FINAL

WILDFIRE HAZARD ASSESSMENT AND PLAN

for

Montanera Project

Orinda Gateway LLC

Orinda, CA

Prepared by
Wildland Resource Management, Inc.

May 2006

Approved by:

5/17/06

Tonya Hoover
Fire Marshal
Moraga-Orinda Fire District

WILDLAND
RESOURCE
MANAGEMENT

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May 10, 2006

Tonya L. Hoover
Fire Marshal/Public Relations
Moraga-Orinda Fire District
33 Orinda Way
Orinda, CA 94563

Dear Ms. Hoover:

On behalf of Orinda Gateway, LLC, please find for your approval the WILDFIRE HAZARD ASSESSMENT AND PLAN for the Montanera Project.

Please send a copy of the signature page to the Michael O'Hara, at O'Harta Development Group, 383 Diablo Road, Suite 100, Danville, CA. 94526.

I enjoyed working with you on this project; please do not hesitate to contact me with questions or if I can assist in the future.

Sincerely,

Carol L. Rice

Carol L. Rice

Cc: Tamsen Plume, Holland & Knight LLP
Michael O'Hara, O'Hara Development Group

EXECUTIVE SUMMARY

This wildfire hazard assessment and plan for the Montanera Project is intended to meet the requirements established by the Moraga-Orinda Fire District Ordinance #02-02 (2000 Uniform Fire Code) which calls for a wildfire hazard assessment plan to be submitted for Fire District review. The assessment shall address the following items related to wildfire hazards:

- Provision of access for fire apparatus,
- Provision of water supply for fire protection, and
- Provisions to control the spread of fire.

In order to control the spread of fire, the following plan describes actions needed to maintain fuels (both vegetative and structural) in a fire-safe condition. To make vegetation management easier to implement, it is based upon (1) delineating vegetation fuel management zones, (2) establishing appropriate treatments for each, plus (3) documenting maintenance requirements and mechanisms for enforcement. Information on fire-resistant and drought-tolerant landscaping is provided so that homeowners can protect their properties against wildland fire. This plan also addresses fire-resistant design and construction, based on the newly adopted Urban Wildland Interface Fire Code.

The wildfire hazard assessment includes a detailed description of existing conditions and proposed fuel modifications that will, in part, direct maintenance of landscaping and open space areas. The project site includes steep slopes around a moderately sloping valley west- covered with grasslands, oak woodland, riparian vegetation, and project associated landscaping, posing moderate fire hazards. Proposed fuel modifications emphasize actions to decrease fire intensity that facilitate fire suppression and minimize property loss. Development and maintenance of a defensible space zone for 100 ft from each structure, and 30 feet from roadside edge will help ensure fire safety. Open space management will prevent shrubby growth in the grasslands of the open space. Fire behavior under current environmental conditions and with mitigation measures in place will be generally less than two-feet flame length within 100 feet of a structure.

Section One -

EXISTING CONDITIONS

SETTING & CONTEXT

General Location of Project

The project site is located in western Contra Costa County south of the SR24/ Gateway Boulevard freeway interchange, in an area locally known as "Gateway Valley," see *figure 3.1 Local Context.* The 1,590-acre site includes approximately 768 acres (48%) within the City of Orinda Boundaries and approximately 822 acres (52%) within unincorporated Contra Costa County.

Gateway Valley is bounded on the east and west by steep slopes and ridges, including the northwest-trending Gudde Ridge on the west side, rising to an elevation of approximately 1,600 feet. These ridges separate the valley from the developed portions of Orinda to the east and from the developed portions of the City of Oakland to the west and southwest. The north side of the site is generally bounded by the steep escarpment and ridges of the old Upton/Kaiser quarry area. To the south the project abuts open space owned by the East Bay Municipal Utilities District (EBMUD).

Adjacent Properties

The project site shares its eastern boundary with the developed residential portions of the City of Orinda and the Town of Moraga (see *figure 3.2 Land Ownership).* The northern boundary parallels SR 24. On the north side of SR 24 are EBMUD lands and the Bruns Amphitheater. On the south side of SR 24 immediately north of the project site is the one-acre Williams parcel. The west boundary of the project site is shared with 230 acres in EBMUD ownership and the East Bay Regional Park District (EBRPD) Sibley Volcanic Regional Preserve. To the south and southwest lies the Town of Canyon; private open space is adjacent to the project site near the Town of Moraga; to the south east EBMUD owns the open space adjacent to the project.

Project Description - Overview of The Development Area and Montanera Preserve Area.

The Development Area covers approximately 230.4 acres (14.4% of the project site). See *Figure A.1 Conceptual Land Use Plan.* Approximately 148.4 of those acres will be used to create a new residential community, with the remaining land used for community playfields and public recreation areas. The project and related infrastructure will require grading of approximately 253 acres including upland and wetland habitats, removing all existing vegetation in this area.

The project also will create a new 1264-acre permanent open space preserve area, "Montanera Preserve Areas" divided into six preserves. Approximately 768 acres of this

new open space preserve is on-site open space, located primarily to the west and south of the Development Area. The additional 496 acres of this new preserve is located off site at the adjacent properties to the south.

Description of the Development Area

Major project development elements include single-family residential, community recreational amenities (including a Swim Center), public recreation playfields with associated amenities, roads, trails and utility infrastructure.

Residential

The 245 single family residences are clustered into four parcels with a density ranging from two to four units per acre. The project includes a mix of architectural forms sited informally along the contours of the project site, not in formal rows. Conceptual layout of the proposed residences is shown on *Figure B.7 Conceptual Lotting Plan.*

Setbacks, Building Siting and Private Open Space - Residential setback requirements are shown in Table B.1 on Figure B.7. Setbacks vary from 10-foot side to first floor or garage to 40-foot setbacks from property line to rear of structure. The planning commission may grant an exception to allow a five-foot side yard setback for side-facing garages on Type B-lots in lieu of the 10-foot minimum setback. None of the lots have property lines that extend into the Montanera Preserve Areas. In all cases a minimum fifteen-foot setback is provided to any structure as measured from the Development Buffer Area Boundary.

On sites with over 20 percent slope, residential buildings will be sited and oriented so buildings step down the slope. On downhill lots the height of the lowest floor above grade will be no more than six feet at the down slope façade. All understories will be enclosed.

Each residential unit will be provided with a minimum of 300 square feet of private open space within each lot. Fencing is discouraged except along the boundary of the Preserve Areas, and the "back yard" areas will be landscaped with natural plantings on slopes varying from 20 to 50% creating bands of private open space throughout the Development Area.

Architecture - Large buildings will be designed as clusters of smaller forms. Where possible, the ridges of dominant roof planes will run perpendicular to the slope of the land. Large roof planes will be broken by three-dimensional elements (dormers, clerestories, gables). Facades will feature 3 dimensional elements (dormers, second story step backs, bays, decks, overhangs) to break up large walls. Buildings will be designed to avoid large, flat surface planes such as exposed garage roofs.

Building Materials - Roofs will be clad in slate, clay or concrete tiles, copper or in fiber cement or composition shingles. Composition shingles, if used will be fire-rated Class A assemblies. Walls will be clad in wood treated to render them nonflammable, plaster,

concrete (e.g. Hardiplank), masonry or stone. Walls of buildings that abut the Montanera Preserve Areas will be clad in fire resistant materials rather than non-treated wood. Materials other than those listed may be considered on a case-by-case basis if they are consistent with the design principles of the Development Standards and Design Criteria.

Equipment - All mechanical, electrical or other building equipment, trash and dumpster areas and utility structures will be screened, enclosed, buried or otherwise concealed from view. Where large flat planes are intrinsic to a building type and unavoidable, the building will be located on a non-sensitive site and screened from direct view by landforms, trees or other methods of screening. Roof-mounted equipment will be prohibited on all buildings with a possible exception for roof mounted solar panels.

Grading - The grades throughout the Development Area will be modified. The natural pattern of major drainage swales will be preserved; bringing the open space closer to the structure clusters. Slopes developed with structures are no greater than 30%, with few exceptions. Moderately sloped building sites of up to 20% are indicated as preferable to flat pads. Most lots are terraced with two moderately sloping building pads divided by a steeper slope. The larger of the two building pads are typically adjacent to the streets or shared driveways and have a moderate slope of 6% to 12%. A steeper slope up to 50% divides this terrace from a lower terrace that typically slopes 12% to 16%. The rear of most of the lots are slopes that vary from 30% to 50% from 30' to 110' in length.

In some areas retaining walls and other mechanical methods of slope stabilization will be necessary to accommodate the proposed land use plan. Figure B1- Conceptual Grading Plan identifies all retaining walls exceeding 8 feet in height (up to a maximum of 20' tall wall). Reinforced or mechanically stabilized slopes with gradients over 40% ("geo-grid") may be considered as alternatives to retaining walls.

Public Safety

The community playfield areas will be designed to accommodate emergency helicopter landings and takeoffs.

All buildings will be equipped with automatic sprinklers.

Community Facilities

Art and Garden Center - The Art and Garden Center will be a public facility operated and ~~maintained by the Orin~~da Parks and Recreational Department. The Art and Garden Center is located adjacent to Area IV home sites at the southern end of the Project site on approximately 4.5 acres surrounded by the Western Hills Open Space. It will include up to 6,000 square feet of single story buildings in approximately 1.5 acres of landscaped gardens, including community gardens, trailhead facilities, outdoor patios, terraces, a gazebo, a greenhouse of up to 1,300 square feet, an amphitheater with perimeter fencing as needed. Special event will allow parking for 55 cars (which will not pose evacuation challenges).

Community Playfields - Community playfields will be developed on approximately 34 acres adjacent to SR24 and Gateway Boulevard, partially developed on the OGLLC lands and partially on EBMUD lands. This area will include a total of 5 field areas developed on 4 graded terraces:

- The uppermost terrace, adjacent to Area II home sites, includes two combination baseball/ soccer fields in a relatively flat irrigated turf area 850 feet by 400 feet.
- The next terrace to the north is approximately 500 by 350 with a soccer field.
- The third and forth terraces are approximately 400 by 400 and 350 by 400 feet respectively, with combination soccer and baseball fields. .
- These two northern-most baseball/soccer combination fields will include artificial turf and field lighting.

Parking for 250 cars is located in three lots adjacent to these fields. The community playfields will be include landscape buffer/ windrows created by informal clusters of trees and composed of native species consistent with the natural landscape which will reduce their visibility from off-site locations and shelter them from strong winds.

Also included in this community playfield area are public trails and trailheads (10 trailhead auto parking spaces and 2 horse trailer spaces) and a playfield maintenance yard developed on 0.8 acres of the EBMUD property. Approximately 2.2 acres of passive park area, including a grassy area measuring a minimum of 300 ft by 120 ft is located down slope from Area II home sites and adjacent to the play fields.

Other ancillary uses in the community playfield area include: restrooms, snack shacks, picnic areas, tot lots (approximately 5,000 square feet in size), landscaping, storage sheds (including chemical storage for playfield maintenance) and creek restoration/ mitigation work.

At the City's discretion, the community playfield area may be modified with the following two projects:

- An elementary school for approximately 300 K-5 students may be constructed on a lot of up to approximately 4.6 acres located on one of the community playfields sites, with a joint use agreement for the adjacent playfield.
- 50 parking spaces may be replaced with two public tennis courts.

Private Uses

The Development Area includes the following features:

- Swim Club: a private membership swim club is proposed on the east side of the entrance road across from the community playfields. The swim club may include a building or group of buildings totaling no more than 6,000 square feet, adequate parking spaces as well as a lap pool and landscaped areas.

- A limited number of pocket parks may be developed within this private common space.

- A series of three detention basins in the 14.2-acre Detention Basin Open Space located adjacent to Gateway Boulevard and down slope of home sites in Areas I and II. Slopes vary in this open space from 20 to 50%. A fourth detention basin is located east of Area III.

Landscape Improvements

The proposed dominant landscape both outside and inside the Development Area will continue to be mixed oak woodland and riparian habitat, interspersed with open grassland. The natural pattern of dense tree and shrub cover in swales will extend down slope through the developed areas. The Development Area is restricted to the open grassland zones on the lower slopes and valley floor. The upslope woodland zones will remain undisturbed. Areas where vegetation is lost due to grading will be replanted with native tree and understory species (excluding poison oak). Jurisdictional aquatic resources (wetlands, waters and riparian habitat) will be preserved and mitigated. In addition to other elements the Tentative Map will depict all fuel modification zones within the Montanera Preserve Area.

New trees will be planted in informal clusters, not formal rows. Introduced trees in the graded areas throughout the Development Area will be selected and placed to resemble and blend with the natural landscape. While oaks should predominate, they will be combined with other compatible native and non-native species to form a diverse plant mix that blends and conforms to the image of a native California landscape. Native plants are proposed to predominate, but a diversity of species is encouraged.

Grading and landscaping are proposed to screen views of building and make them less prominent and conspicuous. The parking lots throughout the project site will be planted so that within five years 50% of the paved parking areas will be covered by tree canopy. In general the landscape including private gardens is proposed with no abrupt transitions from one plant community to another.

Fenced yards will be discouraged except for courtyards, enclosed patios and any fencing or walls required by the final Resource Agency permits. Fencing or walls will be prohibited in front yards within 10 feet of the front property line. Fences or walls of up to 4 feet in height and gates of up to 4 feet 6 inches will be permitted within the front yard setback for the primary structure (though not closer than 10 feet from front property line). The fencing materials will be of inconspicuous design and color and will be screened with planting. Other fences or walls up to 6 feet in height will be permitted. In all cases, the fencing plan for an individual parcel will be reviewed by the Planning Commission concurrent with its review of the design for a proposed new home for that lot.

Access & Circulation

Site Circulation

Figure A.3 Recreational Access, Parking and Street Plan shows the overall proposed site circulation.

Interchange with SR24 & Gateway Boulevard - The existing interchange with SR 24 is located just north of proposed Project Site entrance. The project proposes intersection improvements where Gateway Boulevard intersect with the freeway ramps that include widening the existing pavement and increasing the side of traffic islands.
Gateway Boulevard - Gateway Boulevard provides the single public access to the 245 homes and other recreation uses in the Gateway Valley. Gateway Boulevard will extend south from SR 24 through the Project Site to the beginning of the emergency vehicle access road to connect to Edgewood Road. The road generally follows the alignment of Brookside Creek, crossing the perennial tributaries at existing, at-grade stream crossings with clearspan bridges in the locations shown on *Figure A4 Conceptual Development Plan*. The Gateway Boulevard will be a public road from SR 24 to the beginning of the emergency vehicle access road to connect to Edgewood Road. The Gateway Boulevard right of way will be dedicated to the City. Other streets and shared driveways throughout the development will be private.

Gateway Boulevard will consist of a road with a minimum of 24 feet in width to accommodate two travel lanes and clearance for occasional emergency parking. The width may be increased to 28 feet for limited distances between SR24 and the community Playfields or may remain at 24 feet with 2-foot wide reinforced shoulders on both sides, as subject to approval by the Moraga Orinda Fire District (MOFD). Turn lanes will be used at intersections.

No stop sign, gate or other traffic control device will be permitted on Gateway Boulevard at the northern entrance to the Project Site, nor will public access be controlled in any manner at this location. A separate vehicular turnout will be provided.

Other Roads in Gateway Valley - All other roads in Gateway Valley and the portion of Gateway Boulevard that serves as emergency vehicle access to Edgewood Road will be private roads. OGLLC will improve Brookside Road to a standard at least consistent with the City requirements for emergency vehicle access. This includes resurfacing Brookside Road from the Project boundary near Moraga Way, subject to approval by the City Engineer. Any vehicle accessway serving more than one home may not be restricted with a gate.

Permeable surfaces will encouraged on private driveways, trails and parking areas to help diffuse runoff from paving, if geotechnically feasible and consistent with maintenance and safety requirements.

A new road is proposed for access to the new water storage tanks within the Quarry Hills Open Space Area. A water storage tank and access road already exist in the Zuckerman Hill area.

Emergency Access Roads - Emergency access roads as approved by the MOFD will have an unpaved all weather surface capable of supporting fire department apparatus. All emergency access roads will be posted "No Parking – Fire Lanes." Private Shared Driveways will have a paved surface. All gate systems will be automatic and be approved by the MOFD.

Two emergency vehicle access (EVA) roads will be provided to link the Gateway Valley vehicular circulation system to the existing Orinda street system at Edgewood Road and Brookside Road. In addition, six emergency access drives are proposed within the valley to link proposed cul-de-sac residential streets:

- EVA 1 connects the two center most driveways on the northern side of Area II and is 430 feet long with 18.8% slope typical.
- EVA 2 connects C Street in Area II with N Street in Area III and is 270 feet long with 18.8% slope typical.
- EVA 3 connects B Street in Area II with N Street in Area III and is 230 feet long with 17% slope typical.
- EVA 4 connects A Street in Area II to L Street in Area III and is 420 feet long with 15% slope typical.
- EVA 5 connects L Street in Area III to Gateway Blvd and is 16.7% slope typical.
- EVA 6 connects E & O Street in Phase I and is 300 feet long with 17.5% slope typical.

The width of the Emergency Vehicle Access will vary as follow:

- The width of EVAs from the cul-de-sacs of Area II will be a minimum of 16 ft
- EVAs from Area I leaving the cul-de-sacs will be a minimum 16 ft wide and connect with the EVA that has a minimum of 20 ft unobstructed width.
- The EVA leaving Area IV will be a minimum width of 20 ft throughout.
- The Edgewood EVA is for access width only.

The Montanera Preserve Area open space includes a network of existing fire roads. These 10-12-ft wide dirt roads connect to fire roads in the west to Round Top Trail on EBRPD Sibley Regional Preserve. To the east the fire roads connect with Brookside Road and Edgewood Road and the network of streets in the City of Orinda. To the south the fire roads connect to others on private property, across EBMUD lands to Pinehurst Road and Canyon Road adjacent to the community of Canyon.

Roadway Standards

Roads will be 20 to 24 feet width and conform to the natural contours of the land. No project roadways (other than private driveways) may exceed a slope of 20%. Gateway Boulevard will generally not exceed 15%. Gradients will be maximized and radii

minimized to reduce grading. Roads may be split as required to preserve desirable site features and reduce grading. Any vehicular accessway serving more than one home may not be restricted with a gate.

The following standards are incorporated in the Project:

- Vertical clearances for roads will be no less than 15ft
- Turning radius for roadways and turnarounds will have at least a 28 ft inside radius
- Dead end roadways in excess of 150 feet in length will be provided with approved provision for turning around fire apparatus

Path and Trail Systems.

Except to the extent that trails follow existing fire roads and EVA's, the path and trail systems are not designed for vehicle access. Paved walks will accommodate pedestrian circulation and unpaved trials within or in close proximity to the rights of way.

Utilities

All power and other utility distribution lines serving on-site users will be underground.

Related infrastructure projects include:

- Relocation of the existing Pacific Gas and Electric (PG&E) 115kV transmission lines to an alternate route to the west and south of the Development Area
- Construction of a new EBMUD onsite water storage tank, with an access road, piping and pumping station
- Expansion of an existing above-ground water tank at an offsite EBMUD facility, with necessary piping and easements
- A series of storm water detention basins, which could provide water for fire suppression if they do not dry up during the summer-fall months

Description of the Montanera Preserve Areas

As shown on *Figure A.2* the *Montanera Preserve Areas* consist of the following six areas surrounding the Development Area and extending south to the property boundary:

1) Development Buffer Area. The Development Buffer Area is approximately 77.4 acres and includes a minimum of 100-feet around the development area, including areas of undisturbed riparian corridors within the Development Area and areas subject to slope stabilization activities ("remedial grading") outside the development area (in some cases these extend beyond the minimum 100-foot buffer to create the most effective ownership/management unit). This area is subject to management restrictions in such locations as the Aquatic Protection Areas, as defined by the RMP and LTMP as defined on page 14.

2) Quarry Hill Open Space Area. The Quarry Hill Open Space Area includes the approximately 53.2 acres to the north of the Development Area upslope from Area I.

3) Eastern Hills Open Space Area. The Eastern Hills Open Space Area is located east of the Development Area, upslope from Areas I, II and III. It is approximately 117.8 acres and includes the main stem of Brookside Creek and the open space from Brookside Creek to the easternmost property boundary and to the south to the boundary of the Zuckerman Saddle Area. The eastern and southern boundaries of this open space are upslope of the developed areas of Orinda (around Brookside Road and Crest View Drive).

4) Western Hills Open Space Area. The Western Hills Open Space Area includes the approximately 389.1-acre area west of the Development Buffer Area upslope from Areas II, III and IV. The Western Hills Open Space extends south to join with the Eastern Hills Open Space at the Zuckerman Saddle Area, upslope of the Moraga Substation and developed areas of Orinda along Edgewood Road and Lost Valley Drive. This open space shares its western border with EBRPD Robert Sibley Volcanic Natural Preserve and includes regional trails from the southern boundary of the Eastern Hills Open Space Area to the northern boundary of the Moraga Creek Open Space Area. The Area also contains on-site multi-use recreational trails, three sets of parallel 115 kV powerlines and easement owned by Pacific Gas & Electric, livestock water facilities, fencing and gates necessary to implement the grazing and fuel management requirements of the RMP and Long Term Management Plan (LTMP).

5) Moraga Creek Open Space Area. The Moraga Creek Open Space Area includes the approximately 130.3-acre area within the Moraga Creek watershed south of the Zuckerman Saddle Area. This open space area does not border directly on any of the project Development Area. However, it is located east of the community of Canyon (located over the ridgeline off of Pinehurst Road) and west of the Town of Moraga.

6) Indian Valley Preserve Area. The Indian Valley Preserve Area includes 214.7 acres of former private ranch property contiguous with the southern boundary of the Moraga Creek Open Space Area. This open space area does not border directly on any of the project development, but is located east of the community of Canyon (located over the ridgeline off of Pinehurst Road) and west of the Town of Moraga.

Three additional open space areas included in the Tentative Map:

1. The Texas Open Space. Like the Indian Valley Preserve Area, the 246.9-acre Texas Open Space does not border on any of the Development Area. The western and southern border of this former ranch is shared with EBRPD Robert Sibley Volcanic Natural Preserve and will be transferred in fee to EBRPD.

2. The Moraga Creek Extension Open Space is located to the east. The southeast corner abuts the Moraga Creek Open Space Area, and will be transferred in fee to EBMUD.

3. The Upper San Leandro Open Space. This open space forms the southernmost open space parcel, with the Indian Valley Preserve sharing its northern border. This 67.9-acre parcel lies to the west of the residential area of Orinda, and to the east of the community of Canyon. This area will be transferred in fee to EBMUD.

Regulatory Context

Fire Safety Regulations - Ordinance No. 02-02.

On September 18, 2002 the Moraga-Orinda Fire District Board of Directors passed, approved and adopted Ordinance No. 02-02 adopting the following codes an standards by reference:

1. Uniform Fire Code (UFC), 2000 Edition (Vols. 1 and 2)
2. 2001 California Code of Regulations Title 24, Part 9 (California Fire Code)
3. 2000 Uniform Fire Code Standards including Appendices I-C, II-A (deleted Sections 15), II-B, III=C, II-E, II-F, II-H, II-I, II-K, III-A, III-AA, III-B, III-BB, III-D (with amendments), IV-A, V-A, VI-A, VI-B, VI-C, VI-D, VI-E, VI-F, VI-G, VI-H, VI-I, VI-J VI-K

This ordinance requires plans be submitted for Fire District review. It also requires that construction address, among other issues, the following three items that related to wildfire hazard: provision of access for fire apparatus, provision of water supply for fire protection, and provisions to control the spread of fire including vegetation management on private lots. Appendix D outlines the local standards beyond those provided by the UFC and CFC.

The 2005 Urban Wildland Interface Code in the Uniform Building Code and Uniform Fire Code

The first phase of the Urban Wildland Interface Fire Code will be in force in 2006. Named "Public Resources Code Title 24, California Building Code (CBC) Part 2 and the California Referenced Standards Code, Part 12 regarding Phase II – Wildland Urban

Interface Fire Areas Building Standards," addresses exterior structural design and construction to become ignition resistant. The code includes:

- *SFM 12-7A-1, Exterior Wall Siding and Sheathing*
- *SFM 12-7A-2, Exterior Window*
- *SFM 12-7A-3, Under Eave*
- *SFM 12-7A-4, Decking*

State-wide Codes

Public Resources Code 4290 and 4291 apply to those lands under the fire protection responsibility of the California Department of Forestry and Fire Protection. However, these codes are often used as a "de-facto" set of codes because they are seen as prudent and reasonable methods to achieve fire safety. Where codes and standards established by the Moraga Orinda Fire District (MOFD) are more stringent than the statewide codes, MOFD codes will be in force.

AB 1360 (the Vargas Bill) revises PRC 4291 and requires that owners of lands designated as high fire hazard in local and state jurisdiction need to create and maintain defensible space for 100 feet from each structure, or to the property line, whichever is closer. 14 CCR 1299 encompasses regulations for the expansion of defensible space to 100 feet in areas of high fire hazard. Guidelines to clarify actions compliant with the regulations are available from the California Department of Forestry and Fire Protection website.

Open Space Management Restrictions, Conservation Easements, On Project and Nearby Lands

The Montanera Project will conform to the City of Orinda Conditions of Approval dated March 15, 2005 that include a number of conditions related to wildland fire. The relevant conditions include:

Resource Management Plan (RMP) and Long Term Management Plan (LTMP).

The final Resource Management Plan ("RMP") for all the Preserve Areas includes the mitigation, management and monitoring requirements of U.S. Army Corps of Engineers ("Corps"), San Francisco Bay Regional Water Quality Control Board ("Water Board"), Department of Fish & Game ("Department") and the U.S. Fish and Wildlife Service ("Service") (collectively "Resource Agencies") required under the federal and state permits for the Montanera Project[1] for the term of the 10 year Initial Monitoring Period. The final Long Term Management Plan ("LTMP") for all of the Preserve Areas includes the mitigation, management and monitoring requirements for the same agencies in perpetuity after the 10 year Initial Monitoring Period.

[1] The Resource Agency Permits are: The Fish & Game Code Section 1602 Lake and Streambed Agreement (**File No. R3-2001-0094**) issued on February 2, 2004; Waste Discharge Requirements/Section 401 Certification (**File No. 2118.03/2119.1242(ECM)**) issued on June 24, 2004; Endangered Species Act Section 7 Biological Opinion (**File No. 1-1-02-F-0168**) issued on October 8, 2004; the Fish & Game Code Section 2080.1 Certification of the Biological Opinion (**File No. 2080-2004-017-03**); and Clean Water Act Section 404 Permit (**File No. 25907S**) issued on January 18, 2005.

Under the RMP and LTMPs, natural and restored open space will be preserved permanently, as part of the Montanera Preserve Areas, as mitigation for development-related impacts to aquatic resources (streams, wetlands and riparian habitat), and special status species (California red-legged frog and Alameda whipsnake). The exact legal boundaries of these open space areas will be finalized prior to transfer to the Long-Term Land Owners in order to create the most effective, practical management units. The boundaries of these areas may be delineated by either a fence or other above-ground, permanent and conspicuous boundary markers.

Fuel Management within all Montanera Preserve Areas will comply with the final Resource Agency Permits, Resource Management Plan during the Initial Monitoring Period, and the LTMPs after the Initial Monitoring Period, as well as the requirements of the Moraga Orinda Fire District Fire Marshal. Within the Development Area, the specific design of the fuel management zones will be a part of the improvement plans for the final subdivision maps of those lots and will be subject to the approval of the Fire Marshal.

The RMP and LTMPs provide specific details on grazing management and fuel management restrictions from the Resource Agency Permits. These address:

Grazing management

- Seasonal grazing restrictions during the dry season.
- Fencing to protect aquatic resources.
- Alternate water sources.
- No supplemental feeding.
- Temporary goat grazing with monitoring, temporary fences and alternate water sources.

Fuel management requirements for

- Development Buffer Areas of 100 feet wide.
- EVAs and Fire Road Fuel Breaks.
- Special habitat areas including aquatic protection zones and coyote scrub areas (Whipsnake suitable habitat).
- Open Space areas (Montanera Preserve Areas).

Construction of any fuel management zone will also be subject to the tree preservation provisions of the Approved Second Amendment and Restatement of the Development and Pre-Annexation Agreement.

Other Conditions of Approval

Mitigation Measure Incorporated in City Council of City of Orinda Resolution #13-05

In *Exhibit B (Statement of Findings, Facts in Support of Findings, and Statement of Overriding Considerations Regarding the Second Amendment and Restatement of the*

Development and Pre-Annexation Agreement for Gateway Valley), the following mitigation measures are required to be incorporated into the project. These include:

Supplemental Impact 4-1: Dead-end Street Length Impacts - The Conceptual Development Plan includes a number of private residential cul-de-sac and hammerhead dead-end streets that exceed 1,000 feet in length. None of these dead-end residential streets are connected by 20 to 24 foot wide streets away from Gateway Boulevard. Emergency vehicle access (EVA) connections are proposed at the ends of some of the longest of these proposed dead-end streets. The resolution requires the developer to demonstrate to the City's satisfaction that the Project's final circulation and EVA provisions have been reviewed and approved by MOFD. The developer must provide at least one 24 foot wide roadway connection between residential streets in Area I North, Area I South, Area II and Area III and between the ends of streets in each residential sub-area that are more than 1,000 feet long; or implement an alternative measure which the MOFD and City finds will provide adequate vehicular access.

Site-specific Assessment of Fire Hazard

The site-specific assessment of the project's fire hazard is based upon an analysis of the fuels and topography that influence fire behavior. The potential effectiveness of fire suppression efforts as influenced by access and water supply on the project site is included in the analysis.

Fuels Assessment

Vegetation Types

Onsite plant communities reflect the site's climatic, geotechnical characteristics and variations in water sources throughout the year.

Grasslands - Non-native grasslands occupy approximately 629.8 acres (62%) of the 1590-acre project site, occurring mainly in the valleys, on south-facing hillsides of low to moderate slope and on hilltops. Past grazing has eliminated most of the native grasses on site.

Oak Forest - Forest dominated by coast live oak occupies approximately 198.5 acres (12%) of the site. This often dense community is mostly concentrated on the north-facing slopes of onsite drainages, but also occurs in other scattered locations throughout the site. Coast live oak forest is dominated by coast live oak, but also includes a large proportion of California bay, as well as madrone, California black oak and California buckeye. In many locations California bay comprises 90% of the forest vegetation.

Coyote Scrub - Northern coyote brush scrub, occupies approximately 75.8 acres (5 %) of the site. This habitat occurs in the more dry south-facing slopes of the property. Common coyote brush is the dominant species within this community; other species include California sage, silver brush lupine and sticky monkeyflower. This community on the Project Site is considered potential habitat for the Alameda whipsnake; a State and

federally listed as "threatened" species. Critical habitat for the species has been identified by USFWS along Gudde Ridge.

Leatherwood - One consolidated area approximately 3.29 acres has been identified with Western leatherwood, a "species of special concern." (CNPS List 1B species). The area is located on the east facing western hillside of the Project Site.

Chaparral/ Knobpine - Chaparral/ Knobpine forest habitat does not exist within the 1,590- acre Project Site, but does occur on dry rocky soils, along the Berkeley Hills ridge within the adjacent Indian Valley Mitigation Site. This habitat includes a combination of open scrub understory, mostly southern exposure and rock outcrops that provide the primary constituent elements for the species and thus represents USFWS defined Primary Constituent Element Area.

Diablan Scrub - Similarly, Diablan scrub habitat does not existing within the Project Site, but occurs in patches within the adjacent Indian Valley Mitigation Site on rocky soils on southern exposures of Gudde Ridge.

Aquatic Areas - Wetland features on the project site provide aquatic habitat, including seasonal wetlands, freshwater seeps and springs. Flowing water features in the various drainages of the project site also provide aquatic habitat, including perennial streams, intermittent and ephemeral streams and riparian corridors. Both the California Red-Legged Frog and the Foothill Yellow-Legged Frog, species with special status, have been identified in aquatic areas on site.

Eucalyptus and Monterey Pine: To the south west of the Western Hills Open Space is a grove of Eucalyptus and Monterey Pine located along the ridgelines west of Round Top.

Fuel Type and Fire Behavior in Different Fuels

The term "fuel" is used to describe any material that will burn, whether vegetative or structure component. A single fire may consume shrubs, grasses, trees, woodpiles, and homes as fuels.

Fire managers in virtually all US agencies (as well as in other countries where wildland fire hazards are significant) use fuel model systems for the various computerized fire behavior prediction systems (FBPS). Within the US, information regarding fuel volumes and fire-behavior descriptions is based upon fuel models described in *How to Predict the Spread and Intensity of Forest and Range Fires*, by Richard C. Rothermel (1983), published by the USDA Forest Service Intermountain Forest and Range Experiment Station, General Technical Report INT–143. Fuel models relevant to the Montanera project include grasslands (each with tall and short grass having different models), shrub lands, oak woodlands and riparian areas (with and without understory vegetation). Each fuel model is given a number designation, which is interpreted by fire managers across the continent to mean the same thing.

Fuel models describe vegetation structure in addition to typical species composition. The most significant factor is the amount and distribution of smaller-diameter fuels, because these materials generally spread wildland fires.

Another important factor is the amount of dead biomass and the ratio of live-to-dead material in terrain with significant brush and numerous tree stands, since dead biomass contributes fine fuel litter as well as carry flames more readily. Fuel models include these considerations.

This section describes conditions that are planned and conditions that would develop over time without fuel management. For example, all of the existing vegetation, including the eucalyptus, within the Development Areas will be removed by grading operations and thus is not discussed. However, shrubs can be anticipated in the grasslands on the open space hillsides and thus is addressed.

Annual Grasslands (FBPS Fuel Model #1)

Currently, the majority of the Project site is dominated with annual grasses. The open space throughout the project, including within the Development Area, will continue to be a naturalized grassland and mixed oak woodland with riparian habitat in the natural swales.

Grass fuels do not produce much heat, but they produce a fire that travels quickly. Therefore, containment is the greatest challenge posed by these fuel types. In particular, grass can serve as a wick for more hazardous fuels whose ignition is apt to cause greater damage. Grass thus provides an avenue for fire to travel to densely vegetated areas, allowing it to build up enough of a "head of steam" to burn into landscaping or other types of fuels under conditions that would not otherwise be fire-sustaining.

Grassland fuels (both annual and perennial) are fairly uniform and homogeneous in comparison to other fuel types. Generally, grasslands have a light total fuel load, consisting entirely of fine herbaceous material that cures in the summertime. This material responds markedly to changes in humidity and ignites easily in dry periods.

Oak Woodland and Riparian Vegetation (FBPS Fuel Model #8)

The project site includes bands of riparian vegetation along many seasonal drainages throughout the Montanera Preserve Areas and following Brookside Creek that divides Area IV from the rest of the Development Area. The tree canopy in the lower reaches of the drainages is dominated by coast live oak, but also includes California bay, madrone, California black oak and California buckeye. In many of the upper slope drainages the California Bay creates a dense closed canopy, with only the open margins interspersed with coyote brush. The understory in most of the closed canopy woodland areas is relatively undeveloped, consisting primarily of leaf duff. The riparian areas also contain wetlands that are subject to US Army Corps of Engineer jurisdiction and management requirements.

Figure 1. Fire Behavior Predictions

Chart of fire-behavior predictions using BEHAVE subprogram TSTMDL, standard environmental factors of low and medium for the fuel types presently found in the development, a 20% slope steepness, and a wind parallel with the slope (In this case, westerly winds). Oak woodlands are included as a contrast to annual grasslands.

	Fuel Moisture	
Fuel Type	**Low**	**Medium**
Grassland – FBPS #1		
rate of spread, ft/min	95	74
fireline intensity, Btu/ft/sec	162	112
flame length, ft	5	4
Oak Woodland and Riparian - FBPS #8		
rate of spread, ft/min	2	2
fireline intensity, Btu/ft/sec	9	6
flame length, ft	1	1
North coastal scrub - FBPS #5		
rate of spread, ft/min	33	11
fireline intensity, btu/ft/sec	416	72
flame length, ft	7	3

Standard Environmental Factors:	***Low***	***Medium***
Midflame windspeed = 4 mi/hr		
Fuel moisture		
0–1/4 in. diameter	*3*	*6*
1/4 – 1 in. diameter	*4*	*7*
1 – 3 in. diameter	*5*	*8*
Live herbaceous material	*70*	*120*
Live foliage of woody plants	*70*	*120*

Fire intensity, flame lengths, and scorch heights are usually low in the oak woodland and riparian areas that do not have a well-developed understory. Riparian vegetation are characterized as follows in the USDA Forest Service Fire Behavior Prediction System:

"Slow-burning ground fires (carried in the compact litter layer) with low flame heights are the rule, although the fire may encounter an occasional "jackpot" or heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures, low humidities, and high winds do the fuels pose fire hazards. Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mainly needles, leaves, and some twigs since little undergrowth is present in the stand."

The resulting fire behavior is rather benign (refer to Figure 1). Rates of fire spread are slow, approximately 2 feet per minute. Flame lengths are predicted to be one foot. Leisurely spread rates, combined with the relatively short flame lengths of the predicted fire behavior demonstrate a manageable, moderate fire hazard in this fuel type.

Fuel conditions in the oak woodland and riparian areas vary with the slope, age, height, and canopy closure of the overstory, the depth of the litter and density of understory shrub cover. Ground-layer and understory fuel loads beneath dense canopy may be minimal (well under one ton per acre), but horizontal fuels may be continuous and ladder fuels present where the vertical distribution of foliage is continuous. The foliage of both bay and coast live oak is very flammable should the fire reach the crowns.

North Coastal Scrub (FBPS Fuel Model # 5)

North Coastal Scrub occurs on fewer than 80 acres on the site (five percent of site), primarily on the dry south facing slopes. However, as young shrubs scattered in the annual grasslands start to develop in size and cover (in approximately 10-15 years), this fuel model will become even more significant. All areas of annual grass will gradually (over a span of 15-25 years) convert into this fuel type without some sort of disturbance (which may be in the form of gophers, grazing animals, or mechanical mowers). This vegetation community is considered potential habitat for the state and federally listed Alameda whipsnake and subject to management restrictions.

This fuel type can be characterized by the Fire Behavior Prediction System Fuel Model #5. Total fuel loads are approximately five ton/ac, with most of the fuels occurring in the smaller diameter fuels. A preponderance of dead fuels can be found in the smallest size class, those under 1/4 inch in diameter. The dead to live ratio of mature stands is usually quite high - an equal proportion of living and dead material is often found. Additionally, live foliage on the plants comprises over half of the total fuel load.

During the mid 1980's, the fuel volumes, structure, and distribution of size classes of 16 scrub sample sites from the East Bay Regional Park District were inventoried. Total fuel loading averaged 3.18 tons/acre, equally distributed between fine fuels (smaller than 1/4 inch in diameter), kindling (from 1/4 to 1 inch in diameter) and larger. Typically the amount of dead material in the scrub is almost one-half the total volume, and sometimes exceeds 50 percent.

Fire behavior is not normally explosive; however, it was this fuel type that fueled the Oakland Fire of 1991 on Saturday, October 19, and the morning of October 20th. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal under normal conditions. Obviously, under extreme weather conditions erratic and explosive fire behavior can result.

Landscaped Areas (No FBPS #)

Project landscaping will occur throughout the Development Area. Every lot is expected to contain a landscaped area both on the private lot and in the open space within the

Development Area. The Project proposes to replant areas where vegetation is lost due to grading with native tree and understory species. The location and species are not yet determined; however environmental documents indicate that the diverse plant mix will conform to the image of a native California landscape. A diversity of species is encouraged, with oaks predominant, especially after more than 6000 15-gallon trees (mostly oaks) are planted. Screening of buildings by grading and landscaping is emphasized in several of the documents that could result in heavy landscaping adjacent to structures.

Even though almost all of the area to be landscaped will be stripped of vegetation during the grading process, top-soil and amendments will allow for vegetation to develop over time. Because this type of vegetation is situated nearest structures and evacuation routes, this fuel type can be the most damaging or provide an additional layer of safety/protection.

Domestic landscapes typically incorporate fall into a spectrum of fire hazards:

1. Landscapes are moist, and therefore won't burn; or
2. They contain large amounts of fuel, which will burn with great intensity; or
3. They contain fire-resistant plants, and will burn slowly with little resistance to control, or
4. They are maintained to be of low fuel volume, so provide little heat when they do burn.

Problems to avoid in landscaped areas are poor maintenance, breakage in irrigation pipes, and unremoved dead plant material. These problems can result in a large dead-fuel component amounting to a large volume of fuel.

Also see a discussion of the properties of fire resistant landscaping in the vegetation management section entitled **Fire Hazard Mitigation Measures**.

Crown Fire Potential

Fire that involves the tree crowns is a challenge for fire suppression because the fire becomes extremely intense - with high heat output - and because burning foliage and twigs are lofted in the air to fall well in advance of the body of the fire. These embers often start countless new fires, thereby increasing the demand on fire suppression and increasing the overall rate of fire spread. These characteristics make this the greatest native hazard in the open space under severe weather, both in terms of starting new fires via spotting and the difficulty of containment and extinguishment.

The main factors involved in crown fire potential are understory vegetation (ladder fuels), height at which the tree canopy starts and flammability of the foliage (based on foliar moisture content and oil content). A thick understory, and/or dry and oily foliage and oily contribute to the higher probability of crown fires and associated new spot fires.

The crown fire potential in the project area is slight because past management practices raised the height at which the tree crowns begin, and because understory vegetation is typically sparse. California coast live oak and bay generally do not lose foliar moisture until very late in the fire season, and are typically are more moist than adjacent shrub fuels. California bay leaves are known for the oils it contains, however the foliage is even more moist in summer months than oaks.

Project Site and Surrounding Terrain

Influence of Topography on fire Hazard

Topographic features - such as slope, aspect (orientation with respect to sun and wind), and the overall form of the land - have a profound effect on an area's ecology and the pattern of heat transfer in a wildfire. Topography affects a wildfire's intensity, burning rate (consumption of fuels), direction, and rate of spread. An area's topography also affects local winds, which are either "bent" or intensified by topographic features. Topographic features can also induce diurnal upslope and down slope winds. The speed, regularity, and direction of winds directly influence the direction of wildfire spread and the shape of the flame front.

For example, fires burning on flat or gently sloping areas tend to burn more slowly and to spread more horizontally than fires burning on steep slopes. Therefore, ridgetop positions are more vulnerable than those at the bottom of a slope. The confluence of two or more canyons, such as at the Project Site, is often a place where fire whirlwinds develop. At such locations, fuel consumption increases exponentially and fires can become uncontrollable.

Topography at Montanera Development Area and Related Fire Hazards.

As described in detail in Section I, the Development Area is located in a sloping valley of Brookside Creek formed between the surrounding ridges. This topography, landscape treatment and maintenance of these steeper slopes will greatly influence the potential fire hazards for the home sites as described below:

- Throughout the Development Area there are many steep slopes, up to 50% grade, with homes located at the top of slopes. These homes sites are subject to rapidly advancing surface fires up these steep slopes. There are also several roads located at the bottom of these steep slopes that could serve as locations of ignition starts. The slopes will be owned and managed privately, adding to the potential fire hazards if some the vegetation on some lots is not adequately maintained. In many locations the configuration of the development limits access to these steep slopes as described below:

    - Area I slopes generally south, south-east in a series of six terraced areas of moderately sloping building pads. These building pads are separated by steeper transition slopes of approximately 100 feet in length adjacent to

the neighborhood streets. The landscape treatment and maintenance of these steeper slopes will greatly influence the potential fire behavior which are made more hazardous by the position of these slopes below homes and the down slope roadside ignition potential.

- Area II and III generally slope to the northeast in a series of four terraced areas with a total of 83 and 54 homes respectively. The terraces are broken into 11 segments by roadways. However unlike Area I, the steeper transition slopes in most of these segments are located between two houses. The steeper slopes vary from 60 to 100 feet wide. There is limited vehicle access to this open space for maintenance or fire fighting. The transition slopes vary from 700 to 1,350 feet long between access points (either roads or EVAs). Four of these slopes are accessible from both ends via roadways or EVAs. Five are accessible from one end of the slope only via roadways or EVAs. One of these slopes lies directly adjacent Gateway Boulevard. The final slope lies behind a group of 11 homes that face onto Gateway Boulevard and are backed by the detention basin and the Brookside Creek riparian zone and Eastern Hills Open Space Area.

- Area IV's 18 homes and the 12 home sites in the southern most portion of Area I are ringed by steeper slopes immediately adjacent to the open space in either the Detention Basin, Eastern or Western Hill Open Space Preserves. The home sites are again configured with steeper transition slopes above or below the more moderately sloping building pads. Gateway Boulevard and T Street provide access throughout Area IV; however access to the steep slopes on the perimeters of both Areas is restricted.

- Area I is located in a natural saddle between higher hills of Quarry Hill Open Space and Eastern Hills Open Space Areas. An ignition in the existing developed portions of the City of Orinda or along Moraga Way to the east would likely move rapidly uphill into this saddle and the project area, especially when driven by eastern "Diablo winds." The terrain in this area causes the winds to swirl between the ridges, creating unpredictable fire behavior because of what is often called "spurious winds".

- Northeast of the Development Area the Quarry Hill Open Space rises to an elevation of 1204 above Area I homes. The proposed 85 residential lots located in Area I are generally located below the 950 ft elevation. The 18 perimeter lots adjoining the open space are separated from the steeply sloping open space above them by G and H Streets. The paved road offers some protection from surface fires in the adjacent open spaces.

- Southeast of Area I the ridge of the Eastern Hills Open Space rises from an elevation of 650 along Brookside Creek to a high point of 1178. Area I is

separated from the Eastern Hill Open Space by the riparian habitat along Brookside Creek. The 13 lowest lots adjacent to Brookside Creek are approximately elevation 650 ft. The moist riparian vegetation offers some protection from surface fires in the adjacent open space.

- Southwest of Area II, III and IV the Western Hills Open Space rises to a series of peaks with the highest being Round Top at elevation 1763. The 137 proposed lots in Areas II, III back onto the open space at approximately elevation 1000, with 18 lots of Area IV being located approximately elevation 925 sloping down to approximately elevation 700. The position of the steep slopes and swales of this open space above the home sites reduces the impact of these topographic features in relation to surface fires.

- The main orientation of the valley funnels winds over the Zuckerman saddle located to the southeast into the Development Area.

- In some areas retaining walls and other mechanical methods of slope stabilizations will be necessary to accommodate the proposed land use plan. *Figure B1- Conceptual Grading Plan* identifies of all retaining walls exceeding eight feet in height (up to a maximum of 20' tall wall). These walls may serve as barriers to fire surface fire progression; however they also represent barriers to firefighters.

Proposed Access

The access and circulation roads described in Section I are proposed to be designed to MOFD's width, slope and clearance requirements. Turn arounds with 40 feet radius or hammerhead "Ts" with 60 feet depth are provided at the end of the 18 roadways in excess of 150 feet. Two fire roads and six EVAs are included in the project to improve egress and access for fire equipment.

The following are features that comply with the Fire Apparatus Access Roadways Standard as revised September, 2003 are offered to enhance fire safety access:

- Turning radius not less than 20 feet
- Vertical clearance of 15 feet
- Covering materials on road gradients that exceed 15% will be approved by MOFD and include such things as coarse-grained asphalt for better traction of emergency vehicles
- Bridge load in compliance with the Uniform Fire Code adopted by the MOFD
- Cross slopes of roadways, fire roads and EVAs not less than 20-ft width, in compliance with the Uniform Fire Code adopted by the MOFD

Proposed Water Supply

Figure D.6 Conceptual Domestic Water Plan shows the proposed Domestic Water for the Project. One or more on or off-site supplemental water storage tanks may be required to meet domestic water supply demands. Current documents state that the fire flow will be 2,250 gallons per minute delivered by three fire hydrants flowing simultaneously, as required by MOFD. Fire hydrant locations are identified on the Tentative Map with modifications approved by the MOFD.

Current Risk of Project Site and Surroundings

Fire History of the Area

No fires larger than 10 acres have occurred on the project site since records have been kept. However, fires in the area indicate the potential for large fires to occur. For example, four structures have been destroyed by three separate wildfires in the community of Canyon between 2000 and 2005. Another large wildfire occurred approximately 15 years ago near the Crestview neighborhood.

General Weather Information

Weather conditions significantly impact both the potential for fire ignition and the rate, intensity, and direction in which fires burn. The most important weather variables used to predict fire behavior are wind, temperature, and humidity.

Wind direction and velocity profoundly affect fire behavior, but wind is considered the most variable and unpredictable weather element. Wind increases the flammability of fuels both by removing moisture through evaporation and by angling the flames so that they heat the fuels in the fire's path. The direction and velocity of surface winds can also control the direction and rate of the fire's spread. Aloft winds, defined as those that blow at least 20 ft above the ground, can carry embers and firebrands downwind. These burning fuels can ignite spot fires that precede the primary front. Gusty winds cause a fire to burn erratically and make it more difficult to contain.

The winds that create the most severe fire danger, known as the "Santa Ana" or "Diablo" winds, typically blow from the northeast. However, winds from the northwest are also likely to cause unacceptable damage, particularly to the project site. The worst-case scenario is a fire driven by a northwest wind that follows a northeast wind. Because the northeast wind is normally associated with low humidities and high temperatures, it dries the fuels. At the end of this "Santa Ana," or "Diablo" wind condition, the fog often moves quickly shoreward, preceded by a brisk, high-speed northwest wind. Under these conditions, the fuels would still be dry from the previous weather conditions. The combination of the northwest wind and the west-facing slope could quickly spread a fire into the densely developed portion of Orinda.

Local Weather Conditions

The project site's location in proximity to the coast influences its weather conditions. It has the warm, dry summers and cool, moist winters characteristic of the fog belt area. The area averages about 30 in. of precipitation a year, primarily in the fall and winter. Most of the measurable rainfall generally occurs during the winter months (mid-October to mid-April). Thus, the fire season (the time of highest fire danger) comprises the dry months of May to October.

Weather observations taken from the Oakland North weather station are considered to represent those of the project site. This station reported ninetieth percentile values for relative humidity as 27%, temperature as 78° F, and wind speed as 12 mph. Times of extreme fire danger coincided with winds from the northeast during the months of October (and, in 2005, November). Extremely dry, windy days occurred during October 19-23, 2000, October 25-28, 2003, and November 2005 for a two-week period. During these episodes, winds routinely exceeded 20 miles per hour (enough to blow burning shakes off roofs) and humidities stayed below twenty percent for days.

Average percentiles 2003 - 2005

90th percentile temperature	78 degrees
95th percentile temperature	83 degrees
97th percentile temperature	86 degrees
highest temperature	101 degrees
90th percentile windspeed	12 mph
95th percentile windspeed	14 mph
97th percentile windspeed	15 mph
highest windspeed	30 mph
90th percentile relative humidity	27%
95th percentile relative humidity	22%
97th percentile relative humidity	20%
lowest relative humidity	6%

Although summertime temperatures are usually quite warm (75 to 85° F), it is common for the fog to roll in during the early evenings and creep over the ridge tops to the site. Thus, proximity to the bay often creates a pattern of hot days and cool nights. Fog also sometimes keeps summertime temperatures cool in the project site.

Northeasterly winds (typical fire weather conditions) will be especially conducive for transport of embers. The most extreme weather values from 2003 through 2005 were all recorded during Diablo wind events in October. The driest recorded relative humidity was 9%; the highest recorded temperature was 101° F, and the greatest recorded wind speed was 30 mph. All of the days with lowest recorded relative humidities and highest windspeeds were associated with Diablo wind events.

Diablo events generally last from 15 to 35 hours, but in 2000, 2003 and 2005, these events lasted for 5 to 14 days. During a Diablo wind event, the wind direction is

somewhat sporadic, sometimes even exhibiting a complete reversal for 2–4 hours. The wind speed ramps up slowly—from 1–2 mph up to its maximum speed, and then down again—similar to a bell-shaped curve.

The wind normally blows from the west but, as discussed above, the most severe fire conditions occur in association with strong north or northeast winds. Under these conditions (common in the fall), humidities drop to 10% and temperatures soar to over 100° F.

In addition, occasional episodes consisting of several still, stagnant days formed by stationary highs occur during summer months. During these periods—characterized by continuous high temperatures and low relative humidities—fuels dry to an National Fire Danger Rating System rating of over 81 for the Burning Index, indicating extreme resistance to fire-control. This overall weather pattern creates extremely low humidities and enhances the possibilities of ignition and extreme fire behavior.

Description of Wildfire Hazard Without Mitigations

1. Description of Fire Behavior using FLAMMAP

a. FLAMMAP Development

FLAMMAP is a computerized fuel and fire behavior prediction model developed by the USDA Forest Service at the Intermountain Forest Fire Research Laboratory. FLAMMAP integrates the factors of topography, fuels, and weather for any one time based on heat transfer algorithms. FLAMMAP and FARSITE use the same input files. Results of the model are predictions of flame length, rates of spread, fireline intensity, and heat per unit area.

FLAMMAP predicts the fire behavior on all the Project simultaneously so a spatial distribution of hazards could be represented. It is as if all the study were aflame under the same conditions at the same time.

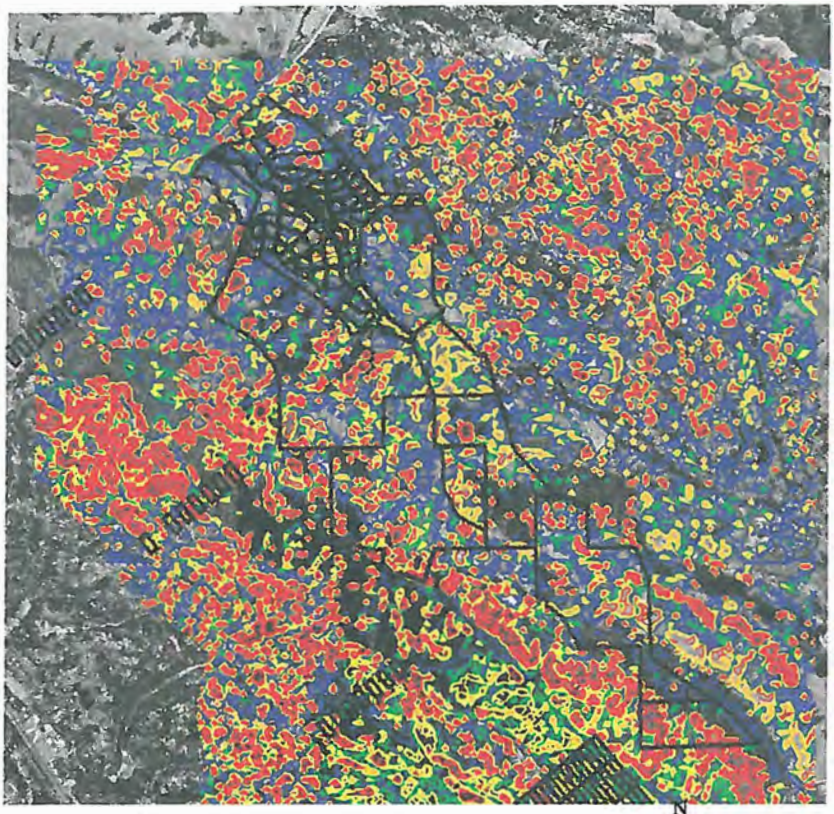
b. FLAMMAP Output

FLAMMAP displays a variety of fire behavior outputs. Three factors are especially pertinent for identifying areas of high fire hazard: flame length and crowning activity. Flame length closely corresponds to fire intensity, and it is this factor that most influences probability of structure damage and ease of fire control. Crowning activity indicates locations where fire is expected to travel into and possibly consume the crowns. When a fire burns through tree crowns, countless embers are produced and are distributed, sometimes at long distances. These embers can start new fires, which can each grow and confound the finest fire suppression forces.

Attached maps indicate the spatial distribution of flame lengths on the Project, as well as areas of crown fire activity. Flame lengths are closely related to the fuel types described above. The longest flame lengths are found in areas of chaparral and shrubs, and the lowest in oak woodlands where no understory is present. There are only a few locations in the Project area where crown fire activity is significant, however outside the Project area, stands of knobcone pine are the locations of fire behavior where crown fires are dominant. Each location where crown fire is likely is fairly small; the largest area was smaller than seven acres.

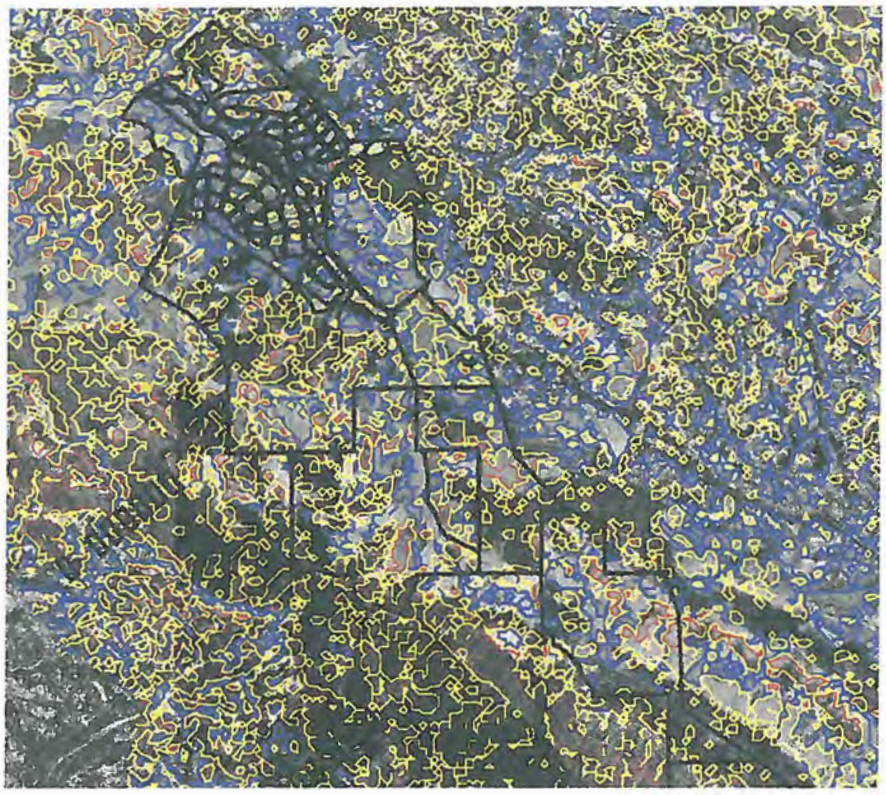
Spatial distribution of Flame Lengths 0-4 ft, 4-8 ft, 8-12 ft, and longer than 12 ft

Potential Flame Lengths with Diablo Wind



Blue = 0-4 ft flame legnth
Green = 4-8 ft flame length
Yellow = 8-12 ft flame length
Red = 12 ft & greater flame length

Potential Crown Fire Activity Under Diablo Winds



Potential Crown Fire Activity
Blue = No Crown Fire Activity
Yellow = Minor Areas of Crown Fire Activity
Red = Crown Fire Activity Dominant

2. FARSITE Simulations

a. FARSITE Development

The fire growth prediction model, FARSITE, is frequently used in all aspects of wildland fire management from pre-planning through wildfire suppression. The heat transfer formulas in FARSITE are based on the software program BEHAVE, used in wildfire prediction since the 1970's. FARSITE calculates the direction and rate of fire growth using the same inputs (and more) as the BEHAVE program. While FARSITE does not portray fire behavior throughout the Project, it allows managers to see predictions of where a fire might spread over time under various weather conditions. All other fire behavior predictions (such as flame length, rate of spread, heat per unit area) are all available on a site-specific basis during the time and in the location of the simulation.

While originally developed around 1991 to predict fire growth without fire suppression in "let-burn" conditions, it has become a vital tool in almost every extended wildfire on federal lands to predict fire growth during the next burning period. After the Oakland Tunnel Fire of 1991, a team of mechanical engineers and wildland fire behavior specialists were able to validate the spread of the fire using FARSITE, based on interviews, photographs, and physical evidence. Overall, the location of actual and predicted fire perimeters agrees, on the average, 88 percent of the time, indicating a high predictive capability.

The utility of FARSITE is to discern patterns of spread from numerous simulations with varying ignition locations. This model can also be used to show the value of fuel management by illustrating the changed fire growth pattern before and after the management is applied. All fire growth assumes no firefighting response, i.e. the fire is freely burning without intervention.

FARSITE employs several types of spatial information simultaneously to predict where the fire will spread, how fast the fire will spread, and the fire intensity of the various portions of the flaming front. The types of data FARSITE uses describe the terrain, weather, and fuels on the site. See Appendix 5, FARSITE Date Data Sources and Assumptions, Input Files for further details on the data used, and assumptions made.

b. Description of Fire Growth Predictions

The growth of fires in the Project area depends on the location of simulated ignition. FARSITE predicts that fires will grow quickly when started in grasslands under strong winds and moves uphill into scrublands and and/or chaparral. Under mild winds that usually blow from the west, spread is considerably slower, with resulting small burned areas after two hours of burning freely. Fires often do not ignite and will not spread in closed canopy oak woodlands with little understory, or in riparian strips.

Two simulations illustrate the pattern of fire growth with conditions that occurred on the same date that the 2003 fires in Southern California burned out of control. On the day of these simulations, the maximum temperatures were 79 degrees and relative humidity was 10 percent.

In both simulations the fire spread to larger than 350 acres within in the two-hour period of burning with no firefighting response. The number of new fires generated by the ignition is another important indicator of the fire's intensity and resulting complexity for containment. The largest fire after one hour was in the northern portion of the project, resulting in 277 new fires, however, both simulated ignitions caused so many fires that it is likely to confound fire suppression efforts.

Two other simulations indicate the potential fire growth under hot, dry conditions with little wind. The weather selected was on a day when the temperature reached 89 degrees, and relative humidity dipped to 15 percent. However, the windspeed was only one to four miles per hour. In all simulations, acreages burned after two hours without suppression were not large, with a maximum burned area of 18 acres. In both these simulations, no spot fires were created.

Table 3 - Summary of Acreage Burned and Number of Fires Generated from four FARSITE simulations, along with potential fire growth patterns for four simulations.

Potential Fire Growth in Grass with Mild West Wind

Contour lines indicate growth in elapsed time
Green = 30 min Yellow = 60 min
Orange = 90 min Red = 120 min

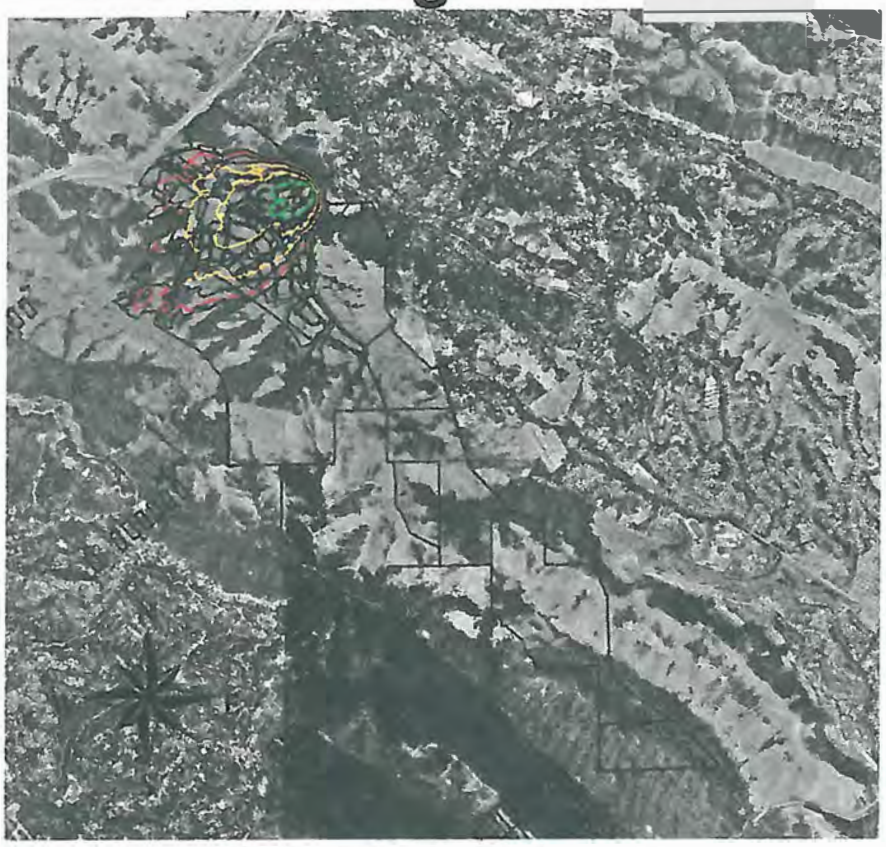
Date&Time	Elapsed Time	Horizontal Fire Area	Sloped Fire Area	# of Fires	Spots
10/27/2006 14:00	0:00	0.0	0.0	1	0
10/27/2006 14:15	0:15	0.2	0.2	1	0
10/27/2006 14:30	0:30	0.9	1.0	1	0
10/27/2006 14:45	0:45	2.3	2.4	1	0
10/27/2006 15:00	1:00	4.2	4.3	1	0
10/27/2006 15:15	1:15	6.8	7.1	1	0

Potential Fire Growth in Grass with Mild West Wind

Contour lines indicate growth in elapsed time
Green = 30 min Yellow = 60 min
Orange = 90 min Red = 120 min

Date&Time	Elapsed Time	Horizontal Fire Area	Sloped Fire Area	# of Fires	Spots
10/24/2006 14:00	0:00	0.0	0.0	1	0
10/24/2006 14:15	0:15	0.1	0.1		0
10/24/2006 14:30	0:30	0.4	0.4	1	0
10/24/2006 14:45	0:45	1.1	1.1	1	0
10/24/2006 15:00	1:00	2.5	2.6	1	0
10/24/2006 15:15	1:15	5.5	5.5	1	0
10/24/2006 15:30	1:30	8.9	9.0	1	0
10/47/2006 15:45	1:45	14.0	14.3	1	0
10/24/2006 16:00	2:00	21.7	22.1	1	0

Potential Fire Growth with Strong East Wind



Contour lines indicate growth in elapsed time
Green = 30 min Yellow = 60 min
Orange = 90 min Red = 120 min

Date&Time	Elapsed Time	Horizontal Fire Area	Sloped Fire Area	# of Fires	Spots
10/24/2006 14:00	0:00	0.0	0.0	3	2
10/24/2006 14:15	0:15	3.5	3.6	3	0
10/24/2006 14:30	0:30	16.2	16.6	2	0
10/24/2006 14:45	0:45	36.7	37.7	4	3
10/24/2006 15:00	1:00	73.4	75.2	17	13
10/24/2006 15:15	1:15	121.0	124.1	35	19
10/24/2006 15:30	1:30	163.7	168.4	179	151
10/47/2006 15:45	1:45	213.9	220.7	277	108
10/24/2006 16:00	2:00	261.9	270.8	242	76

Potential Fire Growth in Oaks with Strong East Wind

Contour lines indicate growth in elapsed time
Green = 30 min Yellow = 60 min
Orange = 90 min Red = 120 min

Date&Time	Elasped Time	Horizontal Fire Area	Sloped Fire Area	# of Fires	Spots
10/24/2006 14:00	0:00	0.0	0.0	1	0
10/24/2006 14:15	0:15	3.3	3.3	1	0
10/24/2006 14:30	0:30	17.3	17.6	3	2
10/24/2006 14:45	0:45	36.4	37.3	5	2
10/24/2006 15:00	1:00	57.1	58.7	6	1
10/24/2006 15:15	1:15	77.4	79.9	18	14
10/24/2006 15:30	1:30	107.3	111.1	33	17
10/24/2006 15:45	1:45	140.2	145.6	59	30
10/24/2006 16:00	2:00	181.0	188.4	129	84

Anticipated Fire Threat from Adjoining Properties

The fire hazards on the project site are influenced both by the structures located nearby and the proposed new development. East of the project site, across Moraga Way within the City of Orinda, are older residential neighborhoods along Estates Drive, Oakwood Road, Overhill Rd, Orchard Road, Owl Hill Road, to the ridgeline along Scenic Drive. The density of homes in these neighborhoods is hidden by the mature tree canopies of both native and ornamental trees. However under east wind conditions these older homes and mature vegetation could loft embers throughout the project, or cause surface fires on the west facing slope below the Development Area. Similar threats of fire could enter the site from other locations where homes or roads in the Town of Moraga are adjacent to the site's open space in the southern eastern areas of the project. The unincorporated community of Canyon located to the south-west presents a similar threat, with the added difficulty of steep terrain, poor emergency vehicle access and limited water service.

- Section Two -

FIRE HAZARD MITIGATION MEASURES

Fire damage can be mitigated through changing potential ignitions and the resulting fire behavior or enhancing fire suppression capabilities. This section addresses methods to reduce fire hazard by changing potential fire behavior on the site, done by modifying both vegetative and structural fuels.

The objective for vegetation management is to modify fire behavior to reduce potential damage. In measurable terms of fire behavior, the goal of vegetation management would be to produce flame lengths shorter than two feet within 30 feet of a structure, and to less than eight feet when further than 100 ft from any structure.

The following are strategies for reducing fire hazard and a qualitative description of actions to implement the strategy. These actions form the basis for the vegetation management standards that follow and are overarching sets of actions that may be used in every effort to reach stated objectives, from fire-resistant landscaping, roadside treatments, or treatments to facilitate fire containment.

1. Strategy: Reduce fuel volumes

Actions:

- Remove deadwood from trees and shrubs
- Thin forest stands that produce great amounts of litter and debris
- Create shrub/grass mosaics from continuous shrub masses
- Remove shrubs beneath and around existing and emerging trees
- Select low-growing shrubs and ground covers as replacement plants
- Remove/reduce plant litter accumulations, especially large debris such as branches, replace with small particle mulch to prevent invasion of noxious weeds

2. Strategy: Reduce fuel flammability

Actions:

- Mow grass as it cures
- Replace annual grass with plants that do not dry (or cure)
- Establish a formal irrigated landscape in carefully selected areas
- Remove sick and dead shrubs and trees in a timely manner

3. Strategy: Establish/maintain fuel discontinuity

Actions:

- Remove/reduce laddering fuels
- Create shrub/grass mosaics from continuous masses
- Remove shrubs from beneath and around existing and emerging trees
- Thin thickets of small trees from large tree understories
- Create low fuel zone near windows in any structure (an especially vulnerable area)

4. Strategy: Reduce the possibility of fire traveling through tree crown
Actions:

- Prune lower branches larger smaller 3 inches in diameter to 8-10 ft above ground
- Perform fuel volume reduction actions mentioned above

VEGETATION MANAGEMENT REQUIREMENTS

1. Site-Wide Management Actions

Several management actions are universal (with exceptions for Special Habitat Areas and Aquatic Protection areas of the RMP and LTMPs) although they may not be stipulated under every Fuel Management Zone. These include:

- Mowing of grasses or low herbaceous material after they have cured.
- Mowing can be replaced by other management techniques such as grazing with cattle or goats, or a prescribed burn.
- When mowing with a string line (commonly referred to as a weed whip), stay away from trees. Weed whip damage can kill trees.
- Remove noxious weeds such as Canadian thistle, hemlock, penny-royal, spiny cocklebur, and other invasive species listed in the California EPPC List A-1.
- Remove dead wood and declining shrubs and trees each year by start of fire season. Removal of dead wood should occur wherever found and usually as high as can be reached. Trees with a live crown ratio of under 30% should be removed. The live crown ratio is determined by comparing the percentage of the crown which is living with the total height of the crown.
- When pruning lower branches of small trees, leave six-inch stubs to strengthen young growing trunks. Continue this practice until trunk reaches two inches in diameter, at which point, entire branch can be removed.
- Bay trees are likely to re-sprout. These sprouts should be controlled either by cutting or herbicide application under the recommendation of a Pesticide Control Advisor.
- Prune pines and oaks from November to April only. This will avoid attracting pests.
- Bare or disturbed soil must always be covered with mulch to prevent erosion and establishment of invasive weeds. The mulch layer must be a minimum of two inches deep and can be composed of chipping from other vegetation removed.
- Note that limbing up and pruning generally apply only to branches smaller than three inches diameter.
- Trees will be selected for removal on the basis of several factors combined:
  - Condition - health, structural integrity
  - Spacing - good growing space, but maintain complete canopy coverage
  - Screening - hillside position, foliage distribution, relation to other keeper trees, some smaller trees kept for screening assistance
  - Amenity - contribution to views, outdoor use areas, general ambiance, tree quality

General

The concept behind pruning the lower 1/3 branches of small trees is to separate tree canopy from fuels on the ground without removing too much foliage area. The main justification for pruning lower branches is to prevent a fire from involving the tree crowns. Once a fire is actively burning the foliage of a tree, the ability of firefighters to suppress the fire plummets. If the branches are high, and understory fuels low, the possibility of producing a flame high enough to actively burn the tree foliage is remote.

Bay trees frequently grow among native oaks. The bays grow faster and will easily shade out the more desirable oaks within a few years. This is an important reason why young bay trees are often specified for removal.

To enhance wildlife habitat, patches of litter will be allowed to accumulate in a variety of locations and vegetation types that are deemed to be adequately fire safe (only in the Fuel Modification Zone). These areas of refuge may be approximately 100 sq. ft. and cover an average of 10 percent of areas where litter would otherwise be removed. Spacing between patches should be no closer than 20 ft apart. Because disturbance should be avoided in these locations litter up to 6 inches deep may be allowed. As a general rule, treatments to reduce fire hazard in the patches would need to occur on a 10-15 year interval.

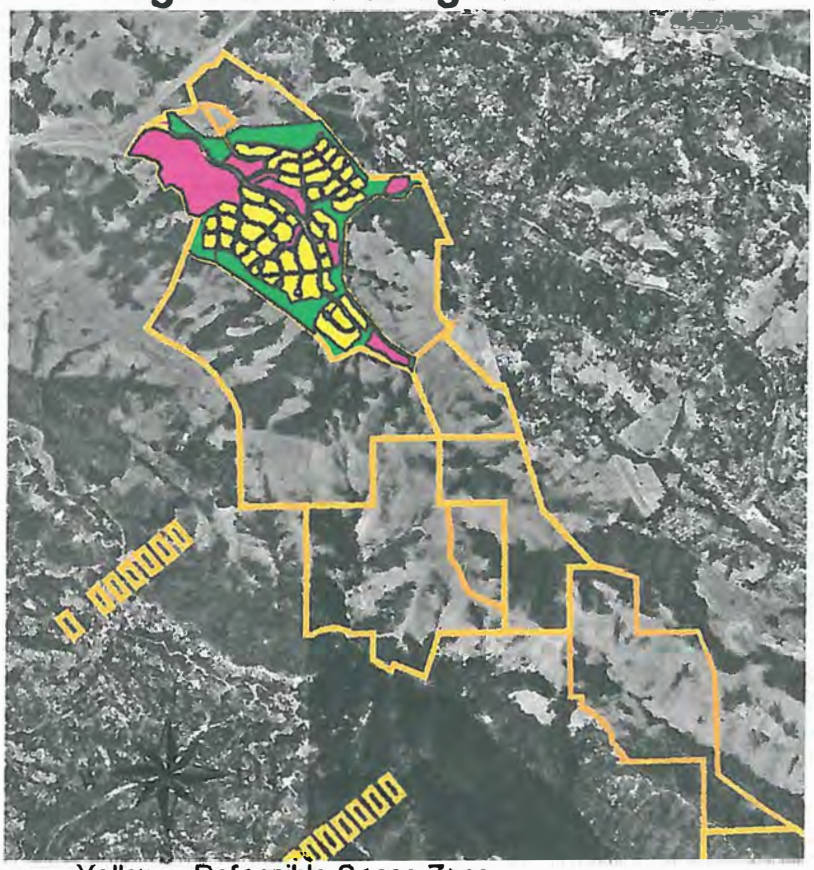
A. SUMMARY OF VEGATIVE FUEL MANAGEMENT ZONES

There are four treatment zones in this fire hazard mitigation plan:

- **The Non-combustible Zone within five feet of any structure (Zone 0):**
- **The Defensible Space/Landscaping** within private yards or otherwise within five to 100 ft of any structure(Zone I) including the **Roadside Vegetation Management Zone** (within 30 ft from pavement edge) The Non-combustible and Defensible Space/Landscaping Zones encompasses the space nearest the structures and is designed to reduce ignitions near structures, support structural survival during a wildfire, and reduce the chance that an ignition will move off site. The Roadside Vegetation Management Zone consists of vegetation near the roads and is designed to assist evacuation and emergency vehicle access and to limit roadside ignitions. The standards and actions to comply with both the Defensible Space/Landscaping Zone and the Roadside Vegetation Management Zone are the same, with one exception. In the Roadside Vegetation Management Zone there must also be a 15-foot vertical clearance created by tree-trimming the entire length of the roadway.
- **The Fuel-Modification Zone in the Development Buffer**(Zone II): The Fuel-Modification Zone encompasses the open space throughout the Development Area and Development Area Buffer and is designed to limit fire intensity and spread by means of the pruning of trees, and reduction of understory plants consistent with the RMP and LTMPs.

- **The Open Space Management Zones** in the Montanera Preserve Areas (Zone III): The Open Space Management Zone ensures the fuels are such that they do not exacerbate fire hazards to adjacent landowners and structures.

Vegetation Management Zones



Yellow = Defensible Space Zone
Green = Fuel Modification Zone in Development Buffer
Pink = Fuel Modification Zone in Other Land Uses
Orange Outline = Open Space Management Zones

B. STANDARDS FOR NON-COMBUSTIBLE ZONE (ZONE 0)

This zone will be kept free of all dead plants and combustible materials.

1. Keep the ground, decking and balconies free of dead leaves, needles or other plant debris
2. Dead material that drapes over ground cover will need to be removed yearly, before June 20. This includes leaves, bark, and branches.

C. STANDARDS FOR DEFENSIBLE SPACE/LANDSCAPING ZONE (ZONE I)

This proposed set of maintenance standards will be used to certify compliance and to direct maintenance activities in the zone within 100 ft of the single-family residences or

to the property boundary, whichever is less. This area encompasses all private yards in the Development Area, and/or the area within 100 ft from any structure. These vegetation management actions comply with the California State PRC 4291, the Uniform Fire Code and AB 1369 (the Vargas Bill).

This area is subject to management restrictions in such locations as Aquatic Protection Area, as defined by the RMP and LTMPs.

1. Remove all dead plants and dry vegetation to establish and maintain a defensible space. The following actions will provide the same level of fire safety as removing all combustible material.
    a. Cut grass and weeds yearly to less than 4 in. in height when 30% of the grasses have turned brown. Beginning May 15, inspect the grass on a weekly basis to determine the state of grass curing. Cut the grass within the week when 30% of the grass cover is cured, and no later than June 20. Re-mow if late-season rains promote grass growth after the first cutting. Optionally, delay cutting of native grass and wildflowers until after seed set if they do not constitute a means of rapidly transmitting fire to any structure.
    b. Keep the ground, roofs, decking, and balconies free of dead leaves or other plant debris.
    c. Clear leaves, bark, and humus under trees and shrubs (including vines and semi-woody species) every year. At no time should a buildup of leaves and humus exceed 1 in. in depth anywhere in a landscaped area. However, do not expose bare earth in over 50% of the site.
    d. Remove dead material that drapes over ground cover (including leaves, bark, and branches) annually, before June 20.
    e. From mature trees, remove all vines, loose papery bark, dead branches, and live branches smaller than 3 in. in diameter to a height of 8 ft above the ground.
    f. Remove all dead branches from within live ground covers, vines, shrubs (including semi-woody species), and immature and landscape trees.

2. Prune trees and large tree-form shrubs (e.g. oaks, bay) that are being retained to provide clearance of three times the height of the understory plant material, or 8 ft, whichever is higher. Prune limbs that are smaller than 3 in. in diameter up to 8 ft above the ground; in young trees, prune these branches the lower one-third of the height of the tree. (Thus, if a tree is 10 ft tall, prune the lower 3–4 ft and keep the understory plant material to less than 1 ft in height. Then as it grows to 24 ft in height, it can achieve the 8-ft distance from the ground, and the understory plant material can reach 2.5 ft in height.) Do not disturb or thin the tree canopy, because these actions promote growth of more flammable vegetation (see Figure 1). Remove all branches within 10 ft of any chimney, flue, or stovepipe. Maintain 5 ft of vertical clearance between roof surfaces and overhanging portions of trees.

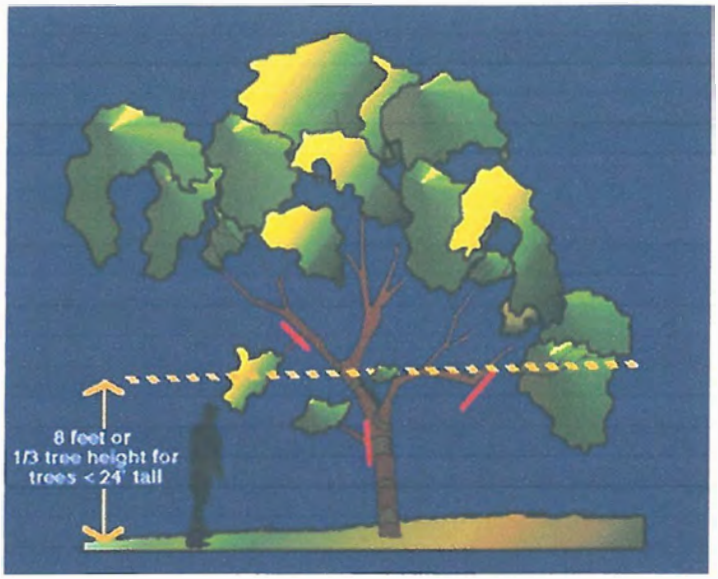


Figure 1 - Prune branches to a height of 8 ft above the ground. In young trees, prune branches on the lower one-third of the height of the tree. Do not disturb or thin the tree canopy. This promotes growth in the understory, which is more easily ignited.

3. Do not locate plants that are replacing ones that die, or oaks planted as a mitigation measure, under trees. To avoid creating "ladder fuel situations" (in which a fire can climb from one vegetation layer to the next higher one), do not plant shrubs (including vines, semi-woody species, and all chaparral species) under trees.

4. Make sure that all landscaping and replacement plants are fire-resistant in nature. Prohibit planting of plants that are highly ignitable and burn with intensity.

5. Manage individual plants or shrub masses to maintain adequate horizontal spacing. Design distinct groupings of shrubs (including vines, semi-woody species, all types of brush, and all chaparral species) to dampen the spread of fire. Make sure that the plant groupings are small enough to provide adequate horizontal separation between groupings and to allow proper maintenance; groupings should measure no wider than two times the grouping height, or 120 sq ft. (However, one row of shrubs in a linear band with a maximum width of 7 ft, located at least 10 ft from the structure, need not comply with the 120 sq ft area limit.) The space between islands should be greater than three times the height of the shrubs, or 12 ft at a minimum. On emerging trees, clear a spacing of 12 ft from the edge of the canopy (see Figure 2).

6. Hardscaping (patios, walkways, driveways, and bare dirt) and irrigated lawn should comprise at least 25% of the area immediately surrounding the structure (within first 30 feet).

7. Remove and safely dispose of all cut vegetation and hazardous refuse.

8. Allow chipped materials to remain on the site, provided the mulch layer is no greater than 2 in. in depth.

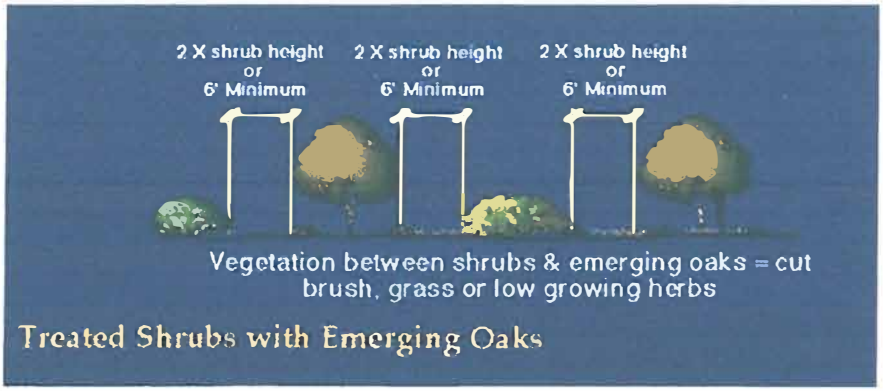


Figure 2. Shrub island spacing. Design groups of plants small enough to provide horizontal separation between groups. This allows proper maintenance and helps slow the spread of fire. Each shrub or group of plants should measure no wider than two times its height, or less than 120 sq.ft. (or 6 ft x 20 ft). The space between groups should be greater than three times the height of the shrubs, or at least a 12 ft. distance

E. STANDARDS FOR FUEL-MODIFICATION (ZONE II)

The land anywhere beyond 100 feet from a structure to the private property boundary will be designated Zone II. This zone will also include all the lands in Development Buffer Open Space and those site boundaries adjacent to existing development that are designated as "Development Interface Fire Break" in the RMP and LTMPs.

The following standards apply to all lands in Zone II, however, this area is subject to management restrictions in such locations as Aquatic Protection Area, as defined by the RMP and LTMPs:

1. All dead plants and combustible materials shall be removed to establish and maintain a defensible space. The following actions will provide the equivalent level of fire safety as removing all combustible material.
   a) Cut grass and weeds to less than 4 inches in height under short trees (trees under 24 ft in height) to preclude excessive pruning (see Item 2 below). This will be done yearly before June 1. Cutting of native grass and wildflowers may be delayed until after seed set provided they do not form a means of rapidly transmitting fire to any structures.
   b) Remove from mature trees all vines, loose papery bark, dead branches and live branches smaller than 3 inches in diameter, to 8 ft above ground.
   c) Remove all dead branches from within live ground covers, vines and shrubs, immature and landscape trees

2. Prune trees and large tree-form shrubs (e.g. oaks, toyon) that are being retained to provide clearance of three times the height of the understory plant material, or 8 ft, whichever is higher. Prune limbs that are smaller than 3 in. in diameter up to 8 ft above the ground; in young trees, prune these branches the lower one-third of the height of the tree. (Thus, if a tree is 10 ft tall, prune the lower 3–4 ft and keep the understory plant material to less than 1 ft in height. Then as it grows to 24 ft in height, it can achieve the 8-ft distance from the ground and the understory plant material can reach 2.5 ft in height.) Do not disturb or thin the tree canopy, because these actions promote growth of more flammable vegetation (see Figure 1).

F. STANDARDS FOR ROADSIDE VEGETATION MANAGEMENT

The standards for Zone I will apply to the strip of land within 30 feet of the pavement edge from both sides of the roadways in the Development Area. In the Preserve Areas, the Zone I standards will apply to the 30-ft zone from the centerline of the roadway. In the Roadside Vegetation Management Zone there will also need to be an unobstructed vertical clearance of 15 feet over along the entire length of the roadway.

G. FIRE-RESISTANT LANDSCAPING (In Zones I and II)

Many communities are promoting the use of fire-safe plants and implementing projects to demonstrate techniques for reducing fire risk to structures. Although there have been relatively few research results on the fire resistance of landscape plants, we can provide several important generalities. First, the spacing and design of the garden is more critical than the species planted. Leaving horizontal spaces between planting masses, specimen trees, and the house helps create a fire-safe landscape. Similarly, leaving vertical spaces between tree branches, shrubs, ground cover, and the structure (particularly windows) is important in designing a fire-safe garden.

Second, good maintenance of landscaped areas requires removing dead material and maintaining the vertical and horizontal spaces that create a fire-safe design. The significance of proper plant and landscape maintenance cannot be overemphasized. Design landscapes to discourage the creation of "fuel ladders"—a continuous fuel path by which a fire can climb from the ground to a shrub, to a tree, and ultimately to the structure. Continuous removal of any potential fuel ladders needs to be part of routine landscape maintenance. *Poorly maintained landscapes can easily become fire hazards, even if many of the plants are favorably recommended for fire performance.*

Species Selection: Desirable landscaping plant species have a low fuel volume and high foliar moisture and do not have a tendency to produce and "hold" dead wood. They also have a proper growth form: for example, ground covers or fruit trees (which inherently have adequate vertical spacing or branches).

Some common landscape species are explosive and can exhibit dramatic fire behavior. For example, a juniper that is 6 sq ft in area can produce flames over 15 ft in length. The Appendix A of this report contains a list of such prohibited plants.

Factors that must be considered in rating the fire performance of plants include:

- *Total volume.* The greater the volume of plant material (potential fuel) present, the greater the fire hazard.
- *Moisture content.* The moisture content of plants is an important consideration; high levels of plant moisture can both lower fire risk and act as a heat sink if a fire occurs, reducing its intensity and spread.
- *Amount and distribution of dead material.* The amount of dead material in a given plant influences the total amount of water in the overall plant; the dead material is usually much drier than living tissue. Whereas dead material rarely has a moisture content higher than 25%, live foliage moisture content ranges from 60 to 80% for chaparral species in xeric conditions to a high of 200 to 400% for succulent plants or plants under irrigation.
- *Size of leaves, twigs, and branches.* Materials with large surface areas (such as needles, twigs, or large flat leaves) dry more rapidly under fire conditions than materials with lower surface ratios (such as branches and fleshy leaves).
- *Geometry and arrangement of the plant (overall spatial distribution of the biomass).* The shape of a plant and the way in which the biomass is distributed throughout the plant is important because this bulk density affects the air flow and heat transfer through the plant. The arrangement of material within the plant affects its fuel continuity and its tendency to undergo preheating and promote fire spread.

All of the above-mentioned plant characteristics are related to maintenance issues. Plants with a higher moisture content generally have a lower fire risk. For example, the moisture content of a plant is absolutely influenced by regular and proper irrigation, and large amounts of dead material lower the plant's overall moisture content. To increase the plant's overall moisture content, it is important to remove and properly dispose of dead material. In addition, regular fire-prevention maintenance should include thinning or pruning to reduce fuel volume and improve plant geometry.

An appropriately landscaped and maintained defensible space will reduce the fire hazard and the fire risk to structures. A landscape environment that is inconsistently or improperly maintained does not function as defensible space, and it contributes to the fire hazard. Consult a nursery or landscape professional for their recommendations on plant spacing, pruning, aeration, fertilization, irrigation, and other cultivation practices.

Oak Planting: Although low-growing and low-volume plants are usually most suitable for a fire-safe landscape, the presence of less flammable trees (oaks, sycamores, and redwoods) is often also advantageous. Oaks foster a microclimate that tends to limit the number of ignitions and the rates of spread and intensity of most fires. When the trees are mature, the shade produced by the canopy limits grass growth and density. This canopy can easily be separated from ground fuels by pruning the lower one-third of the tree's branches as it grows. Also, the litter produced by oak trees is not extremely flammable. The canopy of a dense or large stand of oaks can slow wind and act as a windbreak. Moreover, on foggy days moisture collects on the canopy and forms small

amounts of fog drip. This drip keeps the grass that does grow (and any other fuel) under the trees more moist and green longer. The moistness of the fuels under the trees acts as a heat sink, in which the fire's energy is consumed in trying to dry the fuels. In other words, moist fuels act to retard the fire instead of contributing to its energy.

H. Standards for the Montanera Preserve Areas (Zone III)

The Preserve Areas are restricted in the activities that can occur, particularly in Special Habitat Areas. In Aquatic Protection Areas no mowing is allowed within any wetland or stream, except to control excessive thatch if it cannot be accomplished by managed grazing and if approved by the Corps and Water Board. No grazing is allowed in any perennial stream corridor, with the exception of short-durations in wetlands during the dry season, as specified in the RMP and LTMPs. "Within the Aquatic Protection Areas dead wood, standing dead or diseased trees and limbs will be allowed to remain as habitat unless it is determined on inspection by the Resource Manager and the Fire Marshal that fuel load is excessive and that the possibility of fire is above acceptable risk levels. If removal of excessive dead wood is required, only the amount necessary (determined by the Resource Manager and Fire Marshal) to reduce fire risk to acceptable levels will be removed. Any proposed excessive dead wood removal activities shall comply with the Resource Agency permit requirements." This permit prohibits removal of vegetation within the stream from Feb 15 to August 15. In addition, this permit requires planting of shrubs (toyon, snowberry, rose, coyote bush, and California blackberry) in and adjacent to streams.

Appropriate fuel management in the Aquatic Protection Zone is highest priority in the Development Area and within 100 from residences on the eastern border. The standard for fuel management is to maintain a Fuel Model 8 (closed canopy oak forest with minimal understory), which propagates benign fire behavior and a low possibility of crown fires. When the vegetation composition, fuel structure, and volume combine to characterize a fuel model other than Fuel Model 8, then pruning of lower tree limbs, reduction of understory shrubs, and removal of excessive dead wood is warranted within the Aquatic Protection Zone

In the Coyote Scrub Areas Within Whipsnake Suitable Habitat, grass shall not be reduced to less than nine inches from April to October. Coyote scrub can be managed by a non-burn method and in a frequency determined by the Resource Manager in conjunction with the Service, typically covering 20 percent of the total habitat annually in varied habitat locations. The fuel management standards for non-Special Habitat Areas will be same as the Coyote Scrub Areas within Whipsnake Suitable Habitat Areas.

The RMP and LTMPs state, "Except as otherwise required...the Montanera Preserve Areas not within any of the special zones described above may be subject to minimal annual or semi-annual reduction of excessive fuel loading. These areas may be maintained by managed livestock grazing, temporary goat grazing, mowing or hand-clearing of grasses and non-woody vegetation to a height of less than eighteen inches and

the removal of flammable vegetation and dead wood where necessary to prevent the spread of intensity of a fire." It is further noted that "flammable vegetation" does not include existing mature, healthy oaks, bays, and other native trees.

The open space not within Special Habitat Areas within the six Montanera Preserve Areas should be managed to preclude the encroachment of shrubs, such as coyote bush (i.e. *Baccharis pilularis*), into grasslands and maintain the woodland areas clear of dead materials, which would increase the fuel load and potential fire hazard. Maintaining the Project site as a grassland interspersed with young coyote bush scrubland, oak woodland, and riparian vegetation, can be accomplished by many techniques, including grazing, or prescribed fire (in non-scrub areas). Prescribed fire, while a useful tool, is unlikely to be implemented on the site as a means to preclude shrub encroachment in grasslands. A more likely manner of maintaining grasslands throughout the site is through grazing or mechanical cutting. Mowing or grazing may be done with sheep, goats, or cattle, and need not be done every year, but in two successive years within a five-year period.

In addition to fuel management throughout the open space, fuel management is necessary to prevent fire from spreading to adjacent residential areas on the eastern border of the project site. This area is located on the eastern border of Quarry Hills, Eastern Hills, Western Hills and Moraga Creek open spaces. This may be in the form of disked or graded strips of 15 ft width with an additional 30 feet of mowed grass of a maximum four-inch height. Trails and/or vehicular access (fire trails) can be incorporated into the perimeter firebreak so minimize the area of disturbance. In wooded areas, a vertical separation between the understory vegetation and tree canopy of two times the shrub height will need to be maintained for a distance of 100 ft from the property boundary. This can be achieved by removing or shortening the understory vegetation or pruning lower limbs of trees per the heights specified in Zone II.

All these standards are in compliance and are compatible with the actions designated in the RMP and LTMPs.

Structure Hardening for Fire Protection
Standards for Construction of Structures and Garden Features

The following construction standards are for structures located on development sites where maximum built-in fire protection measures are necessary due to steep slopes or wildland fuel loading and are recommended for use throughout the Project Site. This set of standards complies with the new Wildland Urban Interface Fire Codes to become effective starting in 2006.

1. Roofing

Materials and Installation. All structures and residences will be constructed in conformance with UL-approved Class "A" roofing. Roofs will have a roofing assembly

installed in accordance with its listing and the manufacturer's installation instructions. The roofing classification will be as required in Sections 1503 of the California Building Code.

Roof Coverings - Where the roof profile allows a space between the roof covering and roof decking, the spaces will be constructed to prevent the intrusion of flames and embers, be firestopped with approved materials, or have one layer of Type 72 ASTM cap sheet installed over the combustible decking.

Roof Valleys - When provided valley flashings will be not less than .016-inch (No. 28 galvanized sheet gauge) corrosion-resistant metal installed over a minimum of 36 inch wide underlayment consisting of one layer of Type 72 ASTM cap sheet running the full length of the valley.

2. Projections (decks, balconies, porches)

Enclosure of Projections. Buildings will have all underfloor areas enclosed to the grade with exterior walls in accordance with Section 705A.1. (Exception: The complete enclosure of underfloor areas may be omitted where the underside of all exposed floors, exposed structural columns, beams and supporting walls are protected as required with exterior ignition-resistant material, construction or be heavy timber, or other construction approved by the Authority Having Jurisdiction)

Materials & Construction. "Heavy timber" construction of decks and gazebos (with appropriate clearances) can be used. Heavy timber is defined in Section 2105 of the Uniform Building Code modified to allow the following timber sizes:

1. 6 inch nominal minimum dimension columns
2. 6 inch by 8 inch nominal minimum dimension horizontal supports
3. 2 inch nominal minimum dimension spaced decking

Alternatively, a "skirt' wall comprising a fire resistive assembly extending down from the projection surface to the adjacent grade will completely enclose the projection

Surfaces, stair treads, risers, and landings of decks, porches and balconies within 10 feet of the primary structure will be constructed with "Ignition Resistant Materials" and comply with the performance requirements of 12-7A-5 "Deck Test Standard", or deck surfaces of heavy timber, fire retardant treated wood or non-combustible materials.

3. Roof Eaves, Soffits & Gutters

Eaves and soffits will meet the requirements of 12-7A-3 "Under Eave Test Standard" or will be protected by ignition-resistant materials or noncombustible construction on the exposed underside as approved by the Authority Having Jurisdiction.

Roof Gutters. Roof gutters will be provided with the means to prevent accumulation of leaves and debris.

Overhangs. Overhangs extending more than 10 inches will be protected by one of the following measures:

a. Uniform Building Code/Uniform Fire Code listed one-hour fire resistive assemblies with a non-combustible surface on the underside and exposed edges;
b. "heavy timber" construction; or
c. Any other noncombustible material approved by the Building Official and Fire District. Roof overhangs that are constructed of noncombustible materials or combustible roof overhangs projecting less than 10 in. from the exterior face of the exterior wall need not be protected.

4. Exterior Siding, Walls, Openings and Windows

Siding Materials - Exterior siding materials will consist of "stucco" or any exterior one-hour fire-resistant–rated wall material with a noncombustible surface or any other noncombustible material approved by the Building Official and Fire District. Trim of 1-in. minimum size may be applied on walls. Untreated wood shingles and wood shakes of any kind are not allowed.

Exterior Walls - Exterior walls will be approved non-combustible or ignition-resistant material, heavy timber, or log wall construction or will provide protection from the intrusion of flames and embers and temperatures capable of igniting combustibles on the inside of the wall in accordance with 12-7A-1 "Exterior Wall Test Standard" or other standards approved by the Authority Having Jurisdiction.

Exterior wall coverings will extend from the top of the foundation to the underside of the roof sheathing, terminate at 2 inch nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure.

Exterior Wall Openings - Exterior wall openings will be in accordance with this section.

Exterior Glazing - Exterior windows, window walls, glazed doors, and glazed openings within exterior doors will conform to the performance requirements of 12-7A-2 "Exterior Window Test Standard" or multilayered glazing with minimum of one tempered pane, glass block or other window assemblies having a fire protection rating of not less than 20 minutes. (Exception: Non-combustible vehicle access doors.

5. Vents

Roof Vents - When required by California Building Code Section 1505.3 roof and attic vents will resist the intrusion of flame and embers into the attic area of the structure, or will be protected by corrosion resistant, non-combustible wire mesh with 1/4 inch openings or its equivalent.

Under-Floor Ventilation - Under-floor ventilation will resist the intrusion of flame and embers into the area under the floor, or will be protected by corrosion resistant, non-combustible wire mesh with 1/4 inch openings or its equivalent.

Other Wall Vents - Unless otherwise prohibited by other provisions of this code, vent openings in exterior walls will resist the intrusion of flame and embers into the structure or vents will be screened with a corrosion-resistant, non-combustible wire mesh with 1/4 inch openings.

6. Fences

Fences will be constructed of either noncombustible material or of timbers with a minimum of one-inch nominal thickness. Typical fencing might include "view fencing", consisting of open wire-mesh with four-inch posts and stringers that have a minimum one-inch nominal thickness.

7. Signage

Signing and building numbering will comply with Contra Costa County regulations for zoning, which require that street, road, and building-address signs will have a minimum letter height of 4 in. and be:

- 1/2 in. thick,
- reflectorized (or lit)
- painted a color contrasting with the background color of the sign, and
- visible within 100 ft traveling from both directions.

8. Accessory Buildings

When required by the Authority Having Jurisdiction ancillary and detached accessory structures will comply with the same requirements as the main structure.

Garden Structures - such as gazebos, spas, or other outbuildings—will meet the same minimum standards for ignition-resistive materials, timber size, and other requirements as described above for other structures.

Barbeques. Barbeques must be surrounded by at least 100 sq ft of noncombustible materials and be located 10 ft away from all overhanging structures or trees. Barbeques must not be left unattended when in use. During use, portable barbeques must be located in an area that is surrounded by at least 100 sq ft of noncombustible material. No structures or trees should overhang the use area within a distance of 10 ft. Both the portable barbeque and the stationary barbeque should be located no farther than 15 ft from a water source (including a garden hose) or be equipped with a fire extinguisher.

Built-in Fireplaces. Built-in fireplaces should be either no farther than 15 ft from a water source or be equipped with a fire extinguisher. All associated chimneys will be fitted with a spark arrestor. Spark arrestors will be approved per the California Building Code.

9. Smoke Detectors

The residence will have smoke detectors that comply with California Building Code.

SUMMARY OF FIRE HAZARD OF PROJECT WITH MITIGATIONS

The Montanera development offers several layers of mitigations addressing wildfire hazards. These include:

- A roadway system that provides for easy access for emergency vehicles simultaneous with evacuation of residents
- A water system that supports effective fire suppression needs
- Vegetation management standards that ensure landscaping and vegetation in the open spaces will produce flames that will not promote structure damage. This is accomplished by maintain vegetation such that it will produce flame lengths less than two feet within private yards and otherwise within 100 feet of a structure, and fire behavior that will not promote crown fires in Preserve Areas.
- Structure design that is ignition-resistant.

STATEMENT REGARDING COMPLIANCE WITH FIRE SAFETY CODES AND REGULATIONS

With the approval of this Wildfire Hazard Assessment and Plan, the Montanera project complies with all fire safety codes and regulations. In addition, the actions specified in this plan are compatible with those restrictions required in the RMP and LTMP.

The fuels within 100 ft of structures are managed to produce flames less than two feet in length, either through mowing of dried grass, and/or through removal of understory plant materials - both live and dead. The potential for crown fires is minimized through these actions, coupled with maintaining tree canopies (pruning trees of lower branches and removal of dead material in the tree canopy).

Riparian vegetation within the Development Area will be managed only when the structure and volume of vegetation justifies characterization of the fuel model as one other than Fuel Model 8 (closed canopy oak forest with minimal understory). These actions will promote fire safety compatible with habitat protection.

- Section Three -

IMPLEMENTATION MECHANISMS

COMPLIANCE WITH THE CONDITIONS OF APPROVAL

Declarations of Covenants, Codes and Restrictions (CC&R's)

The following language is suggested for inclusion in the covenants, codes and restrictions (CC&R's) of the management entity, also called homeowner association (HOA), for the Montanera Subdivision.

Fuel Management and Storage, Weed Abatement

The Montanera Management Entity shall be responsible for inspecting and maintaining the Common Area in compliance with the fuel management program approved by the Moraga Orinda Fire District (MOFD). Each Lot Owner shall be responsible for maintaining the individual lot in compliance with the fuel management program approved by MOFD."

"No owner or resident shall permit any condition to exist on his or her Lot, including, within limitation, trash piles, or weeds, which creates a fire hazard or is in violation of local fire regulations."

"There shall be no outdoor storage of firewood, kindling, or compost material within 30-feet of any structure, unless the material is stored in an approved bin or enclosure."

Responsibility for Maintenance of Common Areas and Improvements

"The Homeowner Association shall be responsible for the maintenance of all Common Area improvements from the edges of the streets up to the edge of the Preserve Area.

"The Homeowner Association shall maintain all the landscaping installed by the Declarant within the Development Area as shown on the Maps. The Homeowner Association shall also maintain the following: The landscaping improvements within common areas, fencing delineating the common areas.

"The Long-Term Land Owner will maintain the perimeter fuel management of the Development Buffer Area, and site-wide prevention of shrub encroachment of existing grasslands within the Montanera Preserve Areas in accordance with the requirements of the Conservation Easement and LTMP and using the funding provided in the endowment established with the Wildlife Heritage Foundation in trust prior to ground breaking."

"The GHAD shall maintain the water quality and stormwater detention ponds in accordance with the Defensible Space Standards."

"The City of Orinda shall maintain the city-owned property (community playfields, art and garden center and playfield maintenance yard) in accordance with the Moraga-Orinda Fire District Fire Code Ordinance #02-02 and Fire District fire safe vegetation standards."

"In compliance with the Fuel Management Program approved by the Fire Marshal, Individual Homeowners shall be responsible for maintaining the private open space within each lot, with enforcement authority provided to the Homeowner Association and the Moraga Orinda Fire District."

"If an Owner fails to maintain and/or repair his Unit and Lot as provided herein in a manner which the Homeowner Association Board reasonably deems necessary to preserve the safety, appearance and/or value of the Project, the Board may notify the Owner of the work required and request that it be done within a reasonable and specific period. If the Owner fails to perform such maintenance and/or repairs within said period, the Board shall, subject to the notice and hearing requirements as set forth in the By Laws, have the right to enter upon the Lot to cause such maintenance and/or repair work to be performed. Costs of any such maintenance or repair shall be charged to the Owner."

"Notwithstanding the foregoing, in the event of an emergency arising out of the failure of an Owner to maintain and/or repair his Unit or Lot, the Board shall have the right, through its agents and employees, to immediately enter the Lot to abate the emergency and individually charge the cost thereof to the Owner."

"Individual homeowners shall be responsible for maintain any private open space within each lot, with enforcement authority provided to the Entity and the Moraga Orinda Fire District."

Fuel Management Zones:

"Fuel Management Zones as delineated on the final recorded map shall be established, funded, implemented, and maintained by the Homeowner Association, City or the designated Long Term Land Owner to ensure the safety of the residents. The fire hazard mitigation plan shall include components including but not limited to: homeowner education, fire-resistant and drought-resistant landscaping, and fuel management zones (Defensible Space/Landscaping Zone I, Roadside Vegetation Management Zone, Fuel Modification Zone II and Montanera Preserve Areas.")

"The Montanera Homeowner Association, City and GHAD will retain a professional with wildland fire-management expertise as an independent contractor. This professional will submit a certificate of compliance to the Moraga Orinda Fire District that the area has

been maintained according to the approved fire-management plan. This certificate will need to be submitted to the Moraga Orinda Fire District by June 20 of each year."

DELEGATION OF FUEL MANAGEMENT AND CONSTRUCTION RESPONSIBILITIES

Construction Responsibilities

Orinda Gateway, LLC (OGLLC) will be responsible for the design and construction of all improvements of the project including site grading, roads, driveways, emergency access roads, fire roads, trails, homes, community facilities, landscape improvements, utilities and improvements in the Montanera Preserve Areas.

Management Responsibilities

Management of Development Area

A Homeowners Association (HOA) and GHAD will maintain the common area facilities, landscaping and other common area management and maintenance functions within the Development Area.

Management of Montanera Preserve Areas

The Maintenance District Plan, *Figure A.5*, conceptually outlines the long term maintenance strategy for the Montanera Preserve Areas. For the first ten years OGLLC will remain the fee owner and a land trust will hold Conservation Easements over the six Montanera Preserve Areas. The maintenance and monitoring during this first ten years will be conducted by OGLLC as required by Permitting Agencies and Agreements. After that time OGLLC will create separate long term maintenance endowment funds for the benefit of long-term owners. The anticipated long term fee owners are as follows, as indicated in the Tentative Map Land Use Summary, 11-18-05:

1) East Bay Municipal Utilities District: Moraga Creek Open Space Area (130.3 acres); Moraga Creek Open Space Extension (44.7 acres); Indian Valley Preserve (214.7 acres), Upper San Leandro Open Space (67.9 acres)
2) East Bay Regional Park District: Western Hills Open Space Area (389.1 acres); ; Texas Parcel (246.9 acres)
3) Geologic Hazard Abatement District: Development Buffer (77.4 acres); Eastern Hills Open Space (53.2 acres), Quarry Hill Open Space (117.9 acres); Detention Ponds Park (the HOA may be the long-term fee owner).
4) City of Orinda: Community Playfields and Passive Area (43.7 acres); Art and Garden Center (5.0 acres)
5) Home Owner Association: Common Areas and Connector Trails and Paths (8.8 acres).

The Geologic Hazard Abatement District (GHAD) will also maintain portions of the Montanera Preserve Areas, the trail system within the Montanera Preserve Areas and all storm-water functions throughout the site. The final terms and conditions of the GHAD will be consistent with the requirements of the Resource Agency Permits, Resource Management Plan, and Long Term Management Plan (LTMP) and subject to Resource Agency and City Council review and approval.

Fuel Management Zones and Requirements

Fuel management zones described in the Long Term Management Plan are conceptually depicted in locations throughout the Montanera Preserve Areas. The specific locations of the fuel management zones will to be established by OGLLC during the Initial Monitoring Period in consultation with the Long Term Land Owner, the Conservation Easement Holder and the Moraga-Orinda Fire District and may differ slightly from those described herein. After the Initial Monitoring Period, the specific locations and management techniques of the fuel management zones may be adjusted and/or modified over time, in consultation with the Resource Agencies and the Conservation Easement Holder, as necessary to protect public safety and the conservation values of the LTMP.

City of Orinda Responsibilities

The Community Playfields, Art & Garden Center and Playfield Maintenance Yard will be dedicated to the City of Orinda upon completion and will be owned and maintained by the City. The City also will be responsible for maintaining any trails and trailheads on the City and or GHAD owned lands.

PHASING OF MAINTENANCE RESPONSIBILITY AND FUEL MANAGEMENT

- Hydrants will be in place before framing begins.
- Initial fuel management actions will be completed before construction of the first lot begins. These actions include tree removal, tree pruning, and grass cutting (if construction takes place between June 20 and Nov. 1).
- A construction fire-prevention plan must be approved by the MOFD Fire Marshal before building permits are issued. This plan will include precautions to carry out during high fire danger, a list of tools to have on hand, a description of available communications, specifications for the supply of water to have on hand, and descriptions of other actions that will reduce the risk of ignition and immediate control of an incipient fire.
- MOFD will inspect roadways, including emergency vehicle access and fire roads, hydrants, and fuel management before framing begins.

- All required clearing and grass cutting will be completed before June 20th of each year. Mowing must begin as soon as 30% of the grass has cured.

- Grass cuttings and clippings will be removed the day they are cut. No clippings are permitted to remain in piles or scattered, unless so approved by the MOFD Fire Marshal.

- All brush piles and tree clippings are to be removed within one week of cutting. No brush or clippings are permitted to remain in piles, unless so approved by the MOFD Fire Marshal.

- Annual fuel management measures include:
  — removal of all combustible vegetation along roadways, driveways, access roads, and trails according to stated standards
  — maintenance of the emergency-access easement
  — maintenance of the defensible space around structures according to stated standards for Zones 0, I and II.

Montanera Management Entity will retain a professional with wildland fire-management expertise as an independent contractor. This professional will submit a certificate of compliance to the MOFD that the area has been maintained according to the approved fire-management plan. This certificate will need to be submitted to the MOFD by June 20 of each year.

In order to assist implementation of fuel management each year, fuel management boundaries will be indicated with a permanent, yet unobtrusive, post (such as re-bar, painted 6 inches from the top down). These posts will be located at least 100 feet from the structure or the lot line on either the private lot or in the adjacent open space. The area closest to the structure will comprise Zone I and the area farther away from the structure will comprise Zone II. These delineations will be installed prior to completion of construction.

MECHANISMS FOR COMPLIANCE

Long-Term Financial Assurances

Prior to groundbreaking on the residential project, OGLLC will fund endowments to fund the Long Term Land Owners' long-term management costs under the *LTMPs* ("Long-Term Management Endowments"). These endowments will be for the sole purpose of funding the long-term management and maintenance of the natural resources and mitigation areas within the Montanera Preserve Areas in accordance with the Conservation Easement and LTMPs.

The Long-Term Management Endowments will be held by the Wildlife Heritage Foundation ("WHF"), a public, non-profit entity qualified to hold Conservation Easements and endowments in trust.

The amount of the Long-Term Management Endowments have been approved by the Resource Agencies prior to groundbreaking for the residential project, and the amounts were based on a Property Analysis Record ("PAR") analysis of the anticipated long-term resource management costs. At the end of the Initial Monitoring Period, the OGLLC or the Long Term Land Owner may request that the Resource Agencies, in consultation with the Conservation Entity and Long Term Owner, review the actual costs incurred by OGLLC for management and maintenance activities during the last five years of the Initial Monitoring Period and adjust the amount of the endowments (up or down) to reflect actual costs prior to transfer.

Reporting

Annual Report to the Conservation Easement Holder

The LTMPs require that a brief letter will be prepared annually by each Long Term Land Owner and submitted by September 15 of each year to WHF, or future Conservation Easement Holder, with a copy sent to each Resource Agency, describing the general status of the Area, any substantial management activities, existing or expected problems, and any proposals to address those problems. Proposals for activities that will affect wetlands, streams, riparian habitat or other jurisdictional resources not specifically authorized by each *LTMP* and the Conservation Easement will require Resource Agency approval, with a copy to the MOFD.

Annual Grazing Plan.

The LTMPs also require that the Long-Term Land Owners develop an annual grazing plan for each grazing unit that will incorporate the long-term requirements of each *LTMP* and require any lessees to comply with such terms and conditions. This annual plan will be similar in form and substance to the *Sample Annual Grazing Plan* found at Appendix L of the Range Resource Management Plan (EBMUD December 2001).[1]

Reports Regarding Grazing Management - The Long-Term Land Owners will provide notice of any substantive changes proposed in any of the annual grazing plans for the following grazing season (*i.e.*, change of lessee, any substantive changes in site conditions that affect grazing management, or any proposed changes in the site improvements) to provide the WHF, or future Conservation Easement Holder and the Resource Agencies an opportunity to comment, with a copy to the MOFD.

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[1] See: http://www.ebmud.com/water_&_environment/environmental_protection/east_bay/range_resource_management_plan/rrmpappLgrazplan.pdf

Frequency of Future Maintenance

The frequency of vegetation management is linked to the vegetation type.

Grass will need to be mowed (or burned) annually when 30% of the grass cover has cured (any time from April 15 - June 20). Should rains occur late in the season and produce more grass growth, the grass may need to be treated again.

The expected frequency of treatment of shrubs is estimated as every three years. Shrubs may need to be pruned of dead wood, shortened, shrub groupings minimized in size, or new shrubs removed under tree canopies. Shrub removal or pruning may be done any time of year. Application of an herbicide to prevent re-sprouting may be more effective in the spring, but will follow the PCA recommendation.

Initial pruning of lower small branches will be a substantial effort. Because trees typically grow from the top and ends of branches, subsequent pruning needs to occur only every five years or so, depending on the rate of growth, and significant events which may cause dead wood to develop or breakage to occur. Pruning of oaks, other trees and tree-like shrubs can be done at any time of the year, depending on recommendations from a professional arborist.

Removal of a litter layer deeper than the standards is expected to be necessary only once every 10 years.

Summary of Frequency of Vegetation Management

Annual management

- Mow or graze grass near structures and under trees and shrubs
- hand crew cut shrubs and weeds in grasslands
- monitor site for weed and shrub encroachment
- inspect trees for deadwood, vertical clearances
- re-establish vertical clearance in Defensible Space Zone
- remove weeds, all dead material in Defensible Space Zone

Management that will occur every 3 years

- thin shrubs into groupings
- remove new understory shrubs

Management that will occur every 3 years

prune trees of lower branches to re-establish vertical clearance

Process for Plan Revision

While this plan presents recommendations that cover future actions, the Moraga Orinda Fire District will have authority to review periodically the conditions addressing structures, plants and landscaping to provide input and direction. Potential issues that should be addressed during this review include:

- Lot line adjustments that may change the distances and areas for which the Montanera Homeowner's Association is responsible.
- Easement encroachments, such as shrub plantings or fence installation into the buffer open space area that are on private property.
- Changed fuel hazard conditions including: height of tree branches, size, density or species of vegetation. Relationship of fuel load and erosion control or slope stability conditions.

A five-year interval of review is recommended. For example, if the expansion of shrub cover warrants additional action, this process provides for revisions of required maintenance options. Input of the Fire District would be based on site visits, results and observations from the annual inspections conducted by this department and experiences from recent wildfires or changes in ordinances or regulations.

The leadership of Homeowner Associations will submit this plan, along with suggested revisions to the Moraga Orinda Fire District for their input. The fire district input will be incorporated and the plan revised. The revised plan would be implemented the following year.

CITY OF ORINDA
CONDITIONS OF APPROVAL

MONTANERA PROJECT

March 15, 2005
(Revisions conforming to City Council's March 1, 2005 action are shown in bold.)

1. The development of the Montanera property shall conform to the following documents, except as these documents are modified by these Conditions of Approval ("Conditions"), as set forth below:

   A. The "Second Amendment and Restatement of the Development and Preannexation Agreement for Gateway Valley between City of Orinda and Orinda Gateway, LLC".

   B. The "Final Second Supplemental Environmental Impact Report for the Montanera Project in the Gateway Valley," and the "Second Supplemental Mitigation Monitoring and Reporting Plan for the Montanera Project in the Gateway Valley," dated January, 2005.

2. The Montanera Project ("Project") consists of the Gateway Valley Conceptual Development Plan ("CDP") and the proposed municipal and service boundary annexation related to the East Bay Municipal Utilities District ("EBMUD") Lands. The CDP is defined in the proposed Second Amendment and Restatement of the Development and Preannexation Agreement for Gateway Valley ("DA") as the standards, terms, and conditions for development of the Project (including the land uses and the location, density, and intensity of the land uses), as set forth in Appendices A (*Land Use Plan*), B (*Development Standards and Guidelines*) and D (*Infrastructure and Utilities Plan*) to the DA.

3. Prior to issuance of a grading permit for development of the permitted uses on the **approximately 985-acre** Orinda Gateway LLC ("OGLLC") property and a 27.0-acre portion of the adjacent EBMUD property ("Project site"), OGLLC shall submit to the City and the Planning Commission (or the City Council, on appeal) must approve a Final Development Plan(s) (FDP(s)) and Tentative Map(s) for the Project consistent with the DA and these Conditions of Approval ("Conditions"). The FDP(s) and Tentative Map(s) shall comply with all City requirements and State law.

4. Where a term is not defined within the DA or within these Conditions, but is defined within the City of Orinda Municipal Code, the definition within the City of Orinda Municipal Code shall govern.

5. The Project shall comply with the Moraga-Orinda Fire Protection District requirements for emergency vehicle access (EVA) roads, which are set forth in Exhibit A to these Conditions.

6. All construction on the Project site shall be carried out according to City of Orinda ordinances, codes, rules and regulations to the extent consistent with the DA.

7. OGLLC shall provide the City with copies of all permits and/or approvals issued by other public agencies, or amendments to any such permits or approvals, as they apply to development of the Project site, including permits or approvals issued by the following agencies:

   A. East Bay Municipal Utility District;
   B. Pacific Gas and Electric Company;
   C. California Public Utilities Commission;
   D. Central Contra Costa Sanitary District;
   E. Contra Costa County;
   F. United States Army Corps of Engineers;
   G. United States Fish and Wildlife Service;
   H. United States Environmental Protection Agency;
   I. San Francisco Bay Area Regional Water Quality Control Board;
   J. California Department of Fish and Game; and
   K. California Department of Transportation.

   OGLLC shall furnish the aforementioned copies of permits and/or approvals to the City within 30 days of issuance.

8. Failure to comply with any of these Conditions may result in a stop work order and/or a rescinding of this Approval.

9. This Approval shall be binding on OGLLC, the owner, and all future owners and lessees of the OGLLC property.

10. **Wherever the DA, which includes the CDP, is silent, ordinances, codes, rules, regulations, and official policies of the City, shall control. Wherever the DA conflicts with these Conditions, the Conditions shall control.** DA amendments shall be consistent with these Conditions prior to execution and recording of the final DA amendments. Consistent with Section 3.2 of the Development Agreement, all references in these Conditions of Approval to specific City regulations, ordinances or policies are to those regulations, ordinances and policies in effect at the time of the City's 2005 approval of the DA, except as provided for in section 3.2 of the DA.

11. Prior to issuance of a grading permit for development of the Project site, OGLLC or its successor shall record a deed restriction, approved as to form by the City of

Orinda, establishing that motorized vehicular access to the (EVA) roads that terminate at Edgewood Road **and Brookside Road** shall be limited to emergency vehicular access in perpetuity. The design of the physical access barriers at the terminus of the EVAs at Edgewood Road **and Brookside Road** shall preclude all non-emergency vehicular traffic and shall be subject to the review and approval by the Planning Commission.

12. Development-related tree trimming areas, including but not limited to areas proposed for "tree-topping," shall be shown on all tentative maps. Such tree trimming areas shall be kept to a minimum except where necessary to: a) protect the health of a tree, or (b) achieve the objectives and purposes of the Development Agreement without requiring a substantial redesign of the project. In all instances, tree trimming shall be permitted only after a certified arborist has prepared a report verifying that the proposed trimming will not endanger the health of a tree. This arborist report shall be reviewed by the Planning Director, who may require a peer review of the proposed tree trimming by a City-selected arborist, and/or a City-selected biologist, at the expense of OGLLC and/or the Project's Homeowners' Association. In addition, if the Planning Director finds that the proposed tree trimming may be visually obtrusive, the proposed tree trimming may be subject to approval by the Planning Commission.

13. The City strongly recommends that all natural resource mitigation be provided onsite where possible. Should offsite mitigation be necessary, the City strongly urges that such mitigation takes place within the Orinda City limits.

14. If any of the "waters of the United States" within the Project site experience slope failure in the future and this slope failure is proposed to be corrected through slope stabilization measures within 100 feet of the centerline of the creek, such corrective slope stabilization measures must be approved by the City Engineer, in consultation with the appropriate consultants and responsible agencies. The Planning Commission shall be notified of the City Engineer's decision regarding any proposed corrective slope stabilization measures before corrective action is taken. Non-emergency measures with impacts on heritage-sized trees, riparian habitat, creeks, etc., that would be considered project changes according to these Conditions, shall require Planning Commission review and approval.

15. The final location and design of geotechnical mitigation measures, including proposed keyways and toe buttresses, and all geotechnical studies prepared for the Project shall be subject to review and approval by the Public Works Department, in consultation with the appropriate consultants to the City prior to the issuance of a grading permit for the mass grading.

16. Concrete curb and gutter shall be permitted as a drainage conveyance in-lieu of grass-lines swales only where construction of curb and gutter reduces hillside cuts, or facilitates drainage controls where the City Engineer, in consultation with appropriate consultants to the City, determine that swales are not feasible due to

topographic limitations and to the extent authorized by the RWQCB pursuant to the Waste Discharge Requirements for the Project. The location of all curbs and gutters shall be shown in the FDP(s) and Tentative Map(s).

17. Landscaping within private single family lots shall be subject to Planning Commission review in the same manner as other single family lots in the City of Orinda are subject to such Planning Commission review.

18. Reserved.

19. The City of Orinda Hillside and Ridgeline Design Guidelines shall apply to development of the Project site in the same manner as they apply to the remainder of the City of Orinda, subject to the restrictions in section 3.2 of the DA. No special amendments to the Hillside and Ridgeline Design Guidelines shall be permitted for the Project.

20. Except on bridges, a minimum 5 foot landscaped buffer shall be provided between the edge of the Gateway Boulevard roadway and any adjacent pathway.

21. The Art & Garden Center shall **close at** 10:00 PM **on Sunday through Thursday** and at 12:00 AM on Friday and Saturday. The types of events and maximum number of attendees shall be determined by OPARC and the **Parks and Recreation Director** based on these hours, the number of parking spaces provided on-site and the limits specified in the City's Noise Ordinance. The **Planning Director, following consultation with the Parks and Recreation Director** and the Homeowners' Association ("HOA") (or OGLLC until such time as the HOA has been formed), shall have the discretion to amend the hours of operation. **The Planning Director's decision to amend the hours of operation may be appealed.**

22. OGLLC shall submit plans and receive Planning Commission approval of the Community Facilities and the Public Improvements, as these terms are defined in the DA. Because the Community Facilities are being constructed by OGLLC for the benefit of the City and the public, the application(s) **for the Community Facilities** shall be considered a joint application of OGLLC and the City, and all City related application processing fees shall be waived. The Parks and Recreation Commission shall review and make recommendations to the Planning Commission regarding the plans for the community playfields, Art & Garden Center and the trails and trailheads. The construction plans for the community playfields shall be submitted prior to issuance of a building permit for the first home. Construction of the community playfields shall be completed by issuance of the building permit for the **100th home.**

23. Certain of the Resource Agency Permits and/or approvals issued by other public agencies identified in Condition 7, above, (e.g., approvals from the United States Fish and Wildlife Service and the San Francisco Bay Area Regional Water

Quality Control Board ("Resource Agency Permits") provide for the Geologic Hazard Abatement District ("GHAD") to take title to certain open space preserve areas associated with the Project and further provide that OGLLC must establish an endowment fund that is adequate to fund the GHAD's long-term management of the open space to which it takes title. Before transferring any open space land to the GHAD, OGLLC shall obtain **City Council approval** for the terms and amount of the endowment fund established to fund the GHAD's long-term management of open space.

24. Certain of the Resource Agency Permits provide for the creation of a single purpose land trust (sometimes referred to as the "Montanera Land Trust") to hold conservation easements over open space preserve areas associated with the Project. OGLLC shall use best efforts to ensure that the membership of the Board of the Montanera Land Trust consists of residents of Contra Costa County who have knowledge of land trusts, open space preservation, finance or other applicable skills. OGLLC shall identify candidates for the Board of the Montanera Land Trust in consultation with the City Manager of the City of Orinda and shall ensure that the Board of the Montanera Land Trust includes at least one member who is a resident of Orinda. The Land Trust formation documents, **proposed** Board **members,** and staff shall be submitted to the City for review and approval by the Planning Director at the same time as they are submitted, as required by the Resource Agency Permits, to the Resource Agencies.

25. No gates shall be allowed along Gateway Boulevard or any private street within the Project, excluding the EVAs connecting Gateway Boulevard with Edgewood Road and Brookside Road.

26. All pedestrian paths shall link to roads or other pedestrian paths.

27. At such time as Caltrans approves construction of the proposed bicycle path adjacent to Highway 24 connecting the Project with Downtown Orinda ("Caltrans Bike Path"), OGLLC shall submit any necessary application to the City for approval of construction of a trail connecting the public trail system on the Project Site to the Caltrans Bike Path. No later than 45 days following completion of the Caltrans Bike Path, OGLLC shall dedicate a permanent trail easement and complete installation of all such trail improvements. The Planning Director may, upon request, extend the deadline for completion of the trail improvements.

28. OGLLC shall provide appropriate signage and lighting to guide Project residents and the public from the private roads and driveways to the recreational trails within the Project. Details of signage and lighting shall be included in the FDP(s) and Tentative Map(s), subject to Planning Commission review and approval.

29. OGLLC shall provide adequate landscaping, emphasizing native plants and irrigation, in all open space areas including the community playfields, pocket

parks, rosewalks, landscaped open space areas and the area inside the cul-de-sac turnarounds. All landscaping and irrigation details shall be submitted to the City for review and approval at the appropriate stage of the development process, as determined by the Planning Director.

30. **Reserved.**

31. The amount of hardscape within the building envelope on each lot shall be minimized and the use of landscaping and pervious surfaces shall be used to the greatest extent feasible to provide landscape screening and reduce the amount of stormwater runoff. **Specifically, the amount of hardscape in the courtyards of each home shall be minimized and the amount of landscaping shall be maximized wherever possible. Courtyards shall be carefully designed, using natural materials that project a semi-rural and rustic character.**

32. Prior to submittal of the FDP(s) and Tentative Map(s), OGLLC shall submit, for review and approval by the Planning Director, a phasing plan to minimize disruption to residents of the Project.

33. The Tentative Map(s) shall be subject to the submittal requirements in the Orinda Municipal Code. The FDP(s) shall contain the information that the City deems necessary to supplement the Tentative Map(s) and the CDP, as required within DA Appendix B. This may include, but not be limited to, additional design guidelines, landscaping details and other supplementary information related to the Project.

34. OGLLC shall submit to the City for approval an application for Design Review of the homes, including building architecture and landscaping consistent with the CDP, DA text, these Conditions and the FDP(s). Design Review **shall be conducted** for phases (clusters) of homes, not individual homes, in order to review the overall design context of groups of adjacent homes. Clusters shall include all lots with contiguous property lines, except any custom home lots.

35. **Reserved.**

36. OGLLC shall install trees and a temporary irrigation system in the rear transition area along the rosewalks and other improved open space areas, after grading and prior to construction of adjacent homes, to the extent that such installation is feasible and does not conflict with the proposed construction activities in the surrounding area.

37. As soon as the grading and infrastructure are complete, OGLLC shall install improved landscaping and irrigation along Gateway Boulevard and all streets that are not fronted with homes.

38. **Orinda Gateway LLC shall fund the cost of a study to determine the impact, if any, on the Moraga-Orinda Fire District (MOFD) of increased fire, rescue and emergency medical service demands resulting from the Project, and, in particular, the impact resulting from the Project being outside of the 1.5 mile District standard for maximum distance from a fire station. The study shall identify mitigation measures for this impact, if any, and determine the cost to implement the identified mitigation measures.**

    A. **The procedure for funding and undertaking this study is as follows:**
        1. **The scope of the study shall be determined by the City of Orinda in consultation with MOFD.**
        2. **The selection of a consultant shall be made by the City of Orinda in consultation with MOFD.**
        3. **The consultant shall be directed to use current modeling data and state-of-the-art modeling tools. The consultant shall consult MOFD in identifying such modeling data and modeling tools.**
        4. **The City of Orinda will present a draft of the consultant's conclusions to OGLLC and MOFD for their review and comment prior to issuance of a final report.**
        5. **OGLLC shall deposit 130% of the estimated cost of the study within 15 days of a request by the City of Orinda to provide funding for the study.**
        6. **The City shall use its best efforts to initiate the study as soon as possible and shall complete the study prior to the issuance of grading permits for the Project.**
        7. **In determining the impact on MOFD of increased service demands resulting from the Project, and in recommending mitigation for these impacts, the study shall address, at a minimum:**
            a. **projected development of the Project Site pursuant to the Development Agreement;**
            b. **existing and projected traffic conditions on California Highway 24 and Moraga Way;**
            c. **water supply available to the Fire District;**
            d. **population data for the Fire District;**
            e. **emergency response history within the Fire District;**
            f. **number of personnel and their location within the Fire District;**
            g. **alternate apparatus location scenarios and staffing;**
            h. **response performance at specific locations;**
            i. **apparatus run-loads and availability under new scene distribution of incidents by time of day and day of week;**

j. impacts of increased workloads from the Project on response performance of apparatus and personnel;
k. current response times in the service area of the District;
l. existing identified service deficiencies in the MOFD;
m. projected future property tax revenues to be generated from the Project relative to the service cost impact on MOFD;
n. mitigation measures necessary to provide services to the Project and the Project's fair share of the cost of providing such services;
o. other foreseeable development projects in MOFD's service area, the impact these projects will have on the provision of District services, and the financial contribution that these projects should make to the provision of District services; and
p. whether the mitigation measures identified by the study as appropriately applicable to the Project will be adequately funded by property tax revenues to be generated from the Project.

8. If the study concludes that MOFD will suffer a short term funding deficiency during Project build-out resulting from the difference between MOFD's up front cost to implement mitigation measures and the property tax revenues to be generated from the Project during build-out, the study shall propose financing alternatives to address this short term funding deficiency. Upon the City's acceptance of the study as complete, the study's proposed financing alternatives to address any short term funding deficiency shall be presented to the City Council and the City Council will adopt its preferred alternative.

B. In addition to funding the cost of the study, OGLLC agrees to fund any mitigation measures that are identified in the study as appropriately applicable to the Project that will not be adequately funded by the property tax revenues to be generated from the Project. Any such payment for mitigation measures shall be made to the City of Orinda prior to issuance of the first building permit for the Project and shall be transferred by the City to MOFD solely to fund the implementation of mitigation measures.

C. OGLLC agrees that it shall participate in the fair and appropriate financing alternative selected by the City Council, based on the study, to provide funds to meet any short term funding deficiency resulting from the need to implement mitigation measures identified in the study.

D. The maximum funding to be provided by OGLLC pursuant to Sections B and C, above, shall be $3,500,000.

39. The relocation of the existing 115 kV power lines is expected to take place prior to mass grading of the Project. The City shall process any applications for grading and tree removal permits that are required for relocation of these power lines (including, but not limited to, permits for access roads and staging and construction areas), but only after OGLLC has submitted to the City a complete application for a Tentative Map for the remainder of the Project site. If, within two years following the City's issuance of grading and tree removal permits for relocation of the power lines, OGLLC has not commenced installation of the rerouted power lines, OGLLC shall restore, including revegetating, the access roads and staging and construction areas for the rerouted power lines.

40. OGLLC shall minimize, to the maximum extent feasible, the use of sewer ejection pumps for homes. In considering the use of sewer laterals, rather than ejection pumps, the Planning Commission shall take into account the overall effect on the landscape plan, including aesthetics and privacy screening.

41. OGLLC shall review the impacts to the Sensitive Tree clusters shown on Figures B.14h, B.14k, and B.14n and shall preserve, and avoid any impacts to these Sensitive Trees, to the maximum extent feasible. The use of small retaining walls around the driplines of tree clusters or individual trees may be considered as a means of preserving trees in graded areas.

Exhibits to Conditions of Approval

A. Memo from Tonya Hoover dated August 9, 2004: Moraga-Orinda Fire District Conditions of Approval

B. 2005 Supplemental Mitigation Monitoring and Reporting Plan (attached separately)