior Prediction and Fuel Modeling System - BURN Subsystem. General Technical Report INT-194. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401

## **Fuel Model Runs**

The BEHAVE, Computer Fire Behavior Prediction and Fuel Modeling System is the most accurate method for predicting wildland fire behavior. The BEHAVE fire behavior computer modeling system is utilized by wildland fire experts nationwide. The fuel models in the computer program, are also referenced from the book titled, "Aids to Determining Fuel Models for Estimating Fire Behavior." The fuel models were designed to aid in determining fuel types and are used in calculating and estimating fire behavior. We used BEHAVE to measure the intensity of a fire moving towards this development.

The fire model describes the fire behavior only within the flaming front of the fire. The primary moving force in the fire is dead fuel less than ¼" in diameter. These are the finest fuels that carry the fire. Fuels larger than ¼" contribute to fire intensity, but not necessarily to fire spread as much as the fine fuels. The BEHAVE fire model describes a wildfire spreading through surface fuels, which are the burnable materials within 6' of the ground and contiguous to the ground.

This type of modeling will demonstrate that the FMMP is the best fire defense system for the University Hills development. The Modeling will show that the structures are significantly further away than the most extreme flame lengths and intensity that would be produced. Instead of estimating with the exact fuel model inputs for calculating fire behavior, we will use worst case scenario fuel model inputs to ensure a further safety cushion in the computer fire behavior calculations and result analysis.

## **BEHAVE Fuel Model Run Locations**

We entered BEHAVE input run data for two wind patterns since wild fires are mostly wind driven events. We measured fire coming from the North-East (Santa Ana wind) and a fire coming from a normally prevailing South-West wind. The width of the fire is determined by the distance away from the development and the wind speed. Generally, the faster the winspeed results in a more narrow burn area during high winds.

Our computer projections simulate a fire burning within the native vegetative fuels directly outside the boundaries of the FMMP zones because the entire fuel modification zone is replanted and permanently irrigated. A fire may only burn towards a portion of the development. If a fire was to begin at the most easterly portion of the north side in a Santa Ana wind event, the fire could spread across the north side perimeter all the way to the west side. The 150 foot wide irrigated zone is designed to keep the measured fuels fire outside of the perimeter of the irrigated zone.

The north perimeter side of the development also provides for re-landscaped areas often twice the distance of the fuel modification zone. This is a benefit due to the irrigation and different type of plants introduced in these areas.

## Wind Patterns and Structure Alignment

We entered the two most extreme wind patterns and speeds relating to wildfires into the BEHAVE model. All other lesser wind patterns and wind speeds normally produce less fire intensity based on a fire in wildland fuels. The two most extreme wind patterns/wildland fuel alignments are:

1. 90 mph northeast Santa Ana wind.
2. A rare 30 mph dry southwest on-shore, normally prevailing wind.



(Figure 3) We used BEHAVE to calculate a North-East Santa Ana wind directed fire affecting the north east side of the development. The south side of the development is not as subjected to a north east wind driven fire except for ember reception.



(Figure 4) We used a South-West wind directed fire that is affecting the West and South perimeter sides of the development.

## Fire Behavior (BEHAVE) Outputs:

### The North Development Perimeter Side / North-East Santa Ana Wind



(Figure 5) BEHAVE So Cal Fuel Model 18 fuels are present on the slight slopes down up to the future development. The east side of the development is subject to the worst case fire weather. (We will calculate the fire spread using a worst case fuel model 4 below.)



(Figure 6) This is the north side of the development in the background. BEHAVE Fuel Model So Cal 18 present.



(Figure 7) This is a photo of the extreme north-east side of the development showing the existing built-out development and the fuels interfacing with the north and east side. BEHAVE Fuel Model So Cal 18.

### **North-East Wind Exposure Fire Behavior**

BEHAVE Calculation inputs for computer fire runs:

- 90 mph N/E down slope wind
- BEHAVE Fuel Model 4

**Flame Length (feet) 122**  
**Rate of Spread 38 MPH**  
**Spotting Distance 7.3 Miles**

*Note: Fire Behavior models are estimates only, based on fire experience and observations. Actual fire behavior may vary. As winds in this area can be, and have been, very severe, worst case estimated wind speeds were used and the estimated worst-case vegetation types and heights were used. The SBFDF requested that a 90 mph wind speed be used for this particular site.*

## **The West and South Perimeter Sides / South-West Wind**



(Figure 8) This is the west side interface of the development. BEHAVE Fuel Model So Cal 18. (We will calculate the fire spread using a worst case fuel model 4.) Notice the Levee acting as a large cement firebreak off in the distance.



(Figure 9) This is a typical photo of the south side of the development. BEHAVE Fuel Model So Cal 18. Notice the tip of the Levee on the right and the smaller hill next to Badger Hill.



(Figure 10) Badger Hill fuels. A road is at the toe of the slope which assists in defending a downhill south-west wind driven fire. BEHAVE Fuel Model So Cal 18.

### **South West Wind Exposure Fire Behavior**

BEHAVE Calculation inputs for computer fire runs:

- 30 mph N/E down slope wind
- BEHAVE Fuel Model So Cal 18 Sage/Buckwheat

**Rate of Spread (ft/min) 146**

**Fireline Intensity 10,359**

**Flame Length (feet) 23.7**

*Note: Fire Behavior models are estimates only, based on fire experience and observations. Actual fire behavior may vary. As winds in this area can be, and have been, very severe, worst case estimated wind speeds were used and the estimated worst-case vegetation types and heights were used.*

BEHAVE Input Data:

<b>Model</b>	<b>1 hour Fuel Moisture</b>	<b>10 Hour Fuel Moisture</b>	<b>100 Hour Fuel Moisture</b>	<b>Live Woody Moisture</b>	<b>20' Windspeed Upslope</b>	<b>Air Temperature</b>
FM-4	2%	2%	2%	55%	90 mph	95 degrees f

BEHAVE Output Results:

<b>Model</b>	<b>Flame length</b>	<b>Rate of Spread</b>	<b>Spotting Distance Downwind</b>
FM-4	122'	38 mph	7.3 miles

The worst case Santa Ana wind condition fire will be a rapidly spreading fire. Estimated vegetation burnout time for the fire at any one structure would probably be less than 10 minutes. However, residual fire can be present for over an hour. Fires can spread due to spotting of burning embers downwind from the main body of the fire.

## **BEHAVE Calculation Results Analysis**

### **Reduced BEHAVE Input Factors:**

The above calculations were projected for fuels within the areas immediately adjacent to the fuel modification zone. A 90 mph wind speed is very rare event. A 60 mph wind speed is rare and happens limited times each year also.

- **We calculated fuel model runs in the same northern interface locations with a 60-mph Santa Ana wind speed. The results showed an overall flame length and fire intensity reduction of approximately 30%.**

### **Irrigated “B” Zone Factors:**

The above calculations were projected for fuels within the areas immediately adjacent to the fuel modification zone. We additionally calculated fuel model runs for fuels within the maintained fuel modification zones, and the results showed an overall fire intensity reduction of:

- **90% reduction in the irrigated zone.**  
(This is due to the removal of highly combustible species being cleared, replanted, and permanently irrigated with only plants listed on the approved plans. Plants are originally installed and maintained conforming to code required horizontal spacing arrangements.)

*BEHAVE demonstrates that flames and fire intensity is significantly reduced within the fuel modification zone.*

Additionally, the proposal exceeds the minimum code requirements because the entire distance of required fuel modification zones are irrigated when compared to a code conforming designed fuel modification program for other developments that includes the dry thinning zones.

The future structures will not ignite from the direct effects of fire regarding flame impingement and radiant heat. Any structure even those further away in other developments are subjected to firebrand embers. Fuels measured directly outside the fuel modification zones do not have sufficient flame lengths or radiant and convective heat energy to reach the future structures to the point of ignition when the new California Building Code Chapter 7A requirements are met.

### **Structure Ignition Assessment Model (SIAM).**

The following is information regarding a valid structure assesment model used by the fire service and professionals throughout the nation. The author of the model is one of the most well respected wildland fire professionals in the world. A USDA-Forest Service research study and report entitled the “Structure Ignition Assessment Model (SIAM)” by Jack D. Cohen, Intermountain Fire Science Laboratory, Missoula, Montana has helped to validate how much distance is required to keep structures from igniting due to wildland fire radiant heat. SIAM research further suggests that for reducing structure ignitions from radiant and convective heat sources, vegetation management (fuel treatment) beyond some relatively short (100 feet) distance from a structure built of non-combustible materials has little significant benefit for reducing flame generated ignitions. Vegetation management cannot be practically extensive enough to significantly reduce airborne firebrand ignitions landing on combustible roofs or other fuelbeds on privately controlled land around a home. Future structures will be set back even further from the intensity of a fire burning outside the limits of the fuel modification zone. Fire suppression efforts combined with the fuel modification zone protection and the latest known building construction practices will ensure the best possible outcome for a safe development.

## **Building Construction Material Requirements**

Shall be in accordance with the latest version of the SBFD adopted Fire Code in effect at the time of building permit application, including local amendments.

The construction of all structures throughout the development:

- CBC Chapter 7A requirements for Attic Venting and Roof Construction requirements.
- Class “A” roof coverings and assemblies.
- No cornice or eave venting allowed.
- All Building Chapter 7A requirements apply.

## **Report Summary**

This development is designed using the most recently developed codes. We used BEHAVE to measure the intensity of a fire moving towards this development, and flame lengths and fire intensity is ultimately reduced by the installation and maintenance of the FMMP.

Based on the scientific fire behavior analysis, exterior portions of future structures will not ignite from the exterior fire exposure from a wildland vegetation fire. This is primarily because the fire energy is too far away from the structures due to the low plant densities within the fuel modification zones and the most recent construction feature requirements.

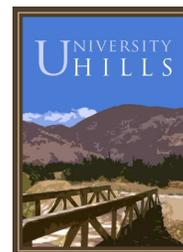
The codes enforced by the SBFD for fuel modification were developed to handle the exact type of fuels that are interfacing with this future development. The fuel modification zones designed for this development meet the minimum code requirements and surrounding the majority of the project exceeds the minimum standards. The use of the standard “A”, “B”, and “C” Zone design is only utilized on the boundary of the project adjacent to the Levee and low fuel Reservoir and the hang-glider port. All of the areas not utilizing the “C” Zone have extended “B” Zones, (permanently irrigated) which provides additional protection.

We recommend approval of the Fuel Modification Maintenance Program.

Acknowledgements and references:

1. Aids to Determining Fuel Models for Estimating Fire Behavior, Hal E. Anderson. General Technical Report INT-122 April 1982. United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401.
2. BEHAVE Plus: Fire Behavior Prediction and Fuel Modeling System - BURN Subsystem. General Technical Report INT-194. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401
3. 3-30-06: Draft Fire Protection Plan; Paradise Hills





## APPENDIX D: FOOTHILL FIRE ZONES OVERLAY DISTRICT CONFORMANCE

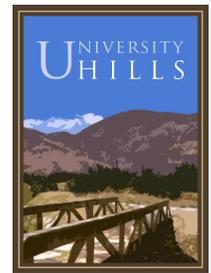
This section outlines University Hills’ compliance with the standards contained in the City of San Bernardino’s Foothill Fire Zones Overlay District. University Hills is located within the City’s FF (Foothill Fire Zones Overlay) District. The overlay district identifies 3 foothill fire zones that have different degrees of hazard. The foothill fire zones are: A-Extreme Hazard, B-High Hazard, and C-Moderate Hazard. Development within University Hills is within Fire Zone C and Fire Zone C, Abutting Wetlands. The following table describes University Hills’ compliance with the standards contained in the FF District.

### FF District Standards

Section 19.15.040	FF District Standard	University Hills Compliance
<b>1. Access and Circulation</b>		
1.A.	Local hillside street standards shall be used to minimize grading and erosion potential while providing adequate access for vehicles, including emergency vehicles. The right-of-way shall be 48.5 feet with 40 feet of paved width and parking on both sides and a sidewalk on 1 side. (A + B)	Development within University Hills occurs on slopes less than 15% therefore this standard does not apply. However, all streets within University Hills exceed the minimum right-of-way width of 48.5 feet.
1.B.	Streets shall have a paved width of 32 feet with parking and sidewalk on 1 side of the street only and right-of-way of 40.5 feet, subject to review and recommendation by the Fire Chief and the City Engineer, with approval by the Commission. (A + B)	Development within University Hills occurs on slopes less than 15% therefore this standard does not apply.
1.C.	Subdivisions shall be designed to allow emergency vehicle access to wildland areas behind structures. This is to be accomplished in either of 2 ways:  1. Provide a perimeter street along the entire wildland side of development or	University Hills provides a perimeter road along the entire wildland side of the development.

# Appendix

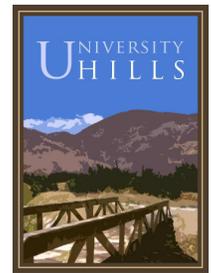
Section 19.15.040	FF District Standard	University Hills Compliance
	2. Provide a fuel-modified area, a minimum of 150 feet in depth from the rear of the structure, adjacent to the subdivision and connected to the interior street by flat 12 foot minimum access ways placed no more that 350 feet apart. If designed as a gated easement, access ways may be part of a side yard. (A + B + C where abuts wildland)	University Hills also provides a minimum 150 foot deep fuel-modified area from the rear of structures that are adjacent to wildland areas.
1.D.	No dead-end streets are permitted. Temporary cul-de-sacs are required.	University Hills does not have dead-end streets
1.E.	All permanent cul-de-sac turnarounds and curves shall be designed with a minimum radius of 40 feet to the curb face. No parking shall be allowed on the bulb of a cul-de-sac. (A + B + C)	Cul-de-sacs within University Hills are designed with a minimum radius of 40 feet and no parking allowed.
1F.	Cul-de-sacs to a maximum of 750 feet in length may be permitted with a maximum of 30 dwelling units, and to a maximum of 1,000 feet in length with a maximum of 20 dwelling units. (A + B)	Development within University Hills occurs on slopes less than 15% therefore this standard does not apply. However, University Hills does not have cul-de-sacs over 400 feet in length.
1.G.	Driveways to residential garages of more than 30 feet in length shall extend for a minimum distance of 20 feet from the garage, on a maximum grade of 5%. Driveways less than 30 feet in length shall have a maximum grade of 8% for a minimum distance of 20 feet from the garage. No portion of a driveway shall exceed a grade of 15%, unless approved by the Fire Chief and City Engineer. Driveways shall be designed so that the algebraic difference in grades will not cause a vehicle to drag or hang-up. (A+B+C)	University Hills does not have driveways that are more than 30 feet in length.
1.H.	Hillside collector and arterial streets shall not exceed 8% grade. Hillside residential streets shall not exceed 15% grade. Grades of streets shall be as provided in this subsection, unless otherwise approved in writing by the Public Services, Fire, and Public Works Departments. (A+B+C)	Collector streets within University Hills do not exceed 8% grade.



Section 19.15.040	FF District Standard	University Hills Compliance
1.I.	A tentative tract or parcel map shall provide for at least 2 different standard means of ingress and egress which provide safe, alternate traffic routes subject to approval by the Fire Department. The two separate means of access shall be provided pursuant to Section 19.30.200 of this Development Code. (A+B+C)	University Hills provides two points of access to the development. One via Campus Parkway and the other via Little Mountain Road.
<b>2. Site and Street Identification</b>		
2.A.	Non-combustible and reflective street markers shall be visible for 100 feet pursuant to City standards. (A+B+C)	University Hills will include non-combustible, reflective street markers that will be visible for 100 feet.
2.B.	Non-combustible building addresses of contrasting colors shall be placed on the structure fronting the street. Four inch high (residential) and 5 inch high (commercial) lettering and numbers visible at least 100 feet are required. (A+B+C)	University Hills will provide non-combustible building addresses of contrasting colors on structures fronting the street.
<b>3. Roadside Vegetation</b>		
3.	All vegetation shall be maintained and all dead plant material shall be removed for a distance of 10 feet from curblines. (A+B+C)	All vegetation within University Hills will be maintained by either the Master Homeowners Association or Landscape and Lighting Maintenance District.
<b>4. Water Supply</b>		
4.A.	Static water sources such as fire hydrants and wells shall have clear access on each side of at least 15 feet. (A+B+C)	Static water sources within University Hills will have clear access on each side of at least 15 feet.
4.B.	A minimum of 2 private spigots facing the foothills/wildlands shall be required for each structure. (A+B+C)	A minimum of 2 private spigots facing the foothills/wildlands will be provided on each structure within University Hills.
4.C.	Fire hydrants shall be identified with approved blue reflecting street markers. (A+B+C)	Fire hydrants will be identified with approved blue reflecting street markers within University Hills.

# Appendix

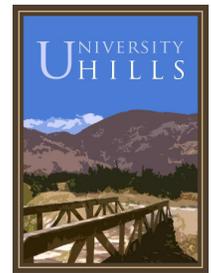
Section 19.15.040	FF District Standard	University Hills Compliance
4.D.	Each cul-de-sac greater than 300 feet in length shall have a minimum of 1 hydrant. (A+B+C)	Cul-de-sacs within University Hills over 300 feet in length will have at least one fire hydrant.
4.E.	Minimum fire flow shall be 1,000 gallons per minute. (A+B+C)	University Hills will provide a minimum fire flow of 1,000 gallons per minute.
<b>5. Erosion Control</b>		
5.A.	All fills shall be compacted. (A+B+C)	All fills within University Hills will be compacted.
5.B.	For all new projects, erosion and drainage control plans must be prepared by a licensed civil engineer, and be approved prior to permit issuance. (A+B+C)	Erosion and drainage control plans have been prepared by a licensed civil engineer.
5.C.	The faces at all cut and fill slopes shall be planted with a ground cover approved by the City Engineer. This planting shall be done as soon as practicable and prior to final inspection. Planting of any slope less than 5 feet in vertical height, or a cut slope not subject to erosion due to the erosion-resistant character of the materials, may be waived by the City Engineer. An automatic irrigation system shall be installed for planted slopes in excess of 15 feet in vertical height, unless recommended otherwise in the preliminary soils report or waived by the City Engineer. If required by the City Engineer, a recommendation for types of planting materials shall be obtained from a Landscape Architect. The Landscape Architect shall, prior to final inspection, provide the City Engineer with a statement that the planting has been done in compliance with recommendations approved by the City Engineer. (A+B+C)	The faces of all cut and fill slopes within University Hills will be planted with ground cover approved by the City Engineer.  An automatic irrigation system will be installed for planted slopes in excess of 15 feet in vertical height, unless recommended otherwise in the preliminary soils report or waived by the City Engineer.  The Landscape Architect will provide the City Engineer with a statement that the planting has been done in compliance with recommendations approved by the City Engineer.
5.D.	Erosion landscaping plans shall incorporate the use of fire resistant vegetation. (A+B+C)	All erosion landscaping plans within University Hills will use fire resistant vegetation.



Section 19.15.040	FF District Standard	University Hills Compliance
5.E.	<p>All parties performing grading operations, under a grading permit issued by the City Engineer, shall take reasonable preventive measures, such as sprinkling by water truck, hydroseeding with temporary irrigation, dust pallative, and/or wind fences as directed by the City Engineer, to avoid earth or other materials from the premises being deposited on adjacent streets or properties, by the action of storm waters or wind, by spillage from conveyance vehicles or by other causes. Earth or other materials which are deposited on adjacent streets or properties shall be completely removed by the permittee as soon as practical, but in any event within 24 hours after receipt of written notice from the City Engineer to remove the earth or materials, or within such additional time as may be allowed by written notice from the City Engineer. In the event that any party performing grading shall fail to comply with these requirements, the City Engineer shall have the authority to engage the services of a contractor to remove the earth or other materials. All charges incurred for the services of the contractor shall be paid to the City by the permittee prior to acceptance of the grading. (A+B+C)</p>	<p>All parties performing grading operations within University Hills will take reasonable preventive measures to avoid earth or other materials from the premises being deposited on adjacent streets or properties. Earth or other materials which are deposited on adjacent streets or properties will be completely removed by the permittee as soon as practical, but in any event within 24 hours after receipt of written notice from the City Engineer, or within additional time as allowed by written notice from the City Engineer.</p>
<b>6. Construction and Development Design</b>		
6.A.	<p>Building standards governing the use of materials and construction methods for structures contained within the Foothill Fire Zones shall be in accordance with the San Bernardino Municipal Code Section 15.10.</p>	<p>Materials and construction methods for structures within University Hills will be in accordance with the San Bernardino Municipal Code.</p>
6.B.	<p>A slope analysis shall be filed with all discretionary applications for all projects in Fire Zones A &amp; B consistent with the Hillside Management section of the General Plan and Section 19.17.080(2) of this Development Code. (A+B)</p>	<p>A slope analysis has been prepared and is included as part of the University Hills Specific Plan.</p>

# Appendix

Section 19.15.040	FF District Standard	University Hills Compliance
6.C.	Structures shall be located only where the upgraded slope is 50% or less. If the building pad is adjacent to a slope which is greater than 50% and is greater than 30 feet in height, a minimum pad setback of 30 feet from the edge of the slope is required. The setback may be less than 30 feet only when the entire slope, or 100 feet adjacent to the building pad, whichever is less, is landscaped with fire resistant vegetation and maintained by an automatic irrigation system. (A+B)	No structure within University Hills is located adjacent to a slope greater than 50%
6.D.	All proposed property lines shall be placed at the top of slopes, except where the original parcel's exterior boundary line does not extend to the top of the slope. (A+B+C)	All property lines within University Hills are located at the top of slopes
6.E.	Development on existing slopes exceeding 30% or greater may occur if in conformance with all applicable ordinances, statutes and California Environmental Quality Act review. (A)	This condition does not apply in University Hills.
6.F.	Structures shall be permitted in narrow canyon mouths or ridge saddles, only if approved by the City Engineer and Fire Department. (A+B)	This condition does not apply in University Hills.
6.G.	All new structures requiring permits, including accessory structures, guest housing or second units shall conform to all applicable fire zone standards. (A+B+C)	All structures within University Hills will conform to all applicable fire zone standards
6.H.	Excluding openings, all exterior elements, including walls, garage doors, fences, etc., shall be free of exposed wood (as defined in Chapter 15.10). (A+B, and C where abuts wildlands.)	All exterior elements, including walls, garage doors, fences, etc., will be free of exposed wood as provided for in the University Hills Fire Protection Plan.
6.I.	The minimum distance between structures shall be 60 feet in Zone A and 30 feet in Zone B, unless otherwise approved by the Fire Chief with Concurrence by the Development Review Committee. (A+B)	Development within University Hills occurs on slopes less than 15% (Zone C) therefore this standard does not apply.



Section 19.15.040	FF District Standard	University Hills Compliance
6.J.	A fuel-modification plan or a reasonable equivalent alternative as approved by the Fire Chief is required. The plan shall include a "wet zone" of a minimum depth of 50 feet of irrigated landscaping behind any required setback and "thinning zones" of a minimum depth of 100 feet of drought tolerant, low volume vegetation, adjacent to any natural area behind structures and provisions for maintenance. A fire model shall be prepared pursuant to Section 19.30.200(6)(D)(3). (A+B, and C where abuts wildlands.)	The University Hills Fire Protection Plan includes a fuel-modification plan that includes a "wet zones" and "thinning zones" as required by this standard. A fire model has been prepared and submitted to the San Bernardino Fire Department.
6.K.	Retrofitting of any element is required when more than 25% replacement of that element occurs; i.e., roofing, fencing. (A+B+C)	This condition does not apply in University Hills. However, future retrofitting of any element will be required when more than 25% replacement of that element occurs; i.e., roofing, fencing.
<b>7. Miscellaneous</b>		
7.A.	All future transfers of property shall disclose to the purchaser at the time of purchase agreement and the close of escrow the high fire hazard designation applicable to the property. (A+B+C)	All future transfers of property within University Hills will be required to disclose to the purchaser at the time of purchase agreement and the close of escrow the high fire hazard designation applicable to the property.
7.B.	Firebreak fuel modification zones shall be maintained, when required, through homeowner associations, assessment districts or other means. (A+B+C)	Firebreak fuel modification zones within University Hills will be maintained by either the Master Homeowners Association or Landscape and Lighting Maintenance District.

## Appendix

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