Lilac Hills Ranch
FIRE PROTECTION PLAN

GPA 3800-12-001; SP 3810-12-001; TM 5571 RPL4; TM 5572 RPL4
REZ 3600-12-003; MUP 3300-12-005; STP 3500-12-018

Deer Springs Fire Protection District
County of San Diego

Applicant: Accretive Investments, Inc.
ATTN: Jon Rilling
12275 El Camino Real, Suite 110
San Diego, CA 92130

C. Douglas Pumphrey
Senior Wildland Fire Associate
***FIREWISE* 2000, Inc.**
951-315-2030
dp.firewise2000@sbcglobal.net

David C. Bacon, President
***FIREWISE* 2000, Inc.**
26337 Sky Drive
Escondido, CA 92026
Telephone: 760-745-3947
Fax: 760-557-2301
firewise2000@sbcglobal.net

Signed: _____
for DAVID C. BACON

Date: May 12, 2014

June 6, 2014

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EXECUTIVE SUMMARY

This Fire Protection Plan (FPP) for the proposed Lilac Hills Ranch development has been prepared to evaluate the level of potential fire hazard affecting or resulting from the proposed project and the methods and measures proposed to minimize that hazard. The FPP identifies and prioritizes the measures necessary to adequately reduce the fire risks of the project. The FPP also evaluated the consistency of the proposed project with applicable fire protection regulations. The FPP has considered the property location, topography, geology, combustible vegetation (fuel types), climatic conditions, and fire history. It considers water supply, access, structure ignitability, fire resistive building materials for residential structures, technical guidance for protection of commercial structures, fire protection systems and equipment, impacts to existing emergency services, defensible space, and vegetation management.

The proposed Lilac Hills Ranch community is a 608 acre mixed use pedestrian oriented sustainable community, comprised of 59 contiguous properties within the northern unincorporated area of San Diego County approximately one quarter mile from the Interstate 15 corridor on the east side with freeway access off the Old Hwy 395 interchange. The project site is located to the south and west of West Lilac Road with State Route 76 to the north, downtown Valley Center 10 miles to the east, downtown Escondido 16 miles to the south, and Interstate 15 and Old Highway 395 to the west (see Figure 1). The Lilac Hills Ranch project is located entirely in the Escondido zip code (92026) and primarily within the westernmost portion of the Valley Center Community Planning Area (CPA), although a small portion is within the Bonsall Subregional Plan Area. From the northwest project corner, West Lilac Road serves as the northern and eastern boundary of the project site, while Circle R Drive is less than a 1/2 mile south of the project Boundary. From the southwest project corner, the western boundary of the project runs along Shirey Road and extends to Standel Lane, which serves as the northwestern project boundary. The project is within Township 10 South, Range 3 West, Section 24, and Township 10 South, Range 2 West, Sections 19 and 30, on the USGS 7.5' Pala and Bonsall quadrangles.

The proposed Specific Plan includes a residential component consisting of 1,746 homes with an overall density of less than 2.9 dwelling units per acre (du/ac). This project is planned to be constructed in five phases. Agreements for emergency service are based on phasing, occupied units, and call volume demand thresholds. Planned phasing and land use categories are presented in APPENDIX 'I'. The proposed Specific Plan includes varying lot sizes, a neighborhood-serving commercial village center, an active park/village green, retail uses, and a school site. Also, proposed on-site are a recycling and buy back facility; a water reclamation facility; active orchards and other supporting infrastructure. A rezone is proposed to implement the Specific Plan by changing the existing Use Regulations, Development Regulations, and Special Residential Land Use Designation and the A70 (Limited Agricultural) Zoning. The project

would also include the submittal of a Master Tentative Map, Implementing Tentative Map, Site Plan (s) and/or Major Use Permit(s).

The Deer Springs Fire Protection District (DSFPD) encompasses the entire site within its boundaries, and the applicant will work with the nearby fire agencies, including DSFPD and CAL FIRE to provide fire service for the project. This FPP must be submitted to the Deer Springs Fire Protection District (DSFPD) and the San Diego County Department of Planning and Land Use (DPLU) for review and comments. It provides a proposed menu of fire protection requirements which would be imposed when each lot within a phase is developed, and recommends standards that will guide detailed design for each phase of development and each lot within each phase.

This plan is consistent with DSFPD's Ordinance No. 2010-01 (District Standards) and County guidance and referenced material in the 2011 San Diego County Consolidated Fire Code~~,~~ (County Consolidated Fire Code), Guidelines for Determining Significance, and applicable State of California requirements. All detailed phase plans shall comply with the requirements of the County Consolidated Fire and Building Codes. The Valley Center Municipal Water District will serve the water needs for this general commercial and residential project. This water supply will meet the requirements of the ~~San Diego~~ County Consolidated Fire Code and the County of San Diego Fire Code (Fire Code) for a commercial/business/residential development.

In addition, this FPP provides fuel modification requirements to mitigate the exposure of people or structures to a significant risk of loss, injury or death from wildland fires. Fuel modification will be achieved by removing, clearing, or modifying combustible vegetation and other flammable materials from the edge outward from all structures in accordance with the County Consolidated Fire Code and with approval of DSFPD. Where the standard 100 feet of fuel modification cannot be met entirely within the boundary of the project or where adjacent to preserved interior native fuels, alternative measures that achieve the same level of protection as fuel modification are proposed, ~~consistent with the~~as allowed underthe fire code~~,~~,, including, but not limited to: 1) utilization of adjacent irrigated and managed agricultural crops (orchards, commercial flower fields, etc.) as a dual-purpose fuel modification/crop production area; 2) customized fuel modification zones based on site-specific fire behavior modeling and fire environment analysis (i.e., areas with flat terrain, grass or other light fuels, justify reduced fuel modification areas); 3) enhanced ignition-resistant construction methods and the use of other non-combustible features, i.e., parking lots, sidewalks, concrete patios, decorative rock, natural boulders on-site, and similar landscape features; and 4) fire-barrier walls where structures face off-site native flammable fuels along the northeast, northwest, and southwest boundary.

Ignition-resistant construction required by Chapter 7A of the Building Code for all structures will provide significant protection in this very high fire hazard zone. Ignition-resistant construction requirements provide critical structure improvements for surviving a worst case

scenario fire. Also, the FPP requires that ignition-resistant construction would apply to mitigate the ignitability of all future proposed structures and projections (exterior balconies, carports, decks, patio covers, unenclosed roofs and floors).

Lastly, plant species used in the landscape must follow those listed in the approved plant list in APPENDIX 'A' – San Diego County Approved Plant List For High Fire Hazard Areas. Highly flammable, non-fire resistive vegetation will be removed and prohibited from being replanted within the fuel modification areas. Three specific non-fire resistive plants that will not be permitted to grow in the Fuel Management Zones, even as specimen plants, because of their flammability, are as follows:

- California sagebrush, *Artemisia californica;*
- Flat-topped buckwheat, *Eriogonum fasciculatum*; and
- Black sage, *Salvia mellifera.*

Lilac Hills Ranch Project
FIRE PROTECTION PLAN
~~for the~~
~~Environmental Impact Report~~
~~CASE NUMBER: 3992-10-025 (MPA); KIVA PROJECT: 09-0112513~~

GPA 3800-12-001; SP 3810-12-001; TM5571 RPL4;TM 5572 RPL4
REZ 3600-12-003; MUP 3300-12-005; STP 3500-12-018

1.0 INTRODUCTION

This Fire Protection Plan (FPP) has been prepared for the Lilac Hills Ranch Community (hereafter referred to as Community). The purpose of the FPP is to evaluate the Project location's potential fire hazard and the potential fire risk resulting from the proposed project. Further, this FPP details the methods proposed to minimize potential fire risk. This FPP also evaluated the consistency of the proposed project with applicable fire protection regulations. As part of the assessment, the plan has considered the property location, topography, geology, combustible vegetation (fuel types), climatic conditions, and fire history. The plan addresses water supply, access (including secondary/emergency access where applicable), structural ignitability and ignition resistive building features, fire protection systems and equipment, impacts to existing emergency services, defensible space, and vegetation management. The plan identifies areas for hazardous fuel reduction treatments and recommends the types and methods of such treatment. The plan recommends measures that property owners will take to reduce the probability of ignition of structures throughout the development addressed by this plan.

An initial field visit was conducted on August 31, 2011, to evaluate lot layout, primary and secondary access road locations, hazardous fuels and topography. Additional field evaluations occurred by the project's fire protection planning team throughout 2011 and 2012 as necessary to collect information and familiarize with the site.

1.1 Project Location

The proposed Lilac Hills Ranch community is a 608 acre mixed use pedestrian oriented sustainable community, comprised of 59 contiguous properties within northern unincorporated San Diego County approximately one-quarter mile from the Interstate 15 corridor on the east side with freeway access off the Old Hwy 395 Interchange. The project site is located to the south and west of West Lilac Road with State Route 76 to the north, downtown Valley Center 10 miles to the east, downtown Escondido 16 miles to the south, and Interstate 15 and Old Highway 395 to the west (see Figure 1). The Lilac Hills Ranch project is located entirely in the Escondido zip code (92026) and primarily within the westernmost portion of the Valley Center Community Planning Area (CPA), although a small portion is within the Bonsall Subregional Plan Area. From the northwest project corner, West Lilac Road serves as the northern and eastern boundary of the project site, while Circle R Drive is less than a one-half mile south of the project Boundary. From the southwest project

corner, the western boundary of the project runs along Shirey Road and extends to Standel Lane, which serves as the northwestern project boundary. The project is within Township 10 South, Range 3 West, Section 24, and Township 10 South, Range 2 West, Sections 19 and 30, on the USGS 7.5' Pala and Bonsall quadrangles.

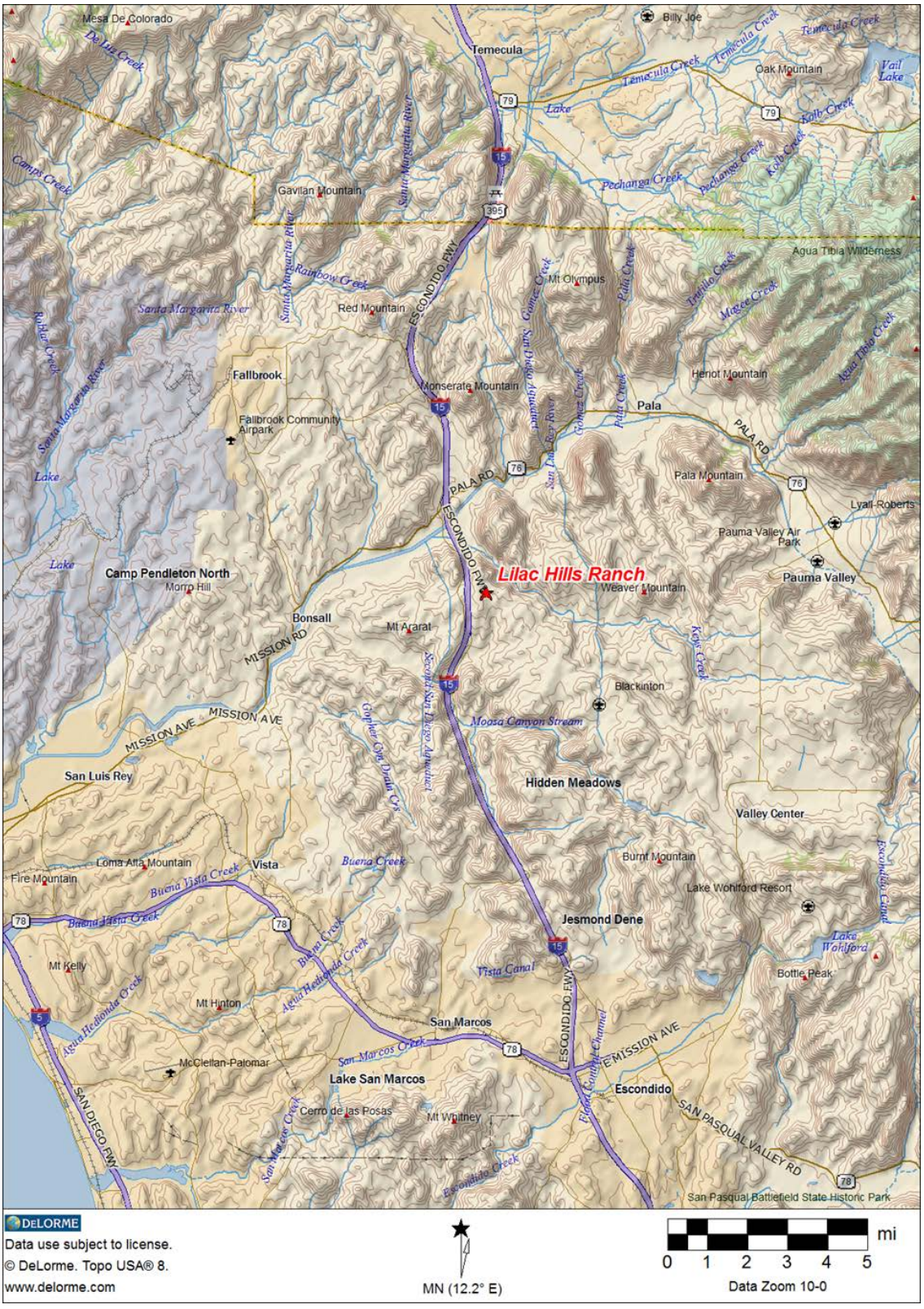


Figure 1~~1~~ - Vicinity Map

1.2 Project Description

The proposed Specific Plan includes a residential component consisting of 1,746 homes with an overall density of ~~less than~~approximately 2.9 dwelling units per acre (du/ac). However, the project is planned to be constructed in five phases. Thus, ~~agreements for~~the delivery of emergency service ~~are~~is based on phasing, occupied units, and/or call volume demand thresholds. Planned phasing and Roadway Circulation are presented in APPENDIX 'G' – Phasing Exhibit and Roadway Circulation.

Phase 1 would include construction of approximately 352 dwelling units along with parks and roadways. Completion of Phase 1 would result in an estimated ~~1,045~~995 persons living in the community. Phase 2 includes 466 dwelling units along with commercial, retail, office, civic center, information center and a 50-room Country Inn. Estimated population increase for residents is 1,~~384persons~~384 persons. Phase 3 would include 460 dwelling units and a recreational facility, commercial, water reclamation, and a school. Estimated population of residents is 1,~~366~~352 persons. Phase 4 includes construction of 171 dwelling units, single family senior, group care, and a senior center. Estimated resident population is ~~508~~818 persons. Phase 5 includes 297 single family senior housing dwelling units with an estimated population of ~~882~~549 persons. Total estimated number of residents is 5,098 persons.

The highest density is located in the Town Center (Phase 2). The Specific Plan includes a Town Center and two smaller Neighborhood Centers permitting 90,000 square feet of retail, commercial and office uses, a 174-acre Senior Citizen neighborhood component (Phases 4 and 5) which includes: market rate residential housing (a total of 468 du included in the 1,746 du above), and Group Residential and Group Care living facilities (Phase 4).

The Community also includes a park system with one public park and multiple private parks, public trails, and a K-8 school site. Also, proposed within the Community are a Recycling Facility; a Water Reclamation Facility; and other supporting infrastructure (varying phases). The Community's open space system is proposed to retain some of the existing citrus and avocado groves within the disturbed areas, along with ~~103.6~~104.1 acres of sensitive biological/wetland habitat.

The project proposes a ~~14.4~~20.6-acre mixed-use commercial Town Center, near the center of the Community (Phase 2). The Community also proposes two Neighborhood Centers and a 12-acre school site is proposed within the Specific Plan project area (Phase 3). A Recycling Facility will be provided on-site per Section 6970-b of the Zoning Ordinance and an on-site ~~Waster~~Water Reclamation Facility are planned (Phase 3).

The Lilac Hills Ranch Specific Plan Map shows the Community divided into ~~46~~multiple Planning Areas (excluding areas designated for open space, roads, common areas, slopes, etc) with ~~18~~19 types of land uses ranging from Single Family Detached to

~~Manufacturred~~Manufactured Slopes. The Phasing Map (APPENDIX 'G' - Phasing Plan with Roadway Circulation) shows how the Community has been divided into five phases with Phase 1 at the north and Phase 5 in the southeast corner of the Community. The ~~Table below~~following table shows the Land Use Summary by Phase provides a detailed breakdown by Phase, for each of the land use types, including acreage numbers and, where appropriate, number of dwelling units.

1.3 General Land Use Designations, Land Uses and Site Improvements.

The project is located entirely within the Deer Springs Fire Protection District (DSFPD) and DSFPD ~~will be responsible for providing fire service to~~is the ~~project.~~Fire Authority Having Jurisdiction (FAHJ). This FPP was submitted to DSFPD and the San Diego County Department of Planning and Land Use (DPLU), in accordance with the San Diego County requirements. The FPP describes the requirements and standards that will be imposed on the development. This plan is consistent with County guidance and referenced material in the 2011 San Diego County Consolidated Fire Code, the most recent Guidelines for Determining Significance (2010) and applicable State of California requirements. All detailed phase plans shall comply with the then-current requirements of the County Fire and Building Codes at the time they are submitted. Detailed site plans for each lot shall reference and include the recommendations and standards in this plan as may be modified to address the actual proposed development. All detailed site plans shall comply with the then-current requirements of the District and County Fire and Building Codes at the time they are submitted.

The Community is located entirely within the boundaries of the Valley Center Municipal Water District (VCMWD). Imported water and sewer service would be provided by the Valley Center Municipal Water District. In order to provide sewer service, the project may complete one of the following: construct a new water reclamation facility on-site, or use the existing Lower Moosa Canyon Water Reclamation Facility (P73-018) located south of the project site off Circle R ~~Lane~~Drive. The extension of sewer and water utilities will be required by the project.

1.4 Environmental Setting

The project vicinity includes larger parcel (1 acre and larger) single family residences in a rural/semi-rural area dominated by small agricultural operations. The area's native fuel beds have been largely converted to irrigated agriculture with remnant native fuels in a patchy mosaic across the landscape. In general terms, the Community and adjoining properties are similar in topography, and dominated by irrigated and maintained agricultural vegetation, including floricultural species, avocado, citrus, and small amounts of other agricultural resources, orchards and small riparian woodland. The area is best categorized as a wildland urban intermix (structures are intermixed with wildland fuels) where no consistent interface is present. Most of

the area includes landscapes that support low to highly flammable vegetation. The following sections discuss the surrounding land use, topography, climate, vegetation, and fire history.

TABLE "3"
SPECIFIC PLAN - LANDUSE DISTRIBUTION

PHASE 1			
AREA	LAND USE	ACRES	DU'S
SFD1	SINGLE FAMILY DETACHED	31.2	175
SFD2	SINGLE FAMILY DETACHED	14.4	89
SFD3	SINGLE FAMILY DETACHED	15.1	88
P1	PARK - HOA	1.6	N/A
P2	PARK - HOA	0.5	N/A
P3	PARK - HOA	0.3	N/A
P4	PARK - HOA	1.9	N/A
P5	PARK - HOA	0.2	N/A
OS1	BIOLOGICAL OPEN SPACE	1.4	N/A
OS2	BIOLOGICAL OPEN SPACE	3.2	N/A
OS3	BIOLOGICAL OPEN SPACE	1.3	N/A
OS4	BIOLOGICAL OPEN SPACE	0.7	N/A
OS5	BIOLOGICAL OPEN SPACE	0.1	N/A
OS6	BIOLOGICAL OPEN SPACE	8.9	N/A
	NON-CIRCULATING ROAD	13.7	N/A
	CIRCULATING ROAD	7.7	N/A
	COMMON AREAS/AG	6.2	N/A
	MANUFACTURED SLOPES	13.1	N/A
SUBTOTAL		121.5	352

PHASE 2			
AREA	LAND USE	ACRES	DU'S
SFD4	SINGLE FAMILY DETACHED	18.3	196
SFA1	SINGLE FAMILY ATTACHED	3.0	47
SFA2	SINGLE FAMILY ATTACHED	0.6	12
C1	COMMERCIAL/MIXED USE	10.1	121
C2	COMMERCIAL/MIXED USE	2.3	46
C3	COMMERCIAL/MIXED USE	2.0	44
RF	RF/TRAILHEAD	0.6	N/A
C4	COMMERICAL/MIXED USE	2.0	N/A
P6	PARK - HOA	0.8	N/A
OS7	BIOLOGICAL OPEN SPACE	9.0	N/A
OS9	BIOLOGICAL OPEN SPACE	3.6	N/A
	NON-CIRCULATING ROAD	8.0	N/A
	CIRCULATING ROAD	13.6	N/A
	COMMON AREAS/AG	0.8	N/A
	MANUFACTURED SLOPES	14.9	N/A
SUBTOTAL		89.6	466

PHASE 3			
AREA	LAND USE	ACRES	DU'S
SFD5	SINGLE FAMILY DETACHED	16.1	95
SFD6	SINGLE FAMILY DETACHED	51.0	242
SFD7	SINGLE FAMILY DETACHED	5.0	10
SFD8	SINGLE FAMILY DETACHED	5.8	8
SFA3	SINGLE FAMILY ATTACHED	4.3	105
C5	COMMERICAL/MIXED USE	0.5	0
WR	WATER RECLAIMATION	2.4	N/A
DB	DETENTION BASIN	5.1	N/A
WWS	WET WEATHER STORAGE	8.1	N/A
S	SCHOOL	12.0	N/A
CPF	COMMUNITY PURPOSE FACILITY	2.0	N/A
P7	PARK - DEDICATED TO COUNTY	13.5	N/A
OS8	BIOLOGICAL OPEN SPACE	44.2	N/A
OS10	BIOLOGICAL OPEN SPACE	4.8	N/A
	NON-CIRCULATING ROAD	8.2	N/A
	CIRCULATING ROAD	8.7	N/A
	COMMON AREAS/AG	3.3	N/A
	MANUFACTURED SLOPES	28.0	N/A
SUBTOTAL		223.0	460

PHASE 2	SPECIALTY COMMERCIAL	55,000	sq. ft.
	OFFICE	25,000	sq. ft.
	COUNTRY INN	50	units

PHASE 3	COMMUNITY PURPOSE FACILITY	40,000	sq. ft.
	SPECIALTY COMMERCIAL	4,000	sq. ft.
	OFFICE	3,500	sq. ft.

PHASE 4	GROUP RESIDENTIAL/CARE	200	units
PHASE 5	SPECIALTY COMMERCIAL	2,500	sq. ft.

PHASE 4			
AREA	LAND USE	ACRES	DU'S
SFS1	SINGLE FAMILY - SENIOR	12.1	81
SFS2	SINGLE FAMILY - SENIOR	17.8	90
GR	GROUP RESIDENTIAL/CARE	6.5	N/A
DB	DETENTION BASIN	1.0	N/A
P8	Park - HOA SENIOR CENTER	3.3	N/A
P9	PARK - HOA	0.4	N/A
OS11	BIOLOGICAL OPEN SPACE	5.3	N/A
OS12	BIOLOGICAL OPEN SPACE	4.3	N/A
	NON-CIRCULATING ROAD	2.8	N/A
	CIRCULATING ROAD	3.0	N/A
	COMMON AREAS/AG	1.3	N/A
	MANUFACTURED SLOPES	3.7	N/A
	SUBTOTAL	61.5	171

PHASE 5			
AREA	LAND USE	ACRES	DU'S
SFS3	SINGLE FAMILY - SENIOR	10.6	72
SFS4	SINGLE FAMILY - SENIOR	6.9	38
SFS5	SINGLE FAMILY - SENIOR	16.0	128
SFS6	SINGLE FAMILY - SENIOR	13.5	59
C6	COMMERICAL/MIXED USE	0.4	0
I	INSTITUTIONAL	10.0	N/A
DB	DETENTION BASIN	1.8	N/A
P10	PARK - HOA	0.1	N/A
P11	PARK - HOA	1.0	N/A
OS13	BIOLOGICAL OPEN SPACE	10.8	N/A
OS14	BIOLOGICAL OPEN SPACE	0.3	N/A
OS15	BIOLOGICAL OPEN SPACE	6.2	N/A
	NON-CIRCULATING ROAD	13.0	N/A
	CIRCULATING ROAD	4.6	N/A
	COMMON AREAS/AG	8.7	N/A
	MANUFACTURED SLOPES	8.5	N/A
	SUBTOTAL	112.4	297

OVERALL			
AREA	LAND USE	ACRES	DU'S
SFD	SINGLE FAMILY DETACHED	156.9	903
SFS	SINGLE FAMILY - SENIOR	76.9	468
SFA	SINGLE FAMILY ATTACHED	7.9	164
C	COMMERICAL/MIXED USE	17.3	211
WRF	WATER RECLAIMATION	2.4	N/A
RF	RECYCLE FACIL/TRAIL HEAD	0.6	N/A
DB	DETENTION BASIN	7.9	N/A
WWS	WET WEATHER STORAGE	8.1	N/A
S	SCHOOL	12.0	N/A
CPF	COMMUNITY PURPOSE FACILITY	2.0	N/A
GR	GROUP RESIDENTIAL/CARE	6.5	N/A
I	INSTITUTIONAL	10.0	N/A
P	PARK - HOA	10.1	N/A
P	PARK - DEDICATED TO COUNTY	13.5	N/A
OS	BIOLOGICAL OPEN SPACE	104.1	N/A
	NON-CIRCULATING ROAD	45.70	N/A
	CIRCULATING ROAD	37.6	N/A
	COMMON AREAS/AG	20.3	N/A
	MANUFACTURED SLOPES	68.2	N/A
TOTAL		608	1746

EXISTING DWELLING UNITS TO REMAIN

128-280-27	9151 W. Lilac Rd.
128-290-07	9153 W. Lilac Rd.
128-440-02	32444 Birdsong Dr
128-290-74	32236 Shirey Rd.
128-280-42	9007 West Lilac Road
128-290-69	9419 West Lilac Road
128-440-14	9553 Lilac Walk
128-440-06	9383 West Lilac Road
128-280-37	9307 West Lilac Road
128-440-05	9381 West Lilac Road
128-440-22	9435 West Lilac Road
128-280-10	9167 West Lilac Road
127-072-38	8709 West Lilac Road
128-290-09	9431 West Lilac Road
129-010-68	9883 West Lilac Road
129-300-09	00000 Rodriguez Road

1.4.1 Topography and Uses

The topography of the area consists of a series of rolling hills dissected by drainage courses and a valley bottom that drain primarily to the south and southwest. Elevations across the site range from 960 feet MSL at the highest to 590 feet MSL at the lowest. The drainage courses on the site convey storm water and urban/agricultural runoff. Both intermittent and ephemeral drainages occur on the site.

The major drainage courses (wetlands) and steeper slopes will be placed into open space easements with each phase of development. The largest of the drainage courses are located primarily along the western boundary and involve phases 1, 2 and 3 of the development. Two other major drainages are within Phases 4, and 5. See APPENDIX 'I' – Specific Plan-Site Plan for the location of the proposed open space on-site. Terrain affects fire behavior and the types of fire protection features that will be required. For example, the steeper slope areas allow faster combustion of fuel in the upslope direction. As a general rule with other factors constant, it can be assumed that the steeper slopes on-site would contribute to faster fire speed.

1.4.2 Climate

The County is divided into five climate zones from the coast to the desert: Maritime, Coastal, Transitional, Interior, and Desert (Climate Zones in San Diego County, Guidelines for Determining Significance, Wildland Fire and Fire Protection). These climate zones are determined by several factors: proximity to the ocean, terrain, elevation, and latitude. Southern California has a Mediterranean climate, characterized by mild, sometimes wet winters and warm, very dry summers. The Mediterranean climate includes all coastal areas, valleys and foot hills. Annual precipitation amounts increase gradually from the coast to the mountain crests, then drop dramatically into the deserts. Most precipitation comes from winter storms between November and March. The Lilac Hills Ranch site is located in the transitional climate zone. The Valley Center RAWS station is the nearest RAWS station within the Transitional climate zone.

The following chart represents the typical weather of a hot summer day in the Transitional Climate Zone, Santa Ana and "peak" (or worst case fire weather/climate conditions) elements for this Fire Protection Plan:

Period	Temperature	Relative Humidity	Sustained Wind Speed	Burning Index (99%)
Summer	90-109°F	10-14%	19 mph	119
Santa Ana	90-109°F	5-9%	28 mph	145
Peak	90-109°F	5-9%	41 mph	-

The BehavePlus 4.0.0 Fire Modeling Program (to be discussed later in this plan) utilizes fuel moisture levels in both live and dead vegetation, projected wind, topography and vegetation type to determine fire behavior. Temperature is not an input. Large fires may occur at much lower temperatures than shown above. Relative humidity of less than 5 percent may also occur.

The Burning Index listed above is an indicator of the relative difficulty of fire control and is part of the National Fire Danger Rating Program. The higher the number, the more intense and severe a wildfire would be burning under the weather conditions described.

Mean precipitation for the Lilac Hills Ranch site is 11.38 inches per year and the mean average air temperature for the site for a year is approximately 63 degrees. The mean maximum wind gusts are 41 mph, with gusts of 100 mph recorded during the 2007 Rice Fire. Wind gusts, precipitation and temperature, particularly in a regional context, will significantly impact wildland fire.

The most critical fire weather wind pattern in the project area would be an off-shore wind from the north/northeast, typically referred to as a Santa Ana wind. Such wind conditions are usually associated with strong (> 60-MPH), hot, dry winds with very low (<15%) relative humidity. Santa Ana winds are caused by high-pressure weather systems and can occur any time of the year. However, they generally occur in the late fall (September through November). This is also when non-irrigated vegetation is at its lowest moisture content.

The typical prevailing summer time wind pattern is out of the south or southwest and normally is of a much lower velocity (5-19 MPH with occasional gusts to 30-MPH). It is associated with higher relative humidity readings (> 30% and frequently more than 60%) due to a moist air on-shore flow from the ocean.

All other (northwest, south, west) wind directions may be occasionally strong and gusty. However, they are generally associated with cooler, moist air and often have higher relative humidity (> 40%). They are considered a serious wildland fire weather condition when wind speeds reach > 20 MPH.

1.4.3 Fire History

This general area has a history of burning from wildland fires, as does most of the County. A fire history map was created by utilizing the California Fire Planning and Mapping Tools, available from the California Fire Alliance web site at http://cafirealliance.org/ (See Figure 3). This map only contains large (100+ acres) wildfires unless there were unusual circumstances. This information helps determine the frequency of wildfire and the likely vegetation cover during such events. For fire behavior planning purposes, climax vegetation (Fuel Model SCAL18 & FM sh7) is utilized for worst case scenarios. ***FIREWISE* 2000, Inc.** did not find that any large fires burned the project area in the last 50 years. The data indicates that in the last 50 years, there have

been several large fires around the project site to the north, east and south (see Figure 3). For example, the Rice Fire of 2007 burned 9,472 acres during a worst case wildfire scenario.

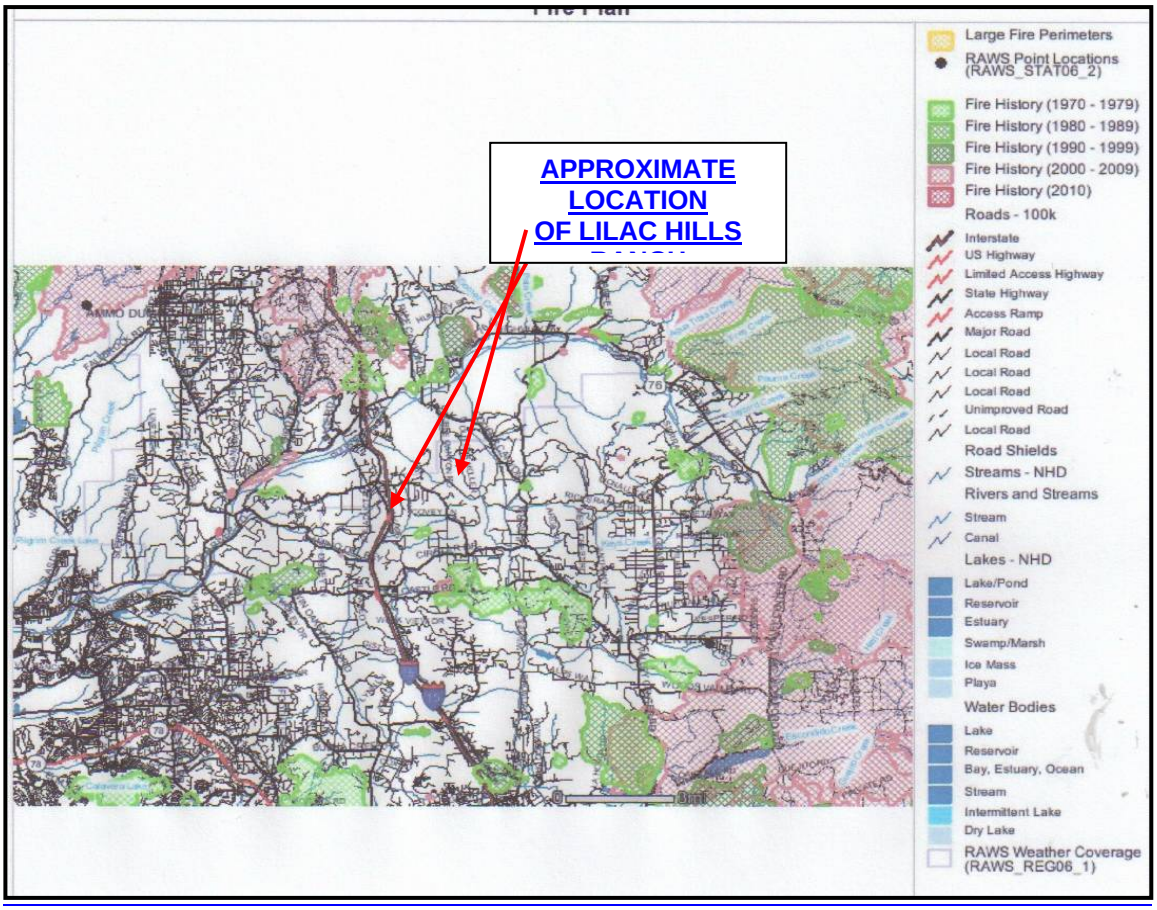


Figure 2 - Fire History Map

The wind factor is a key to the spread of wildfires in southern California. Embers from fires driven by high winds (Santa Ana winds) can start new spot fires up to 1.5 miles away from the 'front' of the original fire. The maximum distance of '1.5 miles' is the canonical wisdom; it apparently is larger in some cases. A home on Queenston Drive in Escondido burned 22 October 2007 when an ember from 2 miles away landed on its wood shake roof. This is a minimum distance, since the fire never burned closer than two miles to this house (San Diego Union Tribune, 1 November 2007, NI-1). Spot fires spread in the direction of the wind, and in turn can start new spot fires in whatever direction the wind is blowing.

In summary, any wind or topography driven wildfire burning under a northeast (Santa Ana) wind pattern creates a very high wildland fire hazard, especially for wildland fires starting off-site north and northeast of the project. The primary threat during this scenario would be flying fire brands. In addition, a typical fire day with a southwest wind will create a high wildland fire

hazard. Fuel treatment and setback will all but eliminate direct fire impingement and radiant heat from around the perimeter of the structures. Strict building code standards will similarly minimize the likelihood that embers ignite the project's ignition resistant structures.

Fire ecology research has shown that the natural fire regime for the shrub lands and forests in San Diego County is one of frequent small fires and occasional large fires. However, over the last 100 years the natural fire process has changed due to fire suppression policies, the introduction of invasive plant species that burn readily (i.e., eucalyptus and palm trees), and the increasing human ignition sources from associated with building and living within the wildland-urban interface areas. Thus, fires may occur at any time and in most areas of San Diego County, are occurring at higher frequencies than historically. However, fire readiness and response capabilities have at least maintained pace if not exceeded this rate, as evidenced by CAL FIRE's 95% success rate at keeping wildfires under 10 acres in size.

2.0 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

This FPP evaluates the fire hazard of the area and its potential affect on the project as well as the potential increased hazard that may result from the proposed project. In addition, this FPP evaluates the methods proposed to minimize potential hazard. This FPP also evaluates the consistency of the proposed project with applicable fire protection regulations. As part of the assessment, the plan has considered the property location, topography, geology, combustible vegetation (fuel types), climatic conditions, and fire history. The plan addresses water supply, access (including secondary/emergency access where applicable), solar structural ignitability, protection systems and equipment, impacts to existing emergency services, and vegetation management.

The FPP will consider factors such as; the modification of fuels, fire access, water supply, the use of ignition-resistant construction to protect people and structures from exposure to wildfire events, and the fire service response capacity and response time. The FPP was prepared in accordance with the County of San Diego Guidelines for Determining Significance for Wildfire and Fire Protection.

2.1 People and Structures Exposure to Fire

This FPP evaluates the proposed community and its survivability in a worst case scenario of northeast winds with gusts of 60 MPH (Santa Ana winds) and 'rare event' 30-MPH southwest winds during a wildland wildfire event in the area. It also documents fuel modification requirements in combination with the non-combustible construction materials and other fire protections systems for the protection of life and property within this proposed community.

2.2 Fire Apparatus Access Roads

The primary fire apparatus access roads to the Lilac Hills Ranch project will be via two ingress/egress points to an upgraded~~, relocated West Lilac Road on the north side of the development. In addition,~~ West Lilac Road on the north side of the development. West Lilac Road connects to Old Highway 395 to the west of the Community and continues eastward and southward where it intersects with Circle R Drive. Each of these roads will be improved to Fire District Standards and the County Consolidated Fire Code, complying with travel lane width, grade, surface, radius, and other requirements.

~~access will be available from Covey Lane on the project's eastern boundary off of West Lilac Road. Project adjacent portions of West Lilac Road and the portions of Covey Lane from the project to West~~
~~Lilac Road will be improved to San Diego County Public Road Standards, complying with travel lane width, grade, surface, radius, and other requirements.~~

The interior project road circulation will be will also be constructed to ~~San Diego County Private Road~~the Fire District Standards and the County Consolidated Fire Code, which will provide unimpeded fire apparatus access throughout the project.

An ~~additionary~~additional emergency ingress/egress road is provided to/from the southern portion of the project via existing Mountain Ridge Road and Rodriguez Road. Mountain Ridge Road is accessed from Circle R ~~Road, and Rodriquez Road is accessed via Covey Lane. These roads will meet County Private road standards for fire apparatus access and will be gated. These ingress/egress roads and all the interior project road circulation will be constructed to San Diego County Private Road Standards and will provide unimpeded fire apparatus access throughout the project. Private Road Standards are similar to public road standards with few exceptions.~~ Drive, and Rodriguez Road is accessed via Covey Lane. All proposed roads are designed in accordance with the County of San Diego Consolidated Fire Code. All roads will meet or exceed the 28 feet driveway minimum horizontal radius with a minimum proposed horizontal radius of 100 feet. All proposed roads will meet or exceed the 20 percent allowable grade and meet or exceed the minimum paved width requirement of 24 feet (14 feet lanes on roads with medians). See APPENDIX "P" for road comparison matrix.

2.3 Water Supply

The Valley Center Municipal Water District has agreed to serve the water needs for this general commercial and residential project. Therefore, the water supply meets fire emergency water needs, including water sprinkler system (and meters) for all facilities on the project site. Hydrants will be installed for each Phase prior to the allowance of combustibles on the active project site.

2.4 Ignition Resistant Construction and Fire Protection Systems.

This FPP evaluates ignition-resistant construction related to protecting new structures from an approaching wildfire. These construction standards provide a high level of protection to structures built in the wildland/urban interface area when completed in combination with other fire protections systems within this proposed development.

3.0 ANTICIPATED FIRE BEHAVIOR IN THE VICINITY

As statutorily designated, fire severity is zoned as "Very High" Fire Severity for some portions of the project vicinity, and "Moderate" for the remainder. These designations indicate that there is not a consistent fuel bed and current land uses have interrupted and converted native fuels to lower flammability/intensity land uses. Several scenarios were evaluated to determine the potential fire behavior of a wildland fire that might occur in the vicinity of the Lilac Hills Ranch Project. Fire Behavior calculations were used to assist in the determination of suitable fuel modification requirements and adequate vegetation treatment and maintenance widths. The distances and requirements are delineated as Fuel Modification Zones (FMZ)

3.1 On-Site Vegetation

Historic. The historic vegetation on the majority of the proposed development boundaries includes Coastal sage scrub, Southern coast live oak riparian woodland and southern mixed chaparral. These vegetation types are characterized as high and very high load, dry climate brush. In these vegetation types, a high percentage of dead material is typical in mature stands. This is due to the effects of the local Mediterranean climate where warm wet winters promote new growth followed by long, hot and very dry summer seasons which significantly affect plant moisture. Occasionally, multi-year droughts cause significant parts of these plants to die back. All of these plants are adapted to the intense wildfires for species regeneration. The on-site, wildland fire threat is largely removed with development of the project and conversion of vegetative fuels to lower flammability urban development. The areas adjacent the developed areas are the primary focus of this modeling effort as these native and agricultural vegetated areas and their potential affect on the project can be mitigated with implementation of the required fuel modification and fire protection features outlined in this FPP.

For fire modeling purposes, these historic and dominant plant communities best characterize the predominant fuel types that would tend to result in fire spread and were used for conservative-based fire modeling purposes.

Photo 1 –Example of Native Vegetation in Project area

Existing. The existing condition is a result of disturbance from decades of agricultural activity. The primary agricultural activities found in the immediate area include orchards, vineyards, row crops, and nursery operations.

The Biological Resources Report for Lilac Hills Ranch by RECON Environmental states that existing vegetation on the site is a mosaic of native habitat patches and agricultural uses. Most native habitat occurs primarily along the drainage courses where riparian type communities (significantly invaded by non-native species) and on some of the steeper terrain on the western and southwestern portions of the Community where remnant native coastal sage scrub and/or chaparral persist. For fire modeling purposes, the historic and dominant plant communities are best characterized as coastal sage scrub (SCAL18) and southern mixed chaparral (sh7 FM – very heavy load, dry climate shrub).

A total of sixteen primary habitat types and vegetation communities were identified by the project's biological resources technical report. The largest areas of native habitat is southern mixed chaparral, with southern coast live oak riparian woodland, southern willow riparian woodland, and southern willow scrub occurring within the drainages. The developed areas consist primarily of scattered rural residences with ornamental landscaping. Roughly 75% of the property is mapped as agriculture, developed or disturbed.

The vegetation communities identified by the RECON survey identifies the vegetation on the project site at present. In an undisturbed environment, the historic native vegetative communities would predominately have been coastal sage scrub, southern coast live oak riparian woodland and mixed southern chaparral. Therefore, in the absence of ongoing manipulations, these vegetation communities would return over time. The anticipated exposure to natural fuels by the project will remain in the planned open space areas within and adjacent the development. These open space corridors will have the potential to result in fire spread, however, the project will restore some of the open space areas to remove flammable non-native species (peppers, eucalyptus, palms, arrundo, etc), will include higher fuel moistures due to drainage locations, and will include a maintenance agreement to remove dead and dying vegetation as well as non-native species that may establish over time. In addition, Fuel Management Zones (FMZs) supplemented by required fire protection features would create acceptable wildfire protection for all structures within this development.

In summary, wind or topography driven wildfires burning under a northeastern (Santa Ana) wind pattern from the north, northeast or east creates a moderate to high wildland fire hazard, especially for wildland fires starting north and/or east of the project site. Also, a "rare event" 30 MPH southwest wind will create a low to moderate wildland fire hazard. However, the vegetation on the north and eastern exposure of the development are lighter fuels and adjacent to small rural residential parcels and agricultural crops, resulting in reduced fire intensity and slower rates of spread. The worst case on-site fuel loading scenario is found in the northwest, west, and southwest exposure. These exposures are from planned fuel loads and steeper slopes. However, with the proposed fuel modification treatments, fire protection features, "*firewise*" landscaping, and the use of ignition resistive building construction standards, the wildfire threat will be mitigated to less than significant levels. As a result, the potential loss of any structure due to direct flame impingement, wind driven embers, or radiant heat around the perimeter of any planned inhabitable building is extremely low. Although this project is not considered a shelter-in-place community, and the state-adopted "Ready, Set, Go" policy for early evacuation will be thoroughly supported and promoted to all residents, visitors and guests, there will be opportunities for residents to safely remain in their homes or another on-site building/location should evacuation be considered too dangerous

3.2 Off-Site Vegetation

Historic. The historic vegetation communities listed as the dominant fuel loads would be similar to the historic on-site vegetation. In a wildland fire the native vegetation provides the fuel, which usually includes both living and dead vegetation. However, wildfire in the wildland urban intermix areas is spread through both native and non-native vegetation as well as other combustible objects, including older, vulnerable homes, outbuildings, and debris. Land uses and resulting vegetation on adjacent properties consist of similar agricultural uses as those found on the majority of the project site.

Existing. The off-site area surrounding the Lilac Hills Ranch presently consists of residential communities with agricultural crops (orchards, vineyards, row crops, and nursery operations), and interspersed islands of native vegetation.

Northern Boundary. There is a large area of native vegetation north of West Lilac Road located in the Draft MSCP Pre-Approved Mitigation Area, single family dwellings, orchards, and other agricultural activities. The fuel modification and hazard abatement associated with the existing single family dwellings, agricultural activities, and a County maintained road provide significant protection from wildfires along this boundary. The greatest risk from this exposure would be firebrands generated from the area of native vegetation and/or the fuels associated with the existing single family dwelling parcels to the north of West Lilac Road during a worst case scenario of late fire season northeast Santa Ana Winds. As previously mentioned, firebrands/embers can be carried a long distance (potentially one mile or more) by fire drafts or strong Santa Ana winds and may ignite the on-site open space fuels or other combustible materials that are receptive to burning.

Eastern Boundary. The vegetation on the eastern exposure of the development has much lighter fuels. Also, the eastern boundary of the development is adjacent to single family dwellings and with a large portion contiguous to roads and road easements, and existing agriculture crops and activities (orchards, commercial flower field and other agricultural activities). The road and managed and irrigated agriculture provides significant fuel modification that results in less ignition prone vegetation and reduced fire intensity and spread rates, resulting in sufficient mitigation from wildfires along this boundary exposure.

Southern Boundary. The exposure along the eastern side of the southern boundary is part of a narrow strip of disturbed southern willow scrub which occurs along a drainage course. On-site agricultural activities, the placement of a church and attendant facilities, access roads, and adequate space to provide fuel modification, will provide fire protection for this part of the southern boundary exposure.

Western Boundary. A riparian woodland vegetation community occurs along most of the western border of the main project area and along tributary east-west drainages in the central portions of the site. Also, southern mixed chaparral vegetation occurs as large, relatively undisturbed patches in the northwest, central, and southern portions of the project area on the western-facing slopes. Dominant plant species for the southern mixed chaparral vegetation include chamise, mission manzanita, hoary-leafed ceanothus, black sage, California buckwheat, and laurel sumac. A wildland fire threat for the development would be from a fire approaching from the south, southwest or west exposures in off-site and on-site highly flammable native and non-native vegetation along these exposures. This threat would be the greatest during a typical late fire season with above average 30 MPH southwest wind conditions. Fuel modification zones meeting code requirements, a non-combustible wall, roadways and a maintained park facility

will be applied along this boundary to provide the fire buffer required to protect ignition-resistant structures along this exposure from late fire season wildfires during 30 MPH southwest wind conditions.

As ~~stated~~state above, the agricultural related land uses and structural hazard abatement practices provide significant fuel modification and fire protection buffers around the perimeter of the Lilac Hills Ranch property and have been considered as part of the overall wildfire risk and need for full fuel modification zones, consistent with San Diego County's Guidelines for Determining Significance – Wildland Fire and Fire Protection (2010). Figure 3 below illustrates the significance of fire buffers which are provided by these adjacent and contiguous land uses along the north and northeast boundary. This is particularly significant for fire protection during strong winds (Santa Ana Winds) which occur in the late fire season.

3.3 Wildland Fire Behavior Assessment

3.3.1 Fuel Modeling.

The minute by minute movement of a wildland fire is never totally predictable, and is certainly not predictable from weather conditions forecast many hours before the fire. Nevertheless, practice and experienced judgment in assessing the fire environment, coupled with a systematic method of calculating fire behavior, yields surprisingly good results (Rothermel, 1983).

The primary driving force in the fire behavior calculations is the dead fuel, less than one-fourth inch in diameter. These are the fine fuels that carry the fire. Fuels larger than 1/4-inch contribute to fire intensity, but not necessarily to fire spread. The BehavePlus 4.0.0 fire model describes a wildfire spreading through surface fuels, which are the burnable materials within six (6') feet of the ground and contiguous to the ground.

Fuels larger than three (3") inches in diameter are not included in the calculations (Andrews 1986). Regardless of the limitations expressed, experienced wildland fire managers can use the BehavePlus 4.0.0 modeling system to project the expected fire intensity (expressed as Btu/ft/sec), rate-of-spread (feet/minute) and flame lengths (feet) with a reasonable degree of certainty for use in Fire Protection Planning purposes. Of these three fire behavior projected flame length is the most critical in determining structure protection requirements.

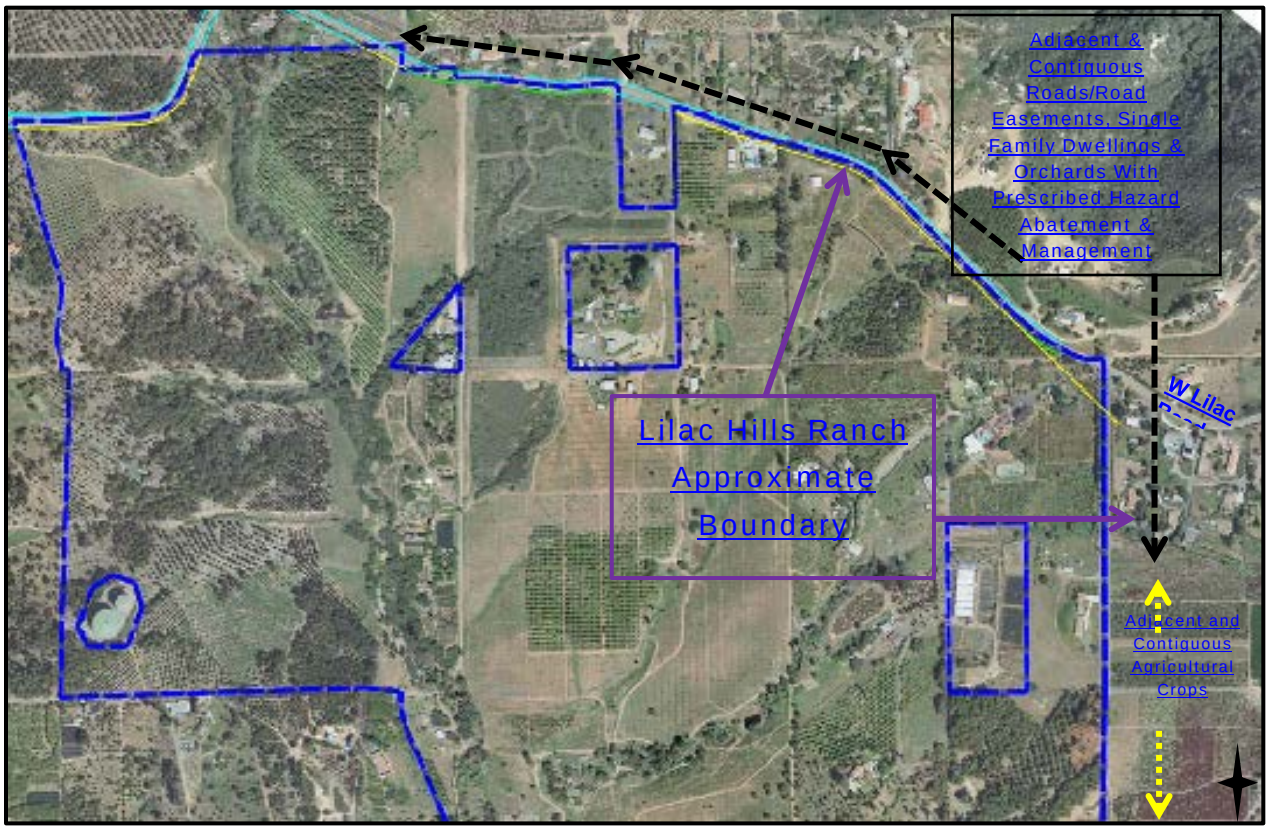


Figure 3 – Aerial Photo Illustrating Adjacent and Contiguous Off-Site Land Uses on Northeast Corner of Property

The BehavePlus 4.0.0 Fire Behavior Prediction and Fuel Modeling System by Patricia L. Andrews and Collin D. Bevins is one of the best systematic methods for predicting wildland fire behavior. The BehavePlus 4 0.0 fire behavior computer modeling system was developed by USDA–Forest Service research scientists at the Intermountain Forest Fire Laboratory, Missoula, Montana, and is utilized by wildland fire experts nationwide. Because the model was designed to predict the spread of a fire, the fire model describes the fire behavior only within the flaming front. The results of the modeling calculations are summarized in APPENDIX 'E'.

The BehavePlus 4.0.0 Fire Modeling System has been used to predict the wildland fire behavior (rate-of-spread, and flame length) for the northern and western boundary vegetative fuels. The BEHAVE: Fire Behavior Prediction and Fuel Modeling System–Burn Subsystem, Part 1 by Patricia L. Andrews, is one of the best systematic methods for predicting wildland fire behavior. The BEHAVE fire behavior computer modeling system was developed by USDA–Forest Service research scientists at the Intermountain Forest Fire Laboratory, Missoula, Montana, and is utilized by wildland fire experts nationwide. Since the model was designed to predict the spread of a fire, the fire model describes the fire behavior only within the flaming front.

The ***FIREWISE* 2000, Inc.** evaluation team used the computer based BehavePlus 4.0.0 Fire Behavior Prediction Model to make the fire behavior assessments and projections for the hazardous vegetative fuels on the areas in proximity to the proposed site for the Lilac Hills Ranch facility (see APPENDIX 'E' for actual calculations). Four (4) worst case fire scenarios are displayed based on 'worst case' fire weather assumptions for the project area. Each fire scenario displays the expected Rate of Fire Spread (expressed in feet per minute), Fire Line Intensity (expressed in BTU's/foot/sec, and Flame Length (expressed in feet). These fire behavior parameters are calculated for the following scenarios: 1) untreated fuels in a worst case scenario northeast Santa Ana winds in coastal sage scrub fuel model, 2) treated fuels in late fire season northeast Santa Ana winds, 3) untreated fuels in above average 30 MPH southwest wind conditions in southern mixed chaparral, 4) treated fuels in above average 30 MPH southwest winds, 5) untreated fuels two in a worst case scenario for northeast Santa Ana winds in southern mixed chaparral fuel model, and 6) treated fuels in northeast Santa Ana winds, 7) untreated fuels in southwest 30 MPH southwest winds, and 8) treated fuels in 30 MPH southwest winds. The Tables below include the calculation inputs used in the BEHAVE Plus program which were obtained from project site observations and fuel levels typically observed during the local fire season.

In order to provide wildland fire protection measures for this project, fire behavior parameters were calculated for the hazardous native vegetation/fuels historically located on- and off-site. These calculations will be the basis for recommended fuel modifications for the project site development. The existing on-site and off-site fuels will also be considered in evaluating the wildfire threat to this proposed development.

Normal weather conditions consist of an onshore flow from the southwest. This condition has a lower temperature and higher humidity then does a Santa Ana condition. A fire under normal conditions is typically a fuel driven fire. However, wind will also contribute to the rate of spread. A summer fire coming from the southwest would be burning uphill and as a result would get a run on the project site. The late fire season strong non-typical southwest winds and the late fire season northeast winds (Santa Ana winds) create the dangerous and severe conditions for wildfires. Modification and/or elimination of hazardous fuels and the reduction of fuel loading are key to "*firewise*" planning.

In order to project the fire behavior benefit for the proposed fuel modifications for the project, worst-case scenarios were used in the modeling system to project fire behavior variables. Scenario 1 is a 60-MPH northeast wind (Santa Ana winds) in the SCAL18 Fuel Model historic fuels and then expected fire behavior in fuels that have been modified (treated) for favorable fire behavior variables within this fuel load. Scenario 2 is a late fire season, strong, non-typical (30-MPH) southwest winds in the SCAL 18 Fuel Model and the expected fire behavior after they have been modified (treated) for favorable fire behavior variables within this this fuel load. Scenario 3 is a 60 MPH northeast wind in the southern mixed chaparral fuel model and the

expected fire behavior after fuel modification (treated) in this fuel load. And, Scenario 4 is 30-MPH southwest wind in mixed chaparral fuel model and the expected fire behavior after fuel modification in this fuel load.

The worst-case climate parameters and assumptions used for the fire behavior modeling process were as follows:

- 1-Hour Fine Fuel Moisture ~~of .....~~2%
- 10-Hour Fuel Moisture ~~of.....~~3%
- 100-Hour Fuel Moisture ~~.....~~5%
- Live Herbaceous Fuel Moisture ~~.....~~30%
- Live Fuel Moisture ~~.....~~50%

Other site characteristics used for Fire Behavior modeling are as follow:

- **Slopes.** The existing slopes for the majority (approximately 91.2 percent) of the entire site range from 0 to 30 percent. This range of slopes includes 110 acres between 0 and 10 percent, 141.1 acres between 10 and 15 percent, and 306.4 acres between 15 and 30 percent. There are also 54.5 acres that are 30+ percent and are the steeper and more gullied locations generally in the west and southwest area of the site (from *Slope Analysis* by Landmark Consulting). These steeper locations would not be developed but would create an overall concern and fire threat to the development.

The range of on-site site slopes will change when the final grading is completed for the development. The representative slope used with the fire behavior model for the slopes prior to development is 20 percent. The fire behavior model representative slope used for the final grading landscape is 10 percent. The exception is that the slopes on the western perimeter area is estimated to average 40 percent. The analysis in fire scenario 5 utilized this slope percentage.

- **Fuel Model.** The majority of the on-site and off-site fuels ~~are~~is coastal sage scrub (SCAL 18) and southern mixed chaparral, and will be used to represent the ~~brushland~~brush land vegetation predominately and historically found on-site and off-site. The historic native fuels on the project site have been modified significantly by past agricultural activity. However, for purposes of evaluating worst case scenario it was assumed that the disturbance to the site were discontinued and the site would revert quickly to some form of a disturbed coastal sage scrub community. In the majority of the areas used for agricultural purposes over several decades, the vegetation would likely revert to disturbed lands or non-native grassland.

3.3.2 Fire Behavior Modeling Summary

The following tables summarize the expected wildland fire behavior for the fuel model found within and adjacent to the proposed LHR development under the worst case scenarios. Tables 2 thru 5 display the expected Rate of Fire Spread (expressed in feet per minute), Fireline Intensity (Btu/ft/sec) and Flame length (feet) for four different BehavePlus 4.0.0 – Fire Behavior Prediction and Fuel Modeling System fuel model computer calculations. All of these calculations are based on forecast vegetation conditions of a typical SCAL 18 Fuel Model-Coastal Sage Scrub and Fuel Model sh7 (very heavy fuel load, dry climate Fuel Model). Variables were slope, projected wind speed, and anticipated weather.

Four (4) different fire scenarios are presented based on "worst case" fire weather assumptions for the project area. Each fire scenario displays the expected Rate of Fire Spread (expressed in feet per minute), Fireline Intensity (expressed in British Thermal Units per foot per second) and Flame Length (expressed in feet). For the longest flame lengths along the north and south exposures, separate BehavePlus 4.0.0 predications were made for the treated fuels following the completion of the required fuel modification work. The tables also include the calculation inputs used in the BehavePlus 4.0.0 program which were obtained from project site observations and fuel moisture levels typically observed during the local fire season.

Fire Behavior Summary Tables. The four worst case fire scenario behavior calculations are summarized in table 6 thru 9, including the reduction in flame length that fuel treatment in Thinning Zone B will provide.

Table 12 – Fire Scenario 1 Summary

Fire Scenario 1–60 MPH Northeast Wind, in coastal sage scrub (SCAL18) North and Northeast Exposures		
Prior to Fuel Treatment	VS.	After Fuel Treatment
Rate of Spread: 1,104 ft./min		Rate of Spread: 79 ft./min
Fire line Intensity: 22,467 BTU/ft./sec		Fire line Intensity: 934 BTU/ft./sec
Flame Length: **44.1 Feet**		Flame Length: **15.6 Feet**

Table 23 – Fire Scenario 2 Summary

Fire Scenario 2–30 MPH Southwest Wind, in coastal sage scrub (SCAL18) Southwest and West Exposures		
Prior to Fuel Treatment	VS.	After Fuel Treatment
Rate of Spread: 104 ft./min		Rate of Spread: 79 ft./min
Fire line Intensity: 22,467 BTU/ft./sec		Fire line Intensity: 934 BTU/ft./sec
Flame Length: **32.1 Feet**		Flame Length: **8.6 Feet**

Table 34 – Fire Scenario 3 Summary

Fire Scenario 3–60 MPH Northeast Wind, in southern mixed chaparral (sh7) North and Northeast Exposures		
Prior to Fuel Treatment	VS.	After Fuel Treatment
Rate of Spread: 494.8 ft./min		Rate of Spread: 60.9 ft./min
Fire line Intensity: 22905 BTU/ft./sec		Fire line Intensity: 891 BTU/ft./sec
Flame Length: **45.6 Feet**		Flame Length: **10.2 Feet**

Table 45 – Fire Scenario 4 Summary

Fire Scenario 4–30 MPH Southwest Wind, in southern mixed chaparral (sh7) North and Northeast Exposures		
Prior to Fuel Treatment	VS.	After Fuel Treatment
Rate of Spread: 223.1 ft./min		Rate of Spread: 26.8 ft./min
Fire line Intensity: 10327 BTU/ft./sec		Fire line Intensity: 324 BTU/ft./sec
Flame Length: **31.6 Feet**		Flame Length: **6.4 Feet**

Table 5~~6~~ – Fire Scenario 5 Summary

Fire Scenario 5–30 MPH Southwest Wind, in southern mixed chaparral (sh7) North and Northeast Exposures		
Prior to Fuel Treatment	VS.	After Fuel Treatment
Rate of Spread: 236.2 ft./min		Rate of Spread: 28.0 ft. /min
Fire line Intensity: 10936 BTU/ft./sec		Fire line Intensity: 342 BTU/ft./sec
Flame Length: **32.4 Feet**		Flame Length: **6.6 Feet**

In addition to BehavePlus fire behavior modeling for this project, Dudek's fire protection planners completed a FlamMap Fire Behavior Modeling for the proposed development. FlamMap provides the ability to model the anticipated fire behavior across a landscape based on site-specific data whereas BehavePlus provides fire behavior predictions at specific point locations. Dudek's analysis states that wildfire behavior in chaparral fuel beds on and adjacent the Project site is expected to be of moderate to high intensity during extreme, Santa Ana weather conditions with maximum sustained wind speeds of 56 mph and low fuel moistures. Based on the observed fuel beds east of the project site, a relatively high-intensity fire can be expected during extreme weather conditions, with flame lengths reaching approximately 43 feet and peak intensity of over 20,000 Btu/ft/s. The report then states this type of fire would be relatively short-duration as vegetative fuels are consumed rapidly, and there would not be a sustained source of heat and or flame associated with site-adjacent wildland fuels. The analysis further notes that the site's fuels would be converted and reduced to ground cover on most of the Project area, resulting in proportionately reduced fire behavior. The post-project fuel modification areas would provide a significant reduction in the potential for fire ignition as well as the flame length, spread rate, and intensity of fires should ignition occur (See APPENDIX 'J' – FlamMap Analysis – Dudek 2013).[1]

4.0 MITIGATION MEASURES AND DESIGN CONSIDERATIONS

The Lilac Hills Ranch development is planned to be completed in 5 phases (See APPENDIX 'G' – Phasing Exhibit). For each implementing Tentative Map ~~(Map "B"),~~ , defined as a map containing individual lots that will be developed with structures that is submitted to the County for approval, will provide mitigation measures and design considerations for those Implementing Tentative Map(s). For example, the ~~projected plan is to initiate construction of Phase 1 and possibly 4 in 2014. For those phases, the~~ Implementing Tentative Maps ~~will~~for Phase 1 and 4 may be approved prior to implementation of Phases 2, 3 and 5. The timing of construction for

[1] Dudek and Hunt Research Corporation were commissioned to conduct an assessment of the fire and emergency response capabilities of Deer Springs Fire Protection District (DSFPD) and California Department of Forestry and Fire Protection (CAL FIRE) by Accretive Investments, Inc. This Assessment (*Lilac Hills Ranch Fire Services Response Capabilities Assessment*, March 2014; attached as appendix to the Specific Plan), is referenced and used to support throughout this FPP.

phases 2, 3 and 5 will be determined at a later time but those Implementing Maps will then be submitted to the County for approval of the mitigation measures and design considerations.

4.1 Adequate Emergency Services

The Deer Springs Fire Protection District (DSFPD) is the Fire Authority Having Jurisdiction (FAHJ~~).~~) for the Project. The DSFPD was established pursuant to state law to provide an effective level of fire protection and emergency medical services for the preservation of life and property within the District in which Lilac Hills Ranch is located. The District covers an area of approximately 47 square miles and serves a population estimated at 13,000. The District is funded through special District assessments, County fees, and tax allocations and supplemented by State and Federal grants. There are four fire stations located in the DSFPD; Station 11 (District Headquarters) at 8709 Circle R Drive, Escondido, CA 92026, Station 12 at 1321 Deer Springs Road, San Marcos, CA 92069 , Station 13 at 10308 Meadow Glen Way East Escondido, CA 92026 and CAL FIRE Station 15 (Miller Station) at 9127 West Lilac Road, Escondido, CA 92026. Station 15 is the closest fire station, surrounded on three sides by the project. Station 11 is the next closes fire station.

Firefighting services for the District are provided via contract by CAL FIRE (California Department of Forestry and Fire Protection). DSFPD utilizes generated fire fees and assessments to contract with CAL FIRE for staffing of its engines. In addition, DSFPD receives funding from the County to staff a third firefighter position on two of its engines. Furthermore, the County provides funding to CAL FIRE as part of the Amador Agreement to provide fire services during the offseason. APPENDIX 'M' provides the Automatic Aid Agreement between Deer Springs Fire Protection District and North County Fire Protection District and APPENDIX 'N' is the County of San Diego-Department of Purchasing and Contracting Contract 515388 Amendment no. 2 – Deer Springs Fire Protection District for Use of Fire Protection Funds.

DSFPD Preparedness and Firefighting Capability Provided by the Deer Springs Fire Protection District. Initial response to all fire, medical and associated emergencies within the District, including the 14-mile stretch of Interstate 15, is the responsibility of the Deer Springs Fire Protection District. The District currently provides staffing for the following resources within the District:

- 3-Type 1 Front Line Engines (one at Station 11, two at Station 13, and 1 at Station 12); two reserve Type I engines (unstaffed, with one at Station 11, and one at Station 13)
- 2-Type 3 Wildland Brush Engines (one located at Station 12 (not staffed) and one at CAL FIRE Station 15 (Miller)
- 1-Paramedic ALS (Advanced Life Support) ambulance is staffed and housed at DSFPD Station 11under contract with Mercy Ambulance Service, Inc.
- 23 Full-Time Firefighters

- ~~2~~1 District Administrative ~~Employees~~Employee
- 1 Fire ~~Marshal~~Prevention Specialist
- 1 Chief

Following is a summary of DSFPD's record of responses and call volumes for all fire stations (including CAL FIRE's Miller Station) within the District for 2005 thru 2011:

Table 6~~7~~ - 2005 – 2011 Response Data Summary for Deer Springs Fire Protection District
(Table Developed From Data Provided By Deer Springs Fire Protection District)

CY	Summary of Data For CY 2005 Thru 2011				TOTAL FOR YEAR
	STATION 11	STATION 12	STATION 13 ***	MILLER	
2005	602	590	---	452	1644
2006 *	58	58	---	47	163
2007	705	691	---	403	1799
2008	610	453	307	483	1853
2009	667	495	302	527	1991
2010 **	98	81	42	56	277
2011	615	443	404	373	1835
Station Total Responses For CY 2005-2011	**3355**	**2811**	**1055**	**2341**	**9562**
Calls per 24-Hr Shift For CY 2005-2011	**1.74**	**1.46**	**0.91**	**1.22**	**3.74**

*** Analysis Reflects Data Only For Month of December**
**** Analysis Reflects Data Only For Months of January and February**
***** Analysis Reflects Data Collected After Station Was Opened**

The response data in Table ~~7~~6 above indicates that DSFPD averages 3.74 calls per 24-hour shift for all stations (including the CAL FIRE Miller Station). The data is for seven years and thereby does show the variation of responses over a longer period of time. The data also indicates that a very large volume of responses for DSFPD is for medical aid (37%), traffic collisions (11%), and cancelled calls (17%). Based on this data, and the information presented in the District Capabilities Assessment (Dudek & Hunt 2014) it is evident that DSFPD would have the existing capacity to respond to expected calls from the proposed Lilac Hills Ranch project (see APPENDIX '~~L~~'K' - 2005–2011 Response Data for Deer Springs Fire Protection District).

The call volume and call type data provided by the District, and presented in the District Capabilities Assessment (Dudek & Hunt ~~2013~~2014), indicates that the closest responding units (Station 15 and Station 11) will not be overloaded with incidents due to the build out of the Lilac Hills Ranch Project. As the table below indicates, in comparison with other north County fire agencies, DSFPD will be able to absorb anticipated call loads and remain the North County Fire Agency with the fewest persons served per station and among the few districts that average less than two calls per station per day.

The additional response to Lilac Hills Ranch could result in an increase from 2.0 calls per day to 3.9 calls per day at build out. Based on ~~this~~the analysis~~,~~ presented in the District Capabilities Assessment (Dudek & Hunt 2014), even though the call volume would be doubled, the Stations would be able to absorb the additional calls generated by the Lilac Hills Ranch at build out.[2]

DSFPD's Response Projection Post-Construction of Phase 1 and 2 of Lilac Hills Ranch Compared to Other High Performing Fire Agencies/Stations

Fire Department/Stations	Average Call Volume*	Average Persons** Served/Station
DSFPD – 4 stations: Existing Condition	Average 1.4/day	3,250
DSFPD – 4 stations: Existing Condition + LHR Phases 1 and 2	Average 1.5/day	3,880
DSFPD – 4 stations: Existing Condition + LHR Project Build Out	1.8/day	5,350
Vista Fire Protection District – 6 stations	Average 4.8/day	19,000
City of San Marcos Fire – 4 stations	Average 4.8/day	23,750
City of Escondido Fire – 6 stations	Average 4.8 /day	20,857
Rancho Santa Fe Fire Protection District – 4 stations	Average 1.7/day	6,750
City of Oceanside Fire Department – 8 stations	Average 5.3/day	21,250
North County Fire Protection District – 6 stations	Average 1.9/day	8,333
Valley Center Fire Protection District	1.4/day	9,200

*Average call volume calculated by dividing the total number of annual calls by the number of fire stations serving those calls.
**Average persons served per fire station calculated by dividing total population by the number of fire stations within agency.

Closest Fire Station Under General Plan Standard

Emergency Response Requirement and Initial Emergency Travel Times for DSFPD and CAL FIRE. The emergency response objective is identified in the Safety Element of the County General Plan. Lilac Hills Ranch must demonstrate that fire services can be provided that meet the minimum travel time identified in the Safety Element. Travel time is defined as the estimated time it will take for the "closest fire station" to reach the furthest structure in a proposed development project. These standards are intended to (1) help ensure development occurs in areas with adequate fire protection and/or (2) help improve fire services in areas with inadequate coverage by requiring mitigation (Policy S-6.4) Travel time is determined by measuring the most

[2] For perspective, a busy urban fire station may respond to 10 or more calls per day while an average station would respond to 5 calls per day. Rural stations respond to fewer calls, but are likely to have longer response times. Therefore, a busy rural station may respond to 5 or 6 calls per day. Urban fire companies are not considered overloaded until about 10 or more calls per day and rural stations may be considered busy with a slightly lower number of average daily calls than 10. On average, a Fire Station in an urban area can be expected to respond about 5 times per day or more. District Capabilities Assessment (Dudek & Hunt 2014),

direct reliable route with consideration given to safe operating speeds for heavy fire apparatus. Travel time does not include reflex or reaction time, or on-scene size-up and set-up prior to attacking the fire, all of which are critical precursors of actual fire fighting. The emergency travel times for fire stations in the immediate area are based on NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting; 2007 Edition Table C.11 (b).

An accepted provision of fire protection services for all calls is to attain the following response time goals (or provide a level of fire protection functionally equivalent to that provided by such response times):

- Total response time for deployment and arrival of the first-in engine company for a fire suppression incident should be within 5 minutes. Add one minute for turnout time and one minute for dispatch time.
- Total response time for deployment and arrival of the full first alarm assignment for a fire suppression incident should be within 8 minutes. Add one minute for turnout time and one minute for dispatch time.

The "closest" fire station to Lilac Hills Ranch Project is CAL FIRE's Station 15 (Miller Station) at 9127 West Lilac Road, located adjacent to the development and approximately 2.3 miles from the furthest structure when the development is fully ~~construct.~~ constructed. Miller Station consists of a 3,000 square foot station located on a 2-acre parcel and is staffed by a three member crew. This station receives District funding from the County of San Diego ~~County Fire Authority~~, for extension of its use during the non-fire season under and Amador contract (see APPENDIX N – County of San Diego and ~~CalFire~~CAL FIRE Fire ~~Protectioin~~Protection Reimbursement Agreement Amendment, No. 3CA77059, dated April 15, 2011). The travel time from this station to the furthest structure when all phases of the proposed development are completed would be approximately 4.5 minutes, below the 5 minutes travel time requirement (see Figure 5 below).

Primary Fire Station Listed in Project Facility Availability Form

The Project Facility Availability Form (PFAF) from DSFPD (see APPENDIX E) indicates that Station 11, located at 8709 Circle R Drive, Escondido, CA, would be the "primary" station to serve Lilac Hills Ranch Project. Station 11 is located at Old Highway 395 and West Lilac Road and is approximately 4 miles from the northwest access point of the development and 2.6 miles from the southern access point via the Circle R Drive-Mountain Ridge Road emergency service route.

The Dudek and Hunt Capabilities Assessment (Attached as an Appendix Item to the Specific Plan) states: the existing four fire stations in the DSFPD (including one CAL FIRE station) are currently located where they can respond to the highest population density areas in an efficient manner. The existing DSFPD Station 11 is located to the south of the proposed project on Circle R Drive. The project includes a potentially gated emergency access along Covey Lane

and Rodriguez Road from the east and a gated private road for additional ingress/egress off of Circle R Drive at Mountain Ridge Road for a portion of Phase 5. Station 11 does not currently meet the time standards identified by the County General Plan (Dudek and Hunt 2014). Using Covey Lane or Mountain Ridge Road, Station 11 cannot reach the entire project site within a 5- minute travel time. Engines from Station 11 can reach the southern portion of the Project within a roughly 7.5- minute travel time (including gates). Should Mountain Ridge Road be designated a public roadway and proposed gates not be utilized, roughly 7 lots can be reached within 5 minutes from Station 11. Engines from Station 11 can reach the northern portion of the Project (via I-15 to Old 395 to W. Lilac Road) within 6 minutes travel (to most remote point) or less, with 71 units reachable within 5 minutes travel. A total of 85% of Phase 1 of the Lilac Hills Ranch Project can be reached by Station 11 within 5 minutes 50 seconds travel and up to 70% of Phase 2 can be reached by Station 11 within 6 minutes travel.

The Assessment states that the existing Station 15 is located directly adjacent to the proposed development and can service 95% or more of the development within a 4-minute (NFPA 1710) and 100% of the project within a 5- minute (SD County General Plan) travel time. The location of Station 15, regardless of association with DSFPD, is a critical point for emergency service (medical emergencies, vehicle accidents, and structure and wildland fires) in this portion of San Diego County and historical call volume indicates they do respond to these calls within the District. Station 15 is an Amador Station – The Amador contract continues CDF staffing and station coverage through the winter "off season," resulting in year-round staffing of this facility. Amador contract funding is provided by San Diego County.

DSFPD also has two other stations, Station 12 at 1321 Deer Springs Road, San Marcos, CA and Station 13 at 10308 Meadow Glen Way East, Escondido, CA, which are within approximately 17 and 20 minutes travel time, respectively. In addition, the DSFPD has established several mutual and automatic aid agreements with surrounding fire departments such as CAL FIRE, North County Fire Protection District, and Valley Center Fire Protection District. The North County Fire Protection District, Station 4, located at 4375 Pala Mesa Drive, Fallbrook, CA, is 3.8 miles and approximately 7.1 minutes travel time to the project (See APPENDIX N - County of San Diego-Department of Purchasing and Contracting Contract 515388 Amendment no. 2 – Deer Springs Fire Protection District for Use of Fire Protection Funds). In addition, the closest unit/drop boundary agreement, with automatic vehicle locators on every engine, enables dispatch to locate and send the closest unit, regardless of agency.

~~**Travel Times from Miller Station Site and Fire Station 11**~~

Table 7 illustrates that the project has three fully staffed stations within 10-minutes of the furthest structure. The proposed development has five phases of construction (See Exhibit G~~-~~ - Phasing Exhibit with Road Circulation Plan). The construction of Phases 1 and 2 is projected to begin in 2014, but the timeline beyond these phases is to be determined. This FPP evaluates the adequacy of emergency service routes for phases 1 and 2 and through build out. Table 8 below provides emergency travel distances and times under the travel time standard set forth in the

General Plan (from the closest fire station-Miller Station) and from the primary response fire station described in the Project Facility Availability Form (Station 11) by phases of development. It should be noted that the chart shows alternate emergency service routes for phases 3 and 4.

Table 7~~8~~ – Proposed Emergency Travel Distance and Times Summary

STATION	PHASE (Sequence of Proposed Construction & Emergency Service Route Based on Phase of Development)	EMERGENCY ACCESS ROUTE 1/ 2/	DISTANCE TO FURTHEST STRUCTURE (miles)	TRAVEL TIME Minute(s)
Cal Fire Station 15 (Miller)	1 & 2	Via West Lilac Road-interior Circulation Roadways	0.6	1.7
	3	West Lilac Drive-Interior Circulation Roadways	1.2	2.7
	4	West Lilac Drive-Interior Circulation Roadways	1.9	3.9
	5	Via West Lilac Drive-Interior Circulation Roadways	2.3	4.5
DSFPD Station 11	5	Via Circle R Drive-Mountain Ridge Road	2.9	5.6
	4	Via Circle R Drive-Mountain Ridge Road	5.1	9.3
	3	Via Circle R Drive-W Lilac Road-Covey Lane	4.5	8.35
	1 & 2	Via Old Hwy 395 and West Lilac Rd	4.7	8.6
	4	Via Circle R Drive-W Lilac Road-Covey Lane	5.2	9.4
	3	Via Old Hwy 395 and West Lilac Rd	5.25	9.5
North County Fire Protection District Station 4	1 & 2	Via Old Hwy 395 and West Lilac Rd	4.2	7.8
	3	Via Old Hwy 395 and West Lilac Rd	4.75	8.7
	4	Via Old Hwy 395 and West Lilac Rd	5.3	9.7
	5	Via Old Hwy 395 and West Lilac Rd	5.65	10.3

1/ Preferred Emergency Access Route Based on Construction Phase of Development
2/ Distance and time to the furthest structure within the development or phase of development

Table ~~8~~7 illustrates that after the initial construction of phases 1 and 2, the construction of successive development phases will provide additional improved emergency routes/access points, and improved on-site roadway circulation for fire apparatus.

~~In addition, as shown in the Capabilities Assessment prepared by Dudek (2013), Station 11 (located at Old Highway 395 and Circle R Drive) can respond within 5 minutes to a portion of the Project's Phase 1 (extreme northwest corner of Project), totaling 53 units. A total of 75% of Phase 1 can be responded to within 5 minutes 50 seconds and 100% can be responded to within 6 minutes travel from Station 11. Phase 2 lots, due to road layout, can be responded to within 5 minutes 50 seconds travel from Station 11. These Phases are minimally beyond the 5 minutes travel time from Station 11, but are immediately adjacent to Station 15, which can serve 100% of the project within the 5 minute standard.~~

~~In addition,~~ The Dudek and Hunt's Capability Assessment, states that using Covey Lane or Mountain Ridge Road, Station 11 cannot reach the project site within a 4- or 5- minute travel time, but that engines from Station 11 can reach the southern portion of the Project within a roughly 7.5- minute travel time (including gates). It further states that should Mountain Ridge Road be designated a public roadway and proposed gates not be utilized, roughly 7 lots can be reached within 5 minutes from Station 11. It also states that engines from Station 11 can reach the northern portion of the Project (via I-15 to Old 395 to W. Lilac Road) within 6 minutes travel (to most remote point) or less, with 71 units reachable within 5 minutes travel time. It further states that a total of 75% of Phase 1 of the Lilac Hills Ranch Project can be reached by Station 11 within 5 minutes 50 seconds travel time, and up to 70% of Phase 2 can be reached by Station 11 within 6 minutes travel time.

The project will incorporate a number of Project features that augment the Project's fire safety:

1. Ignition resistant structures built to code that have proven to perform extremely well in wildfires;
2. Fire sprinklers in all structures which effectively extinguish interior fires over 98% of the time and extend the time of "flash-over", resulting in more time for responding firefighters;
3. Fuel modification for every structure;
4. Roadside fuel modification;
5. Automatic aid "drop boundary" agreements in place enable closest unit to respond, even if from neighboring district/agency;
6. Roads and access meeting ~~San Diego~~the County ~~Private Road Standards (internal) and public~~Consolidated Fire minimum road standards ~~(external);~~and the Deer Springs Fire Protection Districts minimum road standards;
7. Long-term agriculture areas adjacent the site (reduced, irrigated fuels not native brush~~)~~);
8. No buildings 35 feet or taller, and no buildings requiring 3,500 gpm fire flow, minimizing or eliminating the need for a ladder truck, without the approval of the Fire District;
9. Redundant water supply of district water, recycled water, grey water and well water; and,
10. Automated External Defibrillator's (AED's) installed in any high occupancy uses with staffing for use by trained administrators.

~~However, with any of the options listed below, the project will meet the~~ , it has been determined as acceptable to the District because pursuant to the County's ~~travel time requirement:~~

~~**1. Option 1**: This option includes DSFPD and/or SDCFA and CAL FIRE agreeing that CAL FIRE's Station 15 (Miller Station), would provide primary response to project emergencies. This option would include a new fire station or a remodel of the existing Station 15 site, and~~

Guidelines for Determining Significance a ~~new Type I engine. This would require a new agreement between DSFPD and/or SDCFA, and CALFIRE.~~

~~**Option 2:** This option would include a new separate DSFPD fire station on the CAL FIRE Station 15 site in order for such facility to be completely independent from CAL FIRE. This option would include an agreement between DSFPD~~finding can be made that sufficient mitigating factors associated with ~~CAL FIRE to either remodel Station 15 to co-locate and staff a DSFPD Type I paramedic engine on the site with CAL FIRE or the construction of a completely separate DSFPD station. The new station or remodel would accommodate an engine from station 11 or a new engine purchased~~fire protection would be available for the project for the ~~new facility. This would require an amendment to the existing Amador Agreement with CAL FIRE.~~following reasons:

~~2. **Option 3:** If an agreement cannot be reached between SDCFA and/or DSFPD and CAL FIRE (Option 1) or between DSFPD and CAL FIRE (Option 2), a new fire station would be constructed within the Lilac Hills Ranch Project. A Type I paramedic engine would be added at the station. The engine could either be reassigned from Station 11 or a new Type I purchased for the Station. The construction of a new fire station would be triggered upon the construction of any lot outside the 5-minute response time, equivalent to the 54th unit in Phase 1. If DSFPD agrees, a temporary on-site fire station could be constructed at the same trigger.~~

1. ~~Each of these options would result in emergency fire and medical response throughout the Lilac Hills Ranch~~ The District can augment response with ALS capable equipment to the entire project within 7-9 minutes, which is an acceptable District Standard travel time and would ensure adequate fire services to protect health, safety and the general welfare of the community;
2. The analysis shows that the DSFPD has existing capability and capacity to respond to fire emergency incidents on the project;
3. The project will pay statutory mitigation fees and annual assessments that will be provided to the District, which can be used by the District to upgrade and provide new facilities if necessary, as determined by the District;
4. The project can be provided with fire services from three fire stations within ~~the County travel time~~10-minutes to the furthest structure and nearby fire departments pursuant to mutual aid agreements,
5. Sufficient mitigation measures (as set forth in the FPP) that minimize fire hazards are included in the project, such as fire resistant construction methods and fuel modification zones;
6. Travel time from the closest fully staffed fire station - Miller Station to the furthest structure within the project would meet the travel time identified by the County General Plan;

1.7. The project's water supply meets the requirements. of the San Diego County's Consolidated Fire Code and the Fire Code for a commercial/business/residential development; and,

8. Fire access to the project will meet the requirements of the County and Deer Springs Fire Protection District.

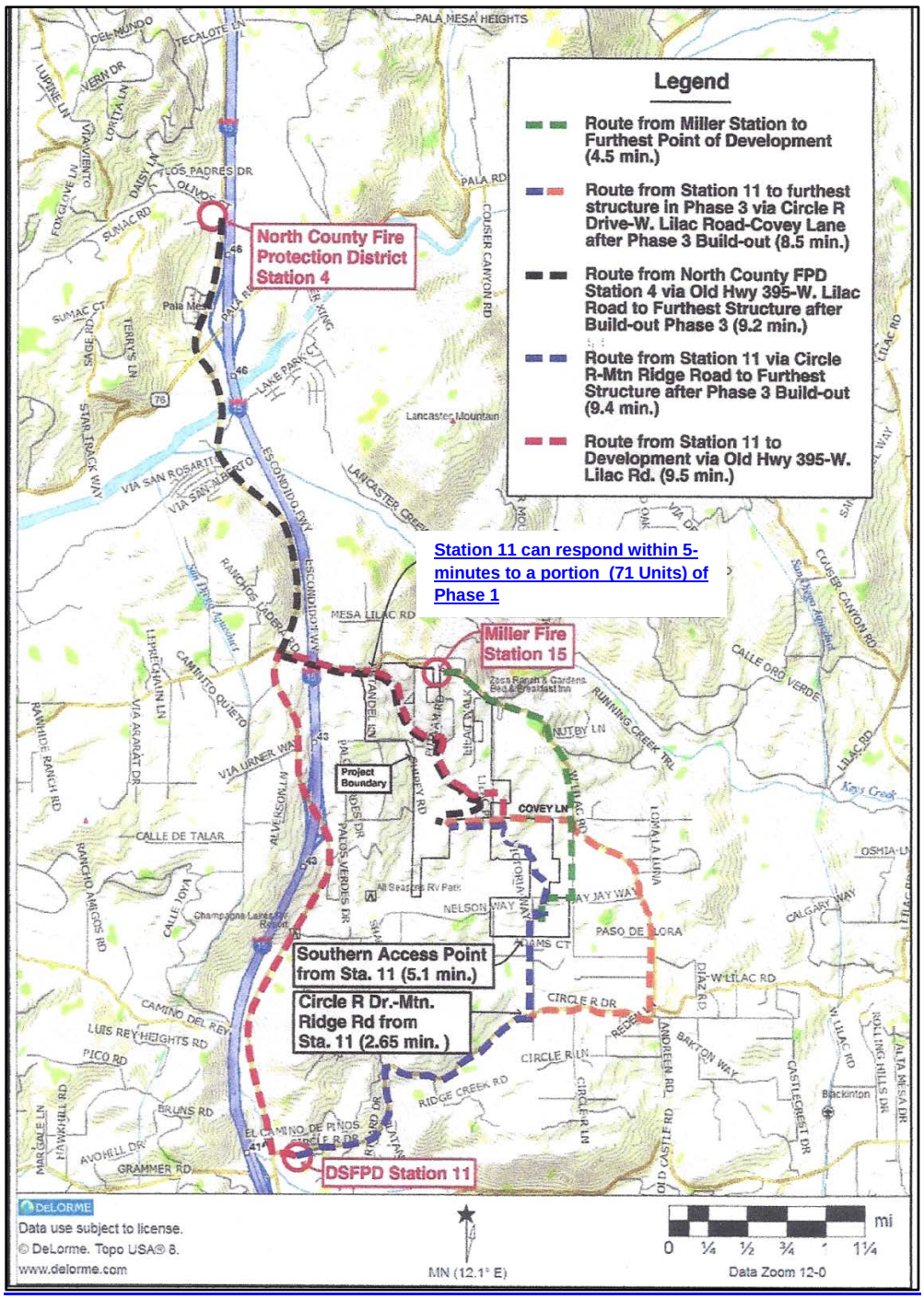


Figure 4 - Emergency Service Routes Map

4.2 Fire Apparatus Access

A comprehensive circulation plan provides access to the Lilac Hills Ranch Community and improves vehicular circulation in the vicinity of the project area in accordance with County standards and guidelines. Within Lilac Hills Ranch, private streets will provide multiple access routes (See Exhibit G – Phasing Exhibit With Roadway Circulation). West Lilac Road is

designed to comply with County Mobility Element standards for public streets~~.~~ with certain exceptions that may be approved by the County as a part of the Project and our more thoroughly addressed in the EIR. All other streets within the Community are private, and will be designed and developed per the special standards established by the specific plan to reflect the traditional character and rural theme of the Community. The Community street system in Phases 1 through 3 will generally be available to the public traveling from the adjacent public road system. The Community street system in Phases 4 and 5 is proposed to be gated and not open to the public except during emergencies and in accordance with the County Consolidated Fire Code.

To minimize impediments to fire apparatus access, the circulation network shall be designed according to the Fire District Standards and the County ~~public and private road standards and in compliance with CFC Sec. 503.2.1 (~~Consolidated Fire Code see APPENDIX 'G' - Phasing Exhibit, Project Internal Circulation Map and Access Exhibit Map). The needs of truck traffic and loading activities for proposed commercial structures and fire apparatus shall be incorporated in the design of the roadways.

The primary access to the Lilac Hills Ranch project will be via two ingress and egress points from West Lilac Road, an existing public road located along the north boundary of the project site (See APPENDIX 'G' - Phasing Exhibit, Project Internal Circulation~~,~~ and Access Exhibit). The initial development of Phases 1 and 2 will include two ingress and egress points to West Lilac Road connecting to internal roads for access throughout the development. Development of phases 3 thru 5 will also include internal roads and will include one additional fire apparatus access point via Covey Lane and an additional gated emergency ingress/egress private roads via Rodriques Road and Mountain Ridge Road. ~~These private~~All proposed roads ~~will be improved to San Diego County Private Road~~are designed in accordance with the Fire District Standards~~. The following~~ and the County Consolidated Fire Code. Following are specific requirements ~~are outlined, but (~~not all inclusive~~,~~) outlined for fire apparatus access ~~per the DSFPD Fire Code and the County Consolidated Fire Code~~:

Fire apparatus access roads shall have an unobstructed improved width of not less than 24 feet, ~~and will~~except for single-family residential driveways, serving no more than two single-family dwellings, shall be ~~maintained at all times~~a minimum of 16 feet of unobstructed improved width. Fire apparatus access roads will not be obstructed in any manner, including the parking of vehicles. Specific interior roadways will be designated 'fire access roadways' or 'fire lanes'. All standards for apparatus access roads will follow APPENDIX 'D' of the California Fire Code. The fire code official shall have the authority to require an increase in the minimum access road widths where determined the minimum are inadequate for fire or rescue operations.

4.2.1 ~~California Fire Code.~~ Roadway infrastructure for each Phase (first and/or second pavement lift) will be installed prior to the allowance of combustibles on the project site.

4.2.2 One ~~-~~way fire apparatus access roads~~ will include~~, roadways with gated entrances, guard stations, or center medians are allowed, provided that each lane is not less than 14 ~~foot~~feet wide~~ improved surface/travel lane~~.

4.2.3 All fire apparatus access roads and driveways shall have an unobstructed vertical clearance of not less than 13 feet 6 inches, unless in the opinion of the fire code official that the width shall be increased if not adequate to provide fire apparatus access. The fire code official shall have the authority to require an increase the minimum access road widths where the fire code official determines the minimum are inadequate for fire or rescue operations. This same authority by the fire code official may reduce the vertical clearance or road width requirement if it does not impair access for fire apparatus, and includes approved signs installed and maintained indicating the amount of vertical clearance.

Access points to pockets of islands of open space/flammable vegetation shall be provided and identified for fire and emergency service apparatus (See APPENDIX G – Project Internal Circulation, Figure 24).

4.2.4 Emergency access to the extensive trail system will be provided at numerous points throughout the community.

~~4.2.3~~**4.2.5** Emergency vehicle turnarounds shall be provided on 'fire lanes' exceeding 150 feet in length. In this development, turnarounds must be approved by the DSFPD, especially for aerial ladder trucks if multiple story structures are proposed (see APPENDIX 'K' - lot configurations and conceptual layouts). NOTE: no buildings 35 feet or taller are proposed for this project, without approval of DSFPD).

~~4.2.4~~**4.2.6** Fire apparatus access road shall extend within 150 feet of all portions of a structure and all portions of the exterior walls of the first story of the building as measured by a route around the exterior of every building in the development.

~~4.2.5 All roads shall be provided with an approved driving surface for all phases of development prior to building permit issuance, construction and/or bringing combustible building products onto each parcel.~~

4.2.7 Gates proposed for this development shall be in compliance with DSFPD guidelines and County Consolidated Fire Code, Section 503.6. A gate across a fire access roadway shall be equipped with an approved design feature for opening the gate for access by the fire department or ~~other~~ law enforcement. Specifically, The Project proposes to include gates controlling public access to Phases 4 and 5, which will be developed as a Senior Citizen Neighborhood. Private streets with gates are features of a number of major developments approved by the County of San Diego, some of which are still undergoing development, including the Rancho Cielo, Castle Creek, Montecito Ranch, Woods Valley Ranch, and

The Crosby Specific Plans, as documented in the Dudek ~~(~~and Hunt 2013~~) Study.~~ Assessment.

Any gate or barrier across a fire access roadway shall have specific plans reviewed and approved by DSFPD, and receive Specific Plan approval prior to installation.

~~The following gate design features are suggested for~~ All automatic gates across fire access roadways~~, at~~ and driveways shall be equipped with approved emergency key-operated switches overriding all command functions and opening the ~~discretion~~gate(s).

Per the DSFPD conditions attached and part of the ~~DSFPD:~~Project Availability Form (Form DPLU-399F), gates accessing more than four residences or residential lots, or gates accessing hazardous institutional, educational or assembly occupancy group structures, shall also be equipped with approved emergency traffic control-activating strobe light sensor(s), or other devices approved by the fire code official, which will activate the gate on the approach of emergency apparatus with a battery back-up or manual mechanical disconnect in case of power failure. In addition, all automatic gates are required to have a Knox key switch override system along with an approved emergency traffic control-activating strobe light sensor(s); e.g., Opticom.

~~1. KNOX Gate: Key operated dual switch device on the date, which overrides all other controls so the gate can be opened by the Fire Department or law enforcement using a KNOX key. Each fire engine and law enforcement vehicle would be provided with a KNOX key.~~
~~2. KNOX Box: Installation of a box which contains a KNOX padlock for manual access.~~
~~3. SOS Siren: This device would active a gate within 2.5 seconds when the "yelp feature" on siren is used, or 4.5 seconds from when a standard siren is deployed. A sign will be placed on gates stating "Emergency vehicles; operate siren to open gate."~~
~~4. Click 2 Enter Device: This device opens the gate upon the clicking of a mobile radio in an emergency vehicle or portable radio. The device is activated by the FCC assigned radio frequencies which are assigned to public safety agencies for restricted use only.~~

Other optional features for automatic gates may include:

1. Backup (battery) or solar power
2. Access control motors that accept and interface with various third party accessories
3. Design provisions to open if bumped by a fire engine, and a hidden "break glass" manual release
4. Gates programmed to remain open in the event of power outage

It is estimated that it takes about one minute to stop the fire engine, operate a KNOX key switch on a gate, get back in the engine, and go through gate. So the response to the gated areas, if using a KNOX key switch, would be delayed at maximum by 1 minute per gate. However, automated

gates (recommended), will require less time, roughly 1/4 to 1/3 the time to open and proceed through the gate as the gate can be triggered remotely by siren or radio and results in minimal delay related to the time for the gate to move from closed to open.

The road and street grade standard for fire apparatus shall not exceed 20 percent, and any roadway over 15 percent shall be a concrete surface with a deep broom finish perpendicular to the direction of travel to enhance traction. The angle of departure and the angle of approach shall not exceed 12 percent or as approved by the fire code official.

The turning radius of a fire apparatus access road shall comply with the Fire District Standards and the County Consolidated Fire Code public and private road standards approved by the Board of Supervisor. The turning radius for a private residential driveway shall be a minimum of 28 feet, as measured on the inside edge of the improved width or as approved by the fire code official.

Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus of not less than 75,000 pounds (unless approved by the DSFPD) and will be provided with an approved surface such as asphalt, concrete or pavers so as to provide all-weather driving capabilities. In addition, all roads shall be provided with an approved driving surface for all phases of development prior to building permit issuance, construction and/or bringing combustible building products onto each parcel.

Secondary Access and Dead End Roadways. The development in combination with designated and marked 'fire lanes' shall provide adequate secondary access. There will be two public access points on the northwest corner of the project and one in the northeast area, both off West Lilac Road. Successive proposed phases of development will include two access points via Covey Lane and an additional gated emergency ingress/egress via Mountain Ridge Road. The maximum length of a dead-end road, including all dead-end roads accessed from that dead-end road, shall not exceed 800 feet. Also, all dead-end fire access in excess of 150 feet in length shall be provided with approved provisions for turning around emergency apparatus. Hammerheads do not serve as a desirable turnaround design for DSFPD.

Roadway design features (speed bumps, speed humps, speed control dips, traffic calming devices, etc.) which may interfere with emergency apparatus responses shall not be installed on fire access roadways, unless they meet design criteria approved by DSFPD.

Approved signs or other approved notices shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. Signs or notices shall be maintained in a clean and legible condition at all times. All public roads and private roads serving four or more parcels shall be named. Road names signs shall comply with County of San Diego Department of Public Works Design Standard #DS-13.

To ensure fire apparatus access, the fire code official may designate existing roadways as fire access roadways as provided by Vehicle Code Section 22500.1 (public) and (private).

The fire code official is authorized to require more than one fire apparatus access road on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

4.3 Water Supply

Water supply will meet the water supply requirements of the San Diego County's Consolidated Fire Code and the Fire Code for a commercial/business/residential development. Following are specific requirements.

All fire hydrants shall be installed and serviceable by all acceptable code standards prior to delivery of combustibles for each development phase(s).

For single-family dwellings, fire hydrants shall be installed at intersections, at the beginning radius of cul-de-sacs, and every 300 feet from structures, regardless of parcel size. In multi-family, commercial and industrial zones, fire hydrants shall be installed at intersections, at the beginning radius of cul-de-sacs and every 300 feet from structures, regardless of parcel size. ~~All fire hydrants will be of bronze construction, including all internal parts except seats.~~

An approved fire hydrant/water supply system shall be capable of supplying 2500 gallons per minute fire flow for 2 hours (California Fire Code and the Consolidated Fire Code for the County of San Diego). Waterlines for fire control must be capable of supplying this required demand through the hydrants, plus the largest fire sprinkler demand, plus any domestic use supplied from that line.

When an on-site waterline serves more than two hydrants, the line must be looped, providing two hydraulically remote points of connection with the water district lines. The interior loop must have isolation valving, such that not more than two hydrants and/or sprinkler systems are between isolation points. If the onsite fire water system for a building is a private loop, the two points of connection are needed to the public supply and appropriate fire department connections.

Fire hydrants shall be located along 'fire lanes' and all structures and other improvements shall be reached with a maximum hose pull of 150 feet, or as approved by the DSFPD.

Each hydrant for this development shall have one 4-inch and one 2-1/2-inch outlets. In some instances DSFPD may require a fire hydrant to have other combinations of 4 inch and 2½ inch outlets. All fire hydrants will be of bronze construction, including all internal parts except seats. Fire protection systems service meters shall be a minimum of one inch (1") and separate from the domestic supply.

The DSFPD approval shall be required for on-site hydrant and fire service waterline based on the final building construction location, type and largest building size. A waterline extension for the purpose of installing a fire hydrant if the water main is 1,500 feet or less from the property line may be required by the fire code official.

All hydrants shall be located along an access roadway and shall not be closer than 50 feet from structures.

Fire hydrants shall be located with blue reflective raised pavement markers at approved locations for each hydrant

All buildings shall be fully protected with automatic fire sprinkler systems. The installation of the sprinkler systems shall meet NFPA 13 and 13D Standards. The 2010 California Building Standards Code published July 1, 2010, with an effective date of January 1, 2011, requires automatic fire sprinkler systems for all new one-and two-family dwellings and townhouse ~~construction~~construction statewide.

4.4 Defensible Space and Vegetation Management

Fire resistant landscape management is the act of converting native vegetative fuels from a highly flammable and high fire intensity state to a more fire resistant and low fire intensity condition. Fire resistant landscaping has been proven to be very effective treatment for minimizing structure losses due to wildland fire radiant heat.

The County's Consolidated Fire Code and the California Fire Code require a Fuel Management Zone (FMZ), within 100 feet of structures, to the extent possible, for each Implementing Tentative Map that is submitted to the County for approval. Implementing the following measures for the management of flammable vegetation would provide acceptable management of flammable vegetation for wildfire protection of structures within each phase of this development:

4.4.1 Implement and maintain a standard to provide an irrigated Zone A (low fuel volume/defensible space) and a selectively thinned non-irrigated Zone B around each residential and commercial structure, and along roadways as described herein.

4.4.2 A long-term interior open space fuel modification treatment plan and fire resistant landscaping criteria to be deployed around all planned structures as described herein.

4.4.3 For the benefit of the community, the fuel modification and maintenance of common areas would be under the control of a homeowners association or other common ownership, established in perpetuity.

4.4.4 Alternative measures that achieve the same level of protection may be used, including 1) additional ignition-resistant construction methods and other non-combustible features, i.e., parking lots, sidewalks, concrete patios, decorative rock, natural boulders on-site, and similar landscape features; 2) fire-barrier walls; and, 3) condition for focused fire protection plan for any area with a reduced fuel modification zone should off-site fuels (which are currently agriculture) convert to native ~~shrubland~~shrub land.

4.4.5 A wildland fire hazard rating assessment and calculations of the expected fire behavior, in the event a wildland fire should occur within the off-site and on-site native and non-native vegetation.

4.5 Fuel Modification Zone(s) for This Development

~~On-site, up to 100-foot Fuel Management Zone (FMZ) will be maintained from the edge of the designated wetland areas within the development per the fuel management plan. In some locations, the fuel management zone is reduced to 50 to 70 feet, and those structures are provided additiona fire protection features providing the same function as a full 100 feet of fuel modification.~~ On-site, a minimum Fuel Management Zone (FMZ) of 100 foot will apply throughout the entire project in accordance with the specification of County Consolidated Fire Code, Section 96.1.4907.2.. Additional clearance may be required as necessary as necessary depending on specific conditions on site up to 100-foot . The perimeter buffer and on-site FMZs would consist of a 50-foot irrigated zone, or in some cases, the FMZ may be 100 feet of actively managed irrigated agricultural crops/orchard, per the fuel management plan. The area 50 feet from the edge of all structures in the development would be cleared of all vegetation that is not fire resistant and re-planted with irrigated fire-resistant landscaping. The actively managed irrigated agricultural crops/orchards, presently located within the development may also be integrated into the zone. This would be defined as Zone A.

In the area between 50 to 100 feet from the edge of structure, all dead and dying vegetation shall be removed (in some areas, this zone may also be the actively managed irrigated agricultural crops/orchards. Maintenance of fuel treatment zones is highly important. Latham (1989) found that ember ignitions were primarily a function of ground fuels, especially litter depth. Also imporant to ignition of a ground fuel is moisture content, size of the litter material as well as the mineral content of the dead vegetation. To the benefit of the eventual homeowners, ground fires burn with less intensity than an aerial fuel. However, a ground fire may carry to adjacent aerial fuels which is a concern.

Most of the fuel modification zone includes an 8 feet wide trail located roughly in the middle of the fuel modification area that will be maintained free of vegetation. This vegetation free area provides an enhanced “fire break within a fuel break”, resulting in decreased flame length and heat reduction, particularly for non-wind driven fires.

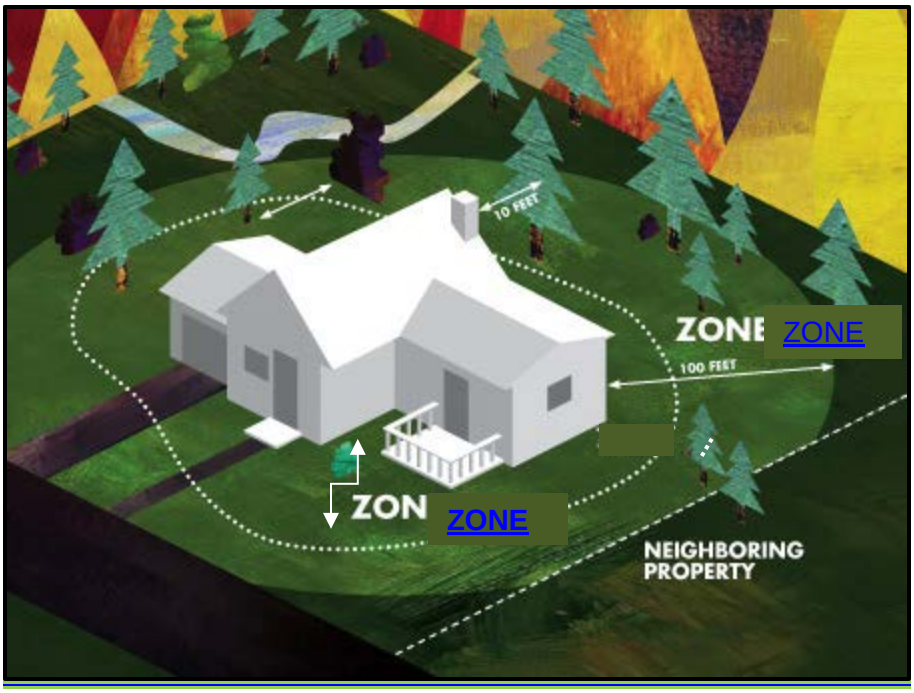


Figure 5 - Illustration of Defensible Space Zones

Where native vegetation does exist adjacent to this zone, native vegetation may remain provided that the vegetation is modified so that combustible vegetation does not occupy more than 50 percent of the square footage of this area. This would be defined as Zone B (see Figure 6 – Illustration of Defensible Space Zones).

As stated above, the FMZ shall be a minimum of a 100-foot area ~~surrounding and extending~~ in all directions from all structures, in which flammable vegetation or other combustible growth is cleared away or modified, except for:

- Single specimens of trees or other vegetation ~~that~~which are well-pruned and maintained.
- Grass and other vegetation located more than 50 feet from the structure and less than 18 inches in height above the ground.
- All ornamental landscaping that is consistent with San Diego County Wildland Urban Interface plant list (see APPENDIX 'A'~~)~~).
- Identified areas where reduced fuel modification zones have been established based on site-specific fire behavior modeling in addition to off-site ~~fuelbeds~~fuel beds (primarily agriculture) and where additional fire protection features to harden structures will be employed.
- Irrigated agriculture

Buildings or structures in a hazardous fire area must be set back 100 feet from the property line and shall meet the requirements in the above paragraph, to the extent possible. Enhanced fire-

resistive construction measures shall be used to mitigate fire, including the elimination of vents and skylights on structures facing natural fuel and open space areas on-site and off-site native flammable fuels. Roadways, parking lots, sidewalks, concrete patios, decorative rock, natural boulders on-site, and similar landscape features may be included as objects that will not support fire. Other alternative measures that achieve the same level of required protection may be used, including, but not limited to one of the following: 1) utilize adjacent irrigated and managed agricultural crops (orchards, commercial flower fields, etc.); 2) fuel modification and hazard abatement required and completed around structures by adjacent landowners to meet fire code on their property and which is contiguous with the development; 3) DSFPD hazard abatement requirements for fuel modification and hazardous abatement 50 feet along the perimeter of adjacent properties, 4) additional ignition-resistant construction methods, non-combustible features, i.e., roadways and right-of-way modified fuels, parking lots, sidewalks, etc.; 5) fire-barrier/deflection walls; or, 6) a recorded easement acquired from adjacent landowners for the purpose of maintaining required fuel modification (there is no off-site clearing proposed). However, if off-site clearing is proposed in the future, the easements must be provided before the project can move forward).

The proposed project shall also provide fuel modification on either side of public roadways, pursuant to the County's Consolidated Fire Code and the California Fire Code for clearance of brush and vegetative growth from roadways. This requirement shall modify combustible vegetation in the area within 10 feet from each side of a road or driveway to establish a fuel modification zone on fire apparatus access roads and driveways. This requirement for modified fuel combustible vegetation shall also apply to off-site private ingress and egress roadways.

FMZ's for the Lilac Hills Ranch Development will be determined as a part of the site plan review for the development of each phase. If the level of development within the overall project increases, these zones would be revisited at the time of site plan review to determine if less strigent requirements may be more appropriate due to these circumstances. When the final FPP for the development is completed, a detailed Fuel Treatment Location Map will illustrate the placement of the zones for each developmental phase.

4.5.1 Fuel Modification Zone A - Irrigated

The following specific requirements are outlined, but not all inclusive, for Zone A.

4.5.1.1 This Zone shall be irrigated (micro-irrigation acceptable when overhead irrigation may cause erosion). It includes all manufactured slopes. Landscaping material from the approved plant list (see APPENDIX 'A') required or in an approved landscape plan and approved by the Fire Marshal.

4.5.1.2 All undesirable non-native vegetation (see APPENDIX 'B') shall be removed. Also, no plants on the California Exotic Pest Plant Council's list of "Exotic Pest Plants of

Greatest Ecological Concern in California as of October 1999" or more recent version shall be planted.

4.5.1.3 Vegetation may include single or cluster (no more than two to three plants/tree) of trimmed fire resistant native and ornamental plants.

4.5.1.4 Dense plant masses adjacent to the structures and at bases of trees and tree clusters shall not be placed in this Zone. Vegetation must be low growing, fire resistive, deep rooted, drought tolerant plantings to maintain erosion control and soil stability, especially on manufactured slopes.

4.5.1.5 Active irrigated agriculture~~,~~ and native or ornamental trees can be retained within this fuel modification zone. They shall be pruned to maintain a vertical separation of approximately 10 feet above underlying shrubs or groundcover. Pruning of the shrubs will minimize the impact of the tree pruning. Trees may be planted and/or maintained as individual specimens, or clustered. Groups should be two to three trees maximum, with mature foliage of any group separated horizontally by at least 10 feet, if planted on less than 20 percent slope, and 20 feet, if planted on greater than 20 percent slope.

4.5.1.6 Tree canopies shall not be allowed to overhang the roof of any structure; the outer edge of the canopies of mature trees will be a minimum of 10 feet from the building eaves, and free of all dead or dying parts. All the dead material must be pruned out of all vegetation on a regular basis. Trees and vegetation should not be planted in areas where fire truck access is impaired, should not impair or obstruct the use of fire department ladders.

4.5.1.7 Mulches, chips and other small multi-cuttings (cut to less than two inches in diameter and four inches in length) shall be evenly spread over the area no more than 4 inches, at least 50 feet from structures. This can be used to maintain soil moisture and prevent grass and weed encroachments within the treated areas. Regular maintenance, vegetation pruning, and irrigation to establish drought tolerant, fire-resistive landscaping are very important in this Zone.

4.5.1.8 Construction materials, firewood, and other combustible materials shall not be stored in unenclosed spaces beneath buildings or structures, or on decks or under eaves, canopies or other projections or overhangs. Storage may occur in the defensible space located a minimum of 30 feet from structures and separated from the crown of trees by a minimum of 10 feet, measured horizontally.

4.5.1.9 Ornamental plants will not be planted or allowed to become established within this Zone, unless shown in the Recommended Plant Lists in APPENDIX 'A' (or in an approved landscape plan and approved by the Fire Marshal).

4.5.1.10 Plants in this Zone will not include any pyrophytes that are high in oils and resins. Exception: All non- fire resistive trees, including conifers, pepper trees, eucalyptus and

acacia species shall be planted and maintained so that the tree's drip line at maturity is a minimum of 50 feet from any combustible structure.

~~maintained so that the tree's drip line at maturity is a minimum of 50 feet from any combustible structure.~~

4.5.1.11 Ornamental plants will not be planted or allowed to become established within this Zone, unless fire resistive trees, including conifers, pepper trees, eucalyptus and acacia species shall be planted and maintained so that the trees drip line at maturity is a minimum of 50 feet from any combustible structure.

~~maintained so that the trees drip line at maturity is a minimum of 50 feet from any combustible structure.~~

4.5.1.12 Non-flammable patios, walkways, rock, driveways, and gravel can be used to break up fuel continuity within this Zone.

4.5.1.13 If shrubs are located underneath a tree's drip line, the lowest branch will be at least three times as high ~~as the understory shrubs or 10 feet, whichever is greater.~~

~~as the understory shrubs or 10 feet, whichever is greater.~~

4.5.1.14 Trees may be planted and/or maintained as individual specimens, or clustered with 2 to 3 trees in a single cluster; crowns of mature trees shall maintain a minimum horizontal clearance of 10 feet for fire resistant trees and 30 feet for non-fire resistive trees; and avoid planting trees directly uphill or one another. The following table 4907.3.1 from the County Consolidated Fire Code defines the distance between mature tree canopies by percent slope.

TABLE 4907.3.1
DISTANCE BETWEEN TREE CANOPIES

Distance between Tree Canopies by Percent Slope	
Percent of Slope	**Required Distances Between Edge of Mature Tree Canopies (1)**
0 to 20	10 feet
21 to 40	20 feet
41 plus	30 feet

4.5.2 Zone B Fuel Modification – Non-Irrigated

Zone B is the remaining 50 feet of fuel management adjacent to flammable vegetation. Roads and other "non-structure" improvements are allowed in this zone. Zone B fuel management shall be applied to all roadways, including private controlled access roadways; i.e., Covey Lane and Mountain Ridge Road (Lilac Hills Ranch would be responsible for these two private roadways only where the development is adjacent to these private roadways and DSFPD would enforce the

minimum fuel modification requirements on the other private properties being serviced by the private roads). Zone B can either be cleared in conformance with Zone A above, or selectively cleared and modified as described below.

4.5.2.1 Zone B is an area 50 to 100 feet (or more) away from any structure where the fuel volume will be removed or thinned by 50 percent, including the removal of undesirable species.

4.5.2.2 Irrigation will be used only if needed to establish and maintain fire-resistive landscaping.

4.5.2.3 As the native vegetation cover in Zone B is reduced, there is a very high probability that the openings will be dominated with non-native weed or grass species. Therefore, all grasses and weeds are to be mowed or weed-whipped to a 4-inch stubble height by June 1st of each year or when the fuels become cured, whichever occurs first.

4.5.2.4 Any vegetative biomass (debris and trimmings) produced by thinning and pruning shall be removed from the site or converted to mulch by chipping and evenly distributed to a maximum depth of four (4) inches. This mulching concept helps to maintain soil moisture for the designated plants, reduces the growth of annual grass and minimizes soil erosion.

4.5.2.5 The area on each side of the improved width of highways, private roads, and driveways shall comply with the requirements of a fuel modification zone. For newly constructed roads, the vegetation shall be modified/reduced by 50 percent for ~~30~~20 feet on either side of the road.

4.5.2.6 The following native species will not be permitted to grow in this zone even as specimen plants because of their flammability:

- California sagebrush, *Artemisia californica;*
- Flat-topped buckwheat, *Eriogonum fasciculatum;* and,
- Black sage, *Salvia mellifera.*

4.5.3 Fuel Maintenance

Maintenance within the zones shall be performed year-round and include the following:

4.5.3.1 Prune and thin trees around structures to decrease fuel volume, retain succulent growth and to provide adequate clearance between structures and plants, as required in the County Consolidated Fire Code.

4.5.3.2 Tree branches overhanging roofs shall be removed.

4.5.3.3 Trash and combustible debris shall be cleared from around structures, and removed from roofs and rain gutters.

4.5.3.4 Irrigation systems will be maintained to ensure that they function properly and plantings are watered sufficiently to maintain succulent growth.

4.5.3.5 The responsibility for the fuel modification ~~maintainence~~maintenance defined below shall remain with each lot owner and any subsequent owners, and a maintenance agreement through a Home Owner Association to remove dead and dying vegetation, non-native species that may establish over time, and general compliance with the fuel modification requirements the common areas.

Fuel Modification Zones Analysis – DUDEK

Dudek conducted an analysis of fuel modification zones which analyzed the fire behavior across the project site and compared it against the proposed development footprint, product type and proposed structure setbacks (See APPENDIX J – Fuel Modification Zones Analysis – DUDEK). This analysis was used to support the analysis of Section 4.4 – Defensible Space and Vegetation Management in this FPP.

4.6 Ignition Resistant Construction and Fire Protection -Residential

Ignition-resistant construction for all structures will provide significant protection in this very high fire hazard zone. Ignition-resistant construction requirements will provide critical improvements to all types of structures for them to survive a worst case scenario fire storm in this area. Another significant requirement will be that ~~the~~ maintenance and repair of these proposed structures will be with the same ignition-resistant materials and construction features. Also, the FPP requires that ignition-resistant construction will apply to mitigate the ignitability of all future proposed residential structures and projections (exterior balconies, carports, decks, patio covers, unenclosed roofs and floors).

All structures within a wildland-urban interface as defined in the County Building Code must be built using ignition-resistive construction methods (Building Code (Title 9, Division 2, Chapter 1 of the San Diego County Code of Regulatory Ordinances). Construction requirements must meet all then-current County and State of California Building Codes (Chapter 7A) requirements for construction in wildland areas. Ignition-resistant building requirements found in the County Building Code (more restrictive than the California Building Code) will significantly reduce the threat of wildfire for this development, especially the flying embers entering a structure, landing on a receptive fuel and starting a new fire.

Following are specific fire-resistive building features that shall be applied to all structure construction that will be implemented at the site plan or building permit stage:

4.6.1 All structures within the Lilac Hills Ranch project shall be built with a Class A roof assembly, including a Class A roof covering (per CBC Chapter 7A). It should be noted that recent testing has found that solar panels mounted within about 5 inches of a Class A roof assembly may nullify the Class A rating of the assembly.

4.6.2 All exterior walls on all sides of the buildings shall be constructed with one-hour fire resistant building materials, and protected with two-inch nominal solid blocking between rafters at all roof overhangs and under the exterior wall covering. Wood siding of 3/8-inch plywood or 3/4-inch drop siding is permitted, but must have an underlayment of ½-inch fire-rated gypsum sheathing that is tightly butted or taped and mudded, or other ignition-resistive materials approved by the Fire Authority Having Jurisdiction (FAHJ) and/or the Planning Authority Having Jurisdiction (PAHJ).

4.6.3 All vents (roof, foundation, combustion-air, etc.) shall resist the intrusion of flames and embers or shall be protected by louvers and 1/8" non-combustible, corrosion-resistant mesh. Turbine attic vents shall be equipped to allow rotation in only one direction (County Building Code 704A.2.1). Attic ventilation shall also comply with the requirements of the California Fire Code.

Exception: Where a 100-foot fuel modification zone from a structure to the project site boundary cannot be met in the northeast and southwest corner of the property, all vents shall provide ventilation while trapping flames and embers before they enter the home (e.g., use of vents produced by Vulcan or Brandguard or any simiular vents).

4.6.4 Attic ventilation openings or ventilation louvers will not be permitted in soffits, in eave overhangs, between rafters at eaves, or in other similar exterior overhanging areas in this wildland/urban interface area.

Exception: Where a 100-foot fuel modification zone from a structure to the project site boundary cannot be met in the northeast and southwest corner of the property, all vents shall provide ventilation while trapping flames and embers before they enter the home (e.g., use of vents produced by Vulcan or Brandguard).

4.6.5 All eaves of roof overhangs shall be enclosed (boxed eaves) on all sides with non combustible materials or constructed with heavy timber such as 2x starter board and 3x6 rafter tails.

Structure openings: Louvers, ventilators, or openings in walls, roofs, attics, and underfloor areas having headroom less than four (4) feet in height which are not fitted with sash or doors shall be covered with wire screen. The screen covering of such openings will be of corrosion-resistant metal or other approved material that offers equivalent protection, and will have a maximum mesh of one-eighth (1/8) inch.

4.6.6 All projections (exterior balconies, stairs, covers, unenclosed roofs and floors, and similar architectural appendages and projections) shall be of non-combustible construction, one-hour ignition resistive construction on the underside, or heavy timber construction. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain the fire-resistive integrity of the wall.

4.6.7 All glass or other transparent, translucent or opaque glazing materials, including skylights, shall be ~~constructed of tempered glass or a dual glazed windows with minimally one pane of tempered glass.~~

~~constructed of tempered glass or a dual glazed windows with minimally one pane of tempered glass.~~

4.6.8 Fences and other structures less than 5 feet from a building shall be non-combustible construction, heavy timber or fire retardant pressure treated wood.

4.6.9 All rain gutters, down spouts and gutter hardware shall be constructed from metal or other noncombustible material to prevent wildfire ignition along eave assemblies.

4.6.10 Gutters shall be designed to reduce the accumulation of leaf litter and debris that contribute to roof edge ignition.

4.6.11 Exterior door assemblies will conform to the performance requirements of standard SFM 12-7A-1 or will be of approved non-combustible construction, or solid core wood having stiles and rails not less than 1 3/8 inches thick with interior field panel thickness no less than 1 1/4 inches thick, or will have ~~a fire-resistance rating of not less than 20 minutes when tested according to ASTME 2074.~~

~~a fire-resistance rating of not less than 20 minutes when tested according to ASTME 2074.~~

4.6.12 All windows to be screened shall be provided with mesh metal or similar non-combustible window screens to prevent embers from entering the structure during high wind condition.

4.6.13 Any damaged or replacement window, siding, roof coverings, and specific non-combustible wall shall meet or exceed the original intent of the fire protection discussed in this Plan.

4.6.14 Buildings and structures will be set back a minimum of 30 feet from property lines and open space easements unless the County Zoning Ordinance requires a greater minimum. When the property line abuts a roadway the setback will be measured from the centerline of the roadway.

4.6.15 Fire protection tactical operations for proposed two-story residential structures will be based on structures less than 35 feet in height, unless approved by the fire district.

4.7 Protection of Commercial and Civic Structures, School, Senior Citizen Neighborhood and Other Facilities and Emergency Trail Access

The proposed project includes commercial, civic structures, schools, and senior citizen neighborhood within the development. Three-story structures are proposed but will not exceed

35 feet in height, with access to the third floor from the second floor. Based on maximum height of structures, none of the structures would be required to meet mid-rise structure fire code requirements there are applicable fire protection requirements that shall be required to ensure that proposed and future buildings on this site meet specific construction features. Guidance to mitigate fire protection measures and to mitigate structural firefighting risks for individual commercial/structure and other public facilities will be established in accordance with the requirements of the County Consolidated Fire Code and California Building Code. The County of San Diego and the DSFPD will review all proposed buildng plans for compliance with the requirements of fire codes and this Fire Protection Plan.

Following are specific requirements, not all inclusive, for commercial, industrial, school, age-restricted community, and other public facilities structures on this development:

4.7.1 Buildings shall be protected throughout by an automatic fire sprinkler system designed and installed in conformance with the latest edition of NFPA 13~~ and in accordance with the following:~~.

4.7.2 A shut-off valve and a water flow alarm shall be provided for each floor of structures. Each shut-off valve and water flow alarm shall be electronically supervised.

4.7.3 Smoke detectors shall be connected to an automatic fire alarm system and shall be installed in accordance with the latest edition of NFPA 72.

4.7.4 An approved and listed, automatic and manual, fully addressable and electronically-supervised fire alarm system shall be provided in conformance with the California Building Code.

4.7.5 Stairway enclosures shall be continuous and shall fully enclose all portions of the stairway. Exit enclosures shall exit directly to the exterior of the building or include an exit passageway on the ground floor leading to the exterior of the building. Each exit enclosure shall extend completely through the roof and be provided with a door that leads onto the roof.

4.7.6 School grounds may be fenced and gates therein may be equipped with locks, provided that safe dispersal areas based on three square feet per occupant are located between the school and the fence. Such required safe dispersal areas shall not be located less than 50 feet from school buildings.

4.7.7 The project's extensive trail system is accessible by emergency responders via numerous access points throughout the Lilac ~~Hils~~Hills Ranch community. The largest distance to a roadway access point from any point along the proposed trail is 765 feet in Phase 1. Access points are called out in the Trail Plan for Phase 1. The trail system has not been designed for the latter phases of the development. However, similar access point spacing will be provided (See APPENDIX 'P' – Trails Plan-Phase 1 Access Points).

The following checklist for design concepts may be utilized to ensure that future commercial buildings meet specific performance standards requried by the DSFPD that may exceed what is normally required by standard California building codes. This list is provided to memorialize the

requirement or design measure, to help mitigate the structural firefighting risk, and to notify the applicant, engineer, architect, and future lot owners, what will be required in these future buildings.

- ✓ Applicable fire protection and building construction related codes and standards for commercial, industrial, and public facilities
- ✓ Maximum allowable height of buildings for existing fire apparatus capability
- ✓ On-site fire protection water system, required fire flow, on site hydrants, and fire sprinkler systems
- ✓ Sprinkler risers and flow alarms and signals
- ✓ Fire detection and fire alarm systems where required by CFC and where needed in large buildings to provide early detection
- ✓ Fire department sprinkler connection locations
- ✓ Wet standpipes where needed in large buildings based on travel distances exceeding 150 feet from doors
- ✓ Site access and on-site fire access roads
- ✓ Identification of onsite fire lanes and provision of signage
- ✓ Clear paved setbacks from property lines to allow fire engine and fire truck operations
- ✓ Protection for trash chutes and trash storage
- ✓ Heating Ventilation and Air Conditioning (HVAC) System controls for firefighter use
- ✓ High piled stock requirements
- ✓ Firefighter access doors for high piled stock
- ✓ Firefighter foot access around buildings
- ✓ Roof access for firefighters through parapets and mansards
- ✓ Addressing and identification of buildings
- ✓ Geographical directories
- ✓ Smoke removal provisions
- ✓ Private or public motor fuel dispensing, if applicable
- ✓ Hazardous materials storage, use and handling; interior and exterior, if applicable
- ✓ Maximum allowable quantities for hazardous materials (define/discuss CFC requirement in general, and threshold for becoming an ‘H’ occupancy)
- ✓ Exterior storage, and interior storage
- ✓ Fire alarms, water flow alarms and monitoring
- ✓ Exits and emergency/standby power
- ✓ Portable extinguishers
- ✓ Combustible decorations, displays and combustible storage
- ✓ No smoking signs

- ✓ Signs on exterior doors to electrical panel rooms, riser rooms, etc. NFPA hazard signals
- ✓ Solar panels on roofs
- ✓ Natural gas shutoffs
- ✓ Emergency plan and equipment
- ✓ Fire prevention program
- ✓ Construction fire safety
- ✓ Fire command center in larger buildings (CFC Section 508)
- ✓ Pre-emptive traffic devices at signalized intersections
- ✓ Emergency responder radio coverage in buildings (CFC section 510)
- ✓ Special requirements for vehicles operating in buildings

The following fire protection and building construction related codes are listed so that architects, engineers, contractors, and owners are aware of their potential applicability.

- 2010 California Fire Code (CFC) including but not limited to Chapter 9 for Fire Protection Systems, Chapter 23 for High Piled Stock; Chapter 27 for Hazardous Materials; and, Chapter 34 for Flammable and Combustible Liquids.
- 2010 California Building Code
- County Building Code
- Fire District and County Fire Codes
- National Fire Protection Association (NFPA) standards as may be applicable including:
  - NFPA 10-- Fire extinguishers
  - NFPA 13--Fire sprinkler systems
  - NFPA 14 – Standpipes
  - NFPA 20--Fire Pumps (if needed but doubtful due to high water system pressures)
  - NFPA 70--National Electrical Code
  - NFPA 72--Fire Alarms
  - NFPA 90A--Air Conditioning and Ventilation Systems
  - NFPA 110--Emergency and Standby Power Systems

4.8 Additional Requirements

4.8.1 Single-story structures shall be setback a minimum 15 feet horizontally from top of a slope to the farthest projection from a roof. A single-story structure shall be less than 12

feet above grade. A two-story structure shall be setback a minimum of 30 feet horizontally from top of slope to the farthest projection from a roof.

4.8.2 Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with AASHTO HB-17. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits and clearance limitations shall be posted at both entrances to bridges when required by the fire code official.

4.8.3 Brush and other flammable vegetation will be removed prior to commencing any construction activity. During construction at least 50 feet of clearance around the structures will be kept free of all flammable vegetation as an interim fuel modification zone during construction of structures.

4.8.4 A lighted directory of the development noting building numbers, solar panel designations (if applicable), etc. shall be installed near the entrance with approval from the DSFPD.

~~**4.8.4**~~**4.8.5** Any disputes of individual yard landscaping with regard to interpretation of this Fire Protection Plan (FPP) shall be decided by DSPD's Fire Chief and Fire Marshal. The Fire Marshal's decision shall be final and binding for the development.

~~**4.8.5**~~**4.8.6** This plan and its recommendations should be incorporated by reference into the final project Supplemental Environmental Impact Report.

~~**4.5.1** A lighted directory of the development noting building numbers, solar panel designations (if applicable), etc. shall be installed near the entrance with approval from the DSFPD.~~

4.8.7 Separate from the conditions in this FPP, the DSFPD will require a Memorandum of Agreement to be settled prior to the initial phase of the development. The conditions of the agreement will not set aside or alter the conditions with the FPP.

4.9 Fuel Treatment Location Map

Each developmental phase will include a Fuel Treatment Location Map which will show the location of all proposed fuel modification treatment locations and other mitigation measures for the known locations of structures within the development. For this FPP, Exhibit 1 illustrates the recommended fuel modification treatment locations to provide adequate fuel modification requirements for the development.

5.0 CONCLUSIONS

This FPP evaluated the adverse environmental effects that the proposed Lilac Hills Ranch residential and commercial development may have from wildland fire and to properly mitigate those impacts to ensure that this development does not unnecessarily expose people or structures to a significant risk of loss, injury or death involving wildland fires.

5.1 Emergency Response

Lilac Hills Ranch must demonstrate that fire services can be provided that meet the minimum travel time identified in Polcy S-6.4. Travel time is defined as the estimated time it will take for the "closest fire station" to reach the furthest structure in a proposed development project. (Policy S-6.4).

The "closest" fire station to Lilac Hills Ranch is CAL FIRE's Miller Station at 9127 West Lilac Road, located adjacent to the development and approximately 2.3 miles from the furthest structure when the development is fully construct. The travel time from this station to the furthest structure when all phases of the proposed development are completed would be approximately 4.5 minutes, below the 5 minutes travel time requirement (see Figure 5).

DSFPD identified Fire Station 11 as the "primary" fire station for the project in the Project Facility Availability Form (DPLU J-399F Form).

~~Travel times from Station 11 can be found~~ The analysis in ~~Table 8 above~~this FPP along with the analysis and findings in DUDEK and Hunt's ~~DSFPD~~ Capabilities Assessment~~,~~ for Lilac Hils Ranch project was referenced and ~~do not fully meet the time standards identified by the County General Plan. However with any of the~~used to recommend options ~~listed above in section 4.1, the project will meet the County's travel times irregardless of which station is used to measure response time. The project analysis detailed in Dudek's DSFPD Capabilities~~ for emergency services. The analysis and Assessment indicates that certain improvements/options to the existing fire response system would ~~allow~~provide fire and emergency medical services ~~to~~that would be ~~provided to LHR~~ within the travel times identified in the General Plan.

5.2 Emergency Road Access

The emergency road access (Fire Apparatus Access Roads) requirements for this project shall be adequate and fire code compliant in terms of access and construction standards for roadways. ~~San Diego County Public Road~~The Fire District Standards and the County Consolidated Fire Code will apply to roadway improvements along West Lilac Road and a portion of Covey Lane~~.~~ ~~San Diego County Private Road Standards will apply~~ and to all interior roads.

In addition, emergency access to the extensive trail system will be provided at numerous points throughout the community.

5.3 Fire-Resistive Building Materials

The required (SDCCFC 2011) ignition-resistant construction for all structures will provide significant protection in this very high fire hazard zone. The ignition-resistant construction requirements provide critical improvements to structures for minimizing ember penetration and resisting potential heat exposure, resulting in a very high survival rate during a worst case scenario fire storm in this rural area. In addition, the FPP requires that ignition-resistant construction will apply to mitigate the ignitability of all future proposed structures and

projections (casitas, storage sheds, exterior balconies, carports, decks, patio covers, unenclosed roofs and floors, etc.).

5.4 Fuel Management Zones

The requirements of this FPP provide the fuel modification standards which mitigate the exposure of people to a significant risk of loss, injury or death. The setback area and fuel modification criteria prescribed provide a defensible space zone for fire suppression forces and will protect structures from radiant and convective heat. The project includes a few areas where fuel modification zones are less than 100 feet wide. However, the project is provided with customized fuel modification based on site specific fire behavior modeling and risk assessments. In these areas, off-site, adjacent land uses and overall fuel densities and terrain justify less than 100 feet of fuel modification zone, but will also be subject to other compensating measures (FireWise2000, Inc.'s Fire Protection Plan 2013), which have been evaluated to be sufficient based on adjacent flame lengths and heat intensity.

The project demonstrates compliance with applicable fire regulations, including but not limited to the California Fire Code, California Code of Regulations, County Fire Code, or the County Consolidated Fire Code.

5.5 Cumulative Impact Analysis

Cumulative impacts from multiple projects within DSFPD can cause fire response service to decline and must be analyzed. The Lilac Hills Ranch Project represents a significant development that would increase the existing District population by 5,135 people. The resulting impact on fire services has been analyzed in detail within this report and despite the large population increase, the existing fire service delivery system is considered underutilized on a call volume basis but may need to be augmented by DSFPD to respond to the type of District population change (as discussed in *the Deer Springs Fire Protection District Capability Assessment by DUDEK and Hunt Research Corp, ~~June~~September 2013*). The DSFPD Capability Assessment further states that besides the Lilac Hills Ranch project: The most significant foreseeable DSFPD project is in the southern/central portion of the District in the Merriam Mountains area. There is no current application for this area. However, the San Diego County Board of Supervisors, in June 2012, approved the project owner specific request of 1,200 units. Based on the size, substantial one-time fire mitigation fees and on-going property tax fire availability and suppression fees would be generated by a potential project, similar to the Lilac Hills Ranch Project, DSFPD Station 12 is located in close proximity to the southern end of this project and would be the first responder for fire and emergency medical calls. Based on the currently low call volume at Station 12 and the proximity and low call volumes associated with Stations 13 and 11, the area may be able to be serviced by existing stations, depending on the northerly extents of any development on the Merriam Mountains property and the type and size

of the Project that may impact the ability to respond within 4 or 5 minute travel times for ~~firstdue~~first-due and 8 minutes for second-due.

The Capability Assessment also found that no other DSFPD significant, large master planned communities were identified as reasonably foreseeable. However, just north of the DSFPD and within Station 15's 8 minute travel time response area, a large master planned community is being constructed in

the North County Fire Protection District at the corner of I-15 and SR-76. Certain portions of this community have been approved while others are still being entitled. This project includes several components including:

- ~~•~~ Meadowood – 900 units, commercial, school
- ~~•~~ Campus Park – 751 units
- ~~•~~ Campus Park West – 355 units
- ~~•~~ Palomar College Campus – up to 5,000 students

The "closest" ~~firre~~fire station to Lilac Hills Ranch is CAL FIRE's Miller Station at 9127 West Lilac Road located adjacent to the development and approximately 2.3 miles from the furthest structure when the development is fully constructed. The travel time from the Miller Station site to the furthest structure when all phases of the proposed development are ~~complted~~completed would be approximately 4.5 minutes, which is below the 5 minutes travel time requirement (see Figure 5). DSFPD identified Fire ~~Statioin~~Station 11 as the "primary" fire station for the project in the Project Facility Availability Form (DPLU J-399F Form). Response times from Station 11 can be found in Table 8 and in Dudek and Hunt's DSFPD Capabilities Assessment, and do not meet the time standards identified by the County General Plan. The analysis provided by this FPP and the Deer Springs Fire Protection District Capability Assessment, the options listed above in section 4.1 would ensure that the project would meet the County's travel time and fire service requirements (*from Deer Springs Fire Protection District Capability Assessment by Dudek and Hunt Research Corp, June 2013*).

The Assessment focused on the DSFPD's current configuration including stations, staffing, apparatus, and response efficiency and considered the potential fire service impacts that the Project, and other foreseeable projects in the DSFPD.

If the recommendations in this Plan are implemented, this development will not expose people or habitable structures to a significant risk of loss, injury or death. Following the recommendations would also decrease the risk of loss for surrounding existing uses. As proposed, the project is not anticipated to contribute to a significant cumulative impact relative to wildland fire risk.

6.0 LIST OF PREPARERS, PERSONS, AND ORGANIZATIONS CONTACTED

6.1 List of Preparers

The principal author and preparer of this Deer Springs Fire Protection Plan is C. Douglas Pumphrey, Senior Wildland Fire Associate of ***FIREWISE* 2000, Inc**. and certified by David C. Bacon, President of ***FIREWISE* 2000, Inc.** and a San Diego County DPLU certified wildland fire consultant.

6.2 List of Persons Contacted During the Course of this Project

Randy Goodson, CEO, Accretive Investment, Inc.

Jon Rilling, ~~Vice~~ President, Accretive Investment, Inc.

Ann Moore, Esquire, Norton Moore and Adams

Chris Amestoy, Fire Chief, Deer Springs Fire Protection District

Cathey Michna, Fire Marshal, Deer Springs Fire Protection District

Mark Brencick, Landmark Consulting

Gerald Scheid, Senior Biologist, RECON

Monique Chen, Chen Ryan Associates

Rikki Schroeder, RMA Consultants

Michael Huff, Dudek

APPENDICES

APPENDIX A

County of San Diego
Acceptable Plants For Defensible Space
In Fire Prone Areas

ALL NATIVE PLANTS ON THE FOLLOWING LIST are considered to be drought-tolerant in the particular climate zone they are found. Those that grow best in riparian areas, as indicated by the "R," are generally the least drought-tolerant plants on the list.

SPECIAL NOTE: When planting, it is necessary to water deeply to encourage the plant roots to seek natural moisture in the soil. This watering should continue for at least three years to allow the plants to naturalize. More water should be provided in summer and less (if any) in the winter. These plants should be weaned off the supplemental irrigation and become less dependent on it over the establishment period.

No plant is totally fire resistant. The plants listed were chosen due to their high water content, minimum amount of flammable resins and/or low fuel volume.

Definitions:

Defensible Space: The area around a structure, where material capable of causing fire has been cleared, reduced or changed, to act as a barrier between an advancing fire and the structure.

Drought-Tolerant Plant Materials: Trees, shrubs, groundcovers, and other vegetation capable of sustained growth and reproduction with only natural moisture. Occasional supplemental irrigation is necessary only in extreme drought situations.

Establishment Period: The time it takes for a plant to become drought-resistant. This is usually a period of three years and is the time when supplemental irrigation is necessary.

Native or Naturalizing Plant Species: Plant species native to the region or introduced which, once established, are capable of sustaining growth and reproduction under local climatic conditions without supplemental irrigation.

Customized Acceptable Plant List
For the Lilac Hills Ranch Project

Type	Genus	Species	Common Name
Annual	Lupinus spp.	nanus	Lupine
Groundcover	Achillea	millefolium	Yarrow
Groundcover	Arctostaphylos spp.		Manzanita
Groundcover	Cerastium	tomentosum	Snow-in-Summer
Groundcover	Coprosma	kirkii	Creeping Coprosma
Groundcover	Cotoneaster spp.		Redberry
Groundcover	Drosanthemum	hispidum	Rosea Ice Plant
Groundcover	Dudleya	virens	Island Live-Forever
Groundcover	Eschscholzia	californica	California Poppy
Groundcover	Ferocactus	viridescens	Coast Barrel Cactus
Groundcover	Gaillardia	grandiflora	Blanket Flower
Groundcover	Gazania spp.		Gazania
Groundcover	Helianthemum spp.		Sunrose
Groundcover	Lantana spp.		Lantana
Groundcover	Lasthenia	californica	Common Goldfields
Groundcover	Lasthenia	glabrata	Coastal Goldfields
Groundcover	Lupinus spp.		Lupine
Groundcover	Pyracantha spp.		Firethorn
Groundcover	Rosmarinus	officinalis	Rosemary
Groundcover	Santolina	chamaecyparissus	Lavender Cotton
Groundcover	Trifolium	frageriferum	O'Connor's Legume
Groundcover	Verbena	rigida	Verbena
Groundcover	Viguiera	laciniata	San Diego Sunflower
Groundcover	Vinca	major	Periwinkle
Groundcover	Vinca	minor	Dwarf Periwinkle
Perennial	Coreopsis	grandiflora	Coreopsis
Perennial	Coreopsis	maritima	Sea Dahlia
Perennial	Coreopsis	verticillata	Coreopsis
Perennial	Heuchera	maxima	Island Coral Bells
Perennial	Iris	douglasiana	Douglas Iris
Perennial	Kniphofia	uvaria	Red-Hot Poker
Perennial	Lavandula spp.		Lavender
Perennial	Penstemon spp.		Penstemon
Perennial	Satureja	douglasii	Yerba Buena
Perennial	Sisyrinchium	bellum	Blue-Eyed Grass
Perennial	Sisyrinchium	californicum	Golden-Eyed Grass
Perennial	Solanum	xantii	Purple Nightshade
Perennial	Zauschneria	'Catalina'	Catalina Fuschia
Perennial	Zauschneria	californica	California Fuschia
Perennial	Zauschneria	cana	Hoary California Fuschia
Shrub	Agave	americana	Desert Century Plant
Shrub	Agave	Amorpha fruticosa	False Indigobush
Shrub	Agave	deserti	Shaw's Century Plant
Shrub	Agave	shawii	NCN
Shrub	Agave		Century Plant
Shrub	Arbutus	menziesii	Madrone

Shrub	Arctostaphylos spp.		Manzanita
Shrub	Atriplex	canescens	Hoary Saltbush
Shrub	Atriplex	lentiformis	Quail Saltbush
Shrub	Baccharis	pilularis	Coyote Bush
Shrub	Baccharis	salicifolia	Mule Fat "R"
Shrub	Carissa	macrocarpa	Natal Plum
Shrub	Ceanothus spp.		California Lilac
Shrub	Cistus spp.		Rockrose
Shrub	Cneoridium	dumosum	Bush rue
Shrub	Comarostaphylis	diversifolia	Summer Holly
Shrub	Convolvulus	cneorum	Bush Morning Glory
Shrub	Elaeagnus	pungens	Silverberry
Shrub	Encelia	californica	Coast Sunflower
Shrub	Encelia	farinosa	White Brittlebush
Shrub	Eriobotrya	deflexa	Bronze Loquat
Shrub	Eriophyllum	confertiflorum	Golden Yarrow
Shrub	Escallonia spp.		Escallonia
Shrub	Feijoa	sellowiana	Pineapple Guava
Shrub	Fouqueria	splendens	Ocotillo
Shrub	Fremontodendron	californicum	Flannelbush
Shrub	Fremontodendron	mexicanum	Southern Flannelbush
Shrub	Galvezia	juncea	Baja Bush-Snapdragon
Shrub	Galvezia	speciosa	Island Bush-Snapdragon
Shrub	Garrya	elliptica	Coast Silktassel
Shrub	Garrya	flavescens	Ashy Silktassel
Shrub	Heteromeles	arbutifolia	Toyon
Shrub	Lantana spp.		Lantana
Shrub	Lotus	scoparius	Deerweed
Shrub	Mahonia spp.		Barberry
Shrub	Malacothamnus	clementinus	San Clemente Island Bush
Shrub	Malacothamnus	fasciculatus	Mesa Bushmallow
Shrub	Melaleuca spp.		Melaleuca
Shrub	Mimulus spp.		Monkeyflower
Shrub	Nolina	parryi	Parry's Nolina
Shrub	Photinia spp.		Photinia
Shrub	Pittosporum	rhombifolium	Queensland Pittosporum
Shrub	Pittosporum	tobira 'Wheeleri'	Wheeler's Dwarf
Shrub	Plumbago	auriculata	Cape Plumbago
Shrub	Prunus	caroliniana	Carolina Laurel Cherry
Shrub	Prunus	ilicifolia	Hollyleaf Cherry
Shrub	Prunus	lyonii	Catalina Cherry
Shrub	Puncia	granatum	Pomegranate
Shrub	Pyracantha spp.		Firethorn
Shrub	Rhamus	alaternus	Italian Buckthorn
Shrub	Rhamus	californica	Coffeeberry
Shrub	Rhaphiolepis spp.		Rhaphiolepis
Shrub	Rhus	continus	Smoke Tree
Shrub	Rhus	ovata	Sugarbush
Shrub	Rhus	trilobata	Squawbush
Shrub	Romneya	coulteri	Matilija Poppy
Shrub	Rosa	californica	California Wild Rose

Shrub	Rosa	minutifolia	Baja California Wild Rose
Shrub	Salvia spp.		Sage
Shrub	Sambucus spp.		Elderberry
Shrub	Symphoricarpos	mollis	Creeping Snowberry
Shrub	Syringa	vulgaris	Lilac
Shrub	Teucrium	fruticans	Bush Germander
Shrub	Verbena	lilacina	Lilac Verbena
Shrub	Xylosma	congestum	Shiny Xylosma
Shrub	Yucca	schidigera	Mojave Yucca
Shrub	Yucca	whipplei	Foothill Yucca
Tree	Acer	macrophyllum	Big Leaf Maple
Tree	Acer	saccarum	Sugar Maple
Tree	Acer	saccharinum	Silver Maple
Tree	Alnus	rhombifolia	White Alder "R"
Tree	Arbutus	unedo	Strawberry Tree
Tree	Brahea	edulis	Guadalupe Palm
Tree	Ceratonia	siliqua	Carob
Tree	Cercis	occidentalis	Western Redbud
Tree	Cerdidium	floridum	Blue Palo Verde
Tree	Cornus	nuttallii	Mountain Dogwood
Tree	Cornus	stolonifera	Redtwig Dogwood
Tree	Elaeagnus	angustifolia	Russian Olive
Tree	Eriobotrya	japonica	Loquat
Tree	Gingko	biloba "Fairmount"	Fairmount Maidenhair Tree
Tree	Gleditisia	triacanthos	Honey Locust
Tree	Juglans	californica	California Walnut
Tree	Juglans	hindsii	California Black Walnut
Tree	Lagerstroemia	indica	Crape Myrtle
Tree	Ligustrum	lucidum	Glossy Privet
Tree	Liquidambar	styraciflua	Sweet Gum
Tree	Liriodendron	tulipifera	Tulip Tree
Tree	Melaleuca spp.		Melaleuca
Tree	Nerium	oleander	Oleander
Tree	Parkinsonia	aculeata	Mexican Palo Verde
Tree	Pistacia	chinensis	Chinese Pistache
Tree	Pistacia	vera	Pistachio Nut
Tree	Pittosporum	phillyreoides	Willow Pittosporum
Tree	Platanus	acerifolia	London Plane Tree
Tree	Platanus	racemosa	California Sycamore "R"
Tree	Populus	alba	White Poplar
Tree	Populus	fremontii	Western Cottonwood "R"
Tree	Populus	trichocarpa	Black Cottonwood "R"
Tree	Prunus	caroliniana	Carolina Laurel Cherry
Tree	Prunus	cersifera ‘Newport’	Newport Purple-Leaf Plum
Tree	Prunus	ilicifolia	Hollyleaf Cherry
Tree	Prunus	lyonii	Catalina Cherry
Tree	Prunus	serrulata ‘Kwanzan’	Flowering Cherry
Tree	Prunus	xblireiana	Flowering Plum
Tree	Prunus	yedoensis ‘Akebono’	Akebono Flowering Cherry
Tree	Quercus	agrifolia	Coast Live Oak
Tree	Quercus	engelmannii	Engelmann Oak

Tree	Quercus	suber	Cork Oak
Tree	Rhus	lancea	African Sumac
Tree	Salix spp.		Willow "R"
Tree	Ulmus	parvifolia	Chinese Elm
Tree	Ulmus	pumila	Siberian Elm
Tree	Umbellularia	californica	California Bay Laurel "R"
Vine	Antigonon	leptopus	San Miguel Coral Vine
Vine	Distictis	buccinatoria	Blood-Red Trumpet Vine
Vine	Keckiella	cordifolia	Heart-Leaved Penstemon
Vine	Lonicera	japonica 'Halliana'	Hall's Honeysuckle
Vine	Lonicera	subspicata	Chaparral Honeysuckle
Vine	Solanum	jasminoides	Potato Vine

APPENDIX B
Undesirable Plant List

March 26, 2012

The following species are highly flammable and should be avoided when planting within the first 50 feet adjacent to a structure. The plants listed below are more susceptible to burning, due to rough or peeling bark, production of large amounts of litter, vegetation that contains oils, resin, wax, or pitch, large amounts of dead material in the plant, or plantings with a high dead to live fuel ratio. Many of these species, if existing on the property and adequately maintained (pruning, thinning, irrigation, litter removal, and weeding), may remain as long as the potential for spreading a fire has been reduced or eliminated.

BOTANICAL NAME	COMMON NAME
Abies species	Fir Trees
Acacia species	Acacia (trees, shrubs, groundcovers)
Adenostoma sparsifolium**	Red Shanks
Adenostoma fasciculatum**	Chamise
Agonis juniperina	Juniper Myrtle
Araucaria species	Monkey Puzzle, Norfolk Island Pine
Artemesia californica**	California Sagebrush
Bambusa species	Bamboo
Cedrus species	Cedar
Chamaecyparis species	False Cypress
Coprosma pumila	Prostrate Coprosma
Cryptomeria japonica	Japanese Cryptomeria
Cupressocyparis leylandii	Leylandii Cypress
Cupressus forbesii**	Tecate Cypress
Cupressus glabra	Arizona Cypress
Cupressus sempervirens	Italian Cypress
Dodonea viscosa	Hopseed Bush
Eriogonum fasciculatum**	Common Buckwheat
Eucalyptus species	Eucalyptus
Heterotheca grandiflora**	Telegraph Plant
Juniperus species	Junipers
Larix species	Larch
Lonicera japonica	Japanese Honeysuckle
Miscanthus species	Eulalia Grass
Muehlenbergia species**	Deer Grass
Palmae species	Palms
Picea species	Spruce Trees
Pickeringia Montana**	Chaparral Pea
Pinus species	Pines
Podocarpus species	Fern Pine
Pseudotsuga menziesii	Douglas Fir
Rosmarinus species	Rosemary
Salvia mellifera**	Black Sage
Taxodium species	Cypress
Taxus species	Yew
Thuja species	Arborvitae
Tsuga species	Hemlock
Urtica urens**	Burning Nettle

** San Diego County native species

APPENDIX C

Literature Referenced in this FPP

Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model, General Technical Report RMRS-GTR-153. June 2005. Joe H. Scott, Robert E. Burgan, United States Department of Agriculture - Forest Service, Rocky Mountain Research Station, Missoula, Montana

Andrews, Patricia L.; Bevins, Collin D.; Seli, Robert C. 2004. *BehavePlus Fire Modeling System, version 4.0.0: User's Guide. Gen. Tech. Rep. RMRS-GTR-106WWW*. Ogden, UT: Department of Agriculture, Forest Service, Rocky Mountain Research Station. 132p

Andrews, Patricia L. 1986. *BEHAVE: Fire Behavior Prediction and Fuel Modeling System Burn Subsystem, Part 1*. Gen Tech. Rep. INT-194. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 130 pages.

ANSI A-300 - *Tree, Shrub, and Other Woody Plant Maintenance - Standard Practices. A series of maintenance and management practices.* Tree Care Industry Association. Londonderry, NH 03053.

County of San Diego, Consolidated Fire Code, October 2011

County of San Diego. *Plant List and Acceptable Plants for a Defensible Space in Fire Prone Areas.* Department of Planning and Land Use, December, 1998

County of San Diego. *Guidelines for Determining Significance and Report Format and Content Requirement.* Wildland Fire and Fire Protection Land Use and Environment Group Department of Planning and Land Use, Department of Public Works, December 19, 2008

California Code of Regulations [CCR] Title [T] – 24 part 2 Article 86 (8601 & International Urban – Wildland Interface Code, 2003, 2003 edition, Ordinance 2004-003.

County of San Diego. *Consolidated Fire Code*. Created on October 14, 2009 with passage of County Ordinance 10013. County Health and Safety Code Section §*13869.7*.

County of San Diego. *Guidelines for Determining Significance and Report Format and Content Requirements Wildland Fire and Fire Protection Land Use and Environment Group Department of Planning and Land Use, Department of Public Works, March 19, 2007*.

County of San Diego Ordinance No. 101146 – *An Ordinance Amending Appendix II-A of the County Fire Code Relating to Wildland/Urban Interface Standards*.

County of San Diego. *Plant List and Acceptable Plants for a Defensible Space in Fire Prone Areas.* Department of Planning and Land Use, December 15, 1998.

County of San Diego. *Standards for Private Roads."* Department of Public Works, Adopted June 30, 1999.

Deer Springs Fire Protection District, Ordinance 2010-01; an ordinance of the Deer Springs Fire Protection District which adopts the California fire code, 2010 edition, and 2009 international fire code with certain amendments, additions, and deletions.

DUDEK Environmental Consultants and Civil Engineers. Flammap Fire Behavior Modeling – Lilac Hills Master Planned Community. August 15, 2012
DUDEK and Hunt Research Corporation. Lilac Hills Ranch Fire Services Response Capabilities Assessment, December 2013

DUDEK Environmental Consultants and Civil Engineers. Fuel Modification Zones Analysis. September 2012

Fire Planning and Mapping Tools. California Fire Alliance. Web site is available at: http://wildfire.cr.usgs.gov/fireplanning/

Guidance Document Ignition Resistant Eave Construction. County of San Diego, Department of Planning and Land Use, Building Division, DPLU # 198 (3-21-2005).

How to Predict the Spread and Intensity of Forest and Range Fires. General Technical Report INT-143. June 1983. Richard C. Rothermel. United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401

Latham, D. J. and J. A. Schleiter. (1989) *Ignition Probabilities of Wildland Fuels Based on Simulated Lightning Discharges*. USDA Forest Service General Technical Report INT-411, Ogden, UT. (6,497 KB; 20 pages)

National Fire Protection Association - *NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire* (2008 Edition). 30 pages.

National Fire Protection Association - *NFPA 1142 Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2007 Edition. 64 pages.

Scott, Joe H.; Burgan, Robert E. 2005. *Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model*. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 72 pages.

The Biological Resources Report for Lilac Hills Ranch by RECON. 2012

Western Garden Book 2001 Edition. Editor: Kathleen Norris Brenzel. ISBN-0376039175 Sunset Publishing Corporation. Menlo Park, CA. 768 pages.

Western Region Climate Center. *Historic Climate Data from Remote Automated Weather Stations.* RAWS USA Climate Archive. Reno, NV. Data for all Remote Automated Weather Stations is available at: http://www.raws.dri.edu/index.html.

Wildland/Urban Interface Development Standards. San Diego County Fire Chief's Association, originally Developed by Orange County Wildland/Urban Interface Task Force Subcommittee on Open Space Management, July, 1994, Modified by the San Diego County Wildland/Urban Interface Task Force, November, 1995, Revised August, 1997.

APPENDIX D

Behaveplus Version 4.0.0
Fire Behavior Calculations

BehavePlus 4.0.0 (Build 276)

LHR 60 MPH-sh7FM-Untreated
Tue, Jul 31, 2012 at 11:31:53

Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
Fuel Model		sh7
Fuel Moisture		
1-h Moisture	%	2
10-h Moisture	%	3
100-h Moisture	%	5
Live Herbaceous Moisture	%	30
Live Woody Moisture	%	50
Weather		
Midflame Wind Speed (upslope)	mi/h	24
Terrain		
Slope Steepness	%	20

Run Option Notes

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fire line intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind is blowing upslope [SURFACE].

Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	507.9	ft./min
Heat per Unit Area	2778	Btu/ft2
Fire line Intensity	23515	Btu/ft./s
Flame Length	45.6	ft.

BehavePlus 4.0.0 (Build 276)

LHR_30MPH-sh7FM_Untreated
Sun, Mar 25, 2012 at 23:00:08

Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
Fuel Model		sh7
Fuel Moisture		
1-h Moisture	%	2
10-h Moisture	%	3
100-h Moisture	%	5
Live Herbaceous Moisture	%	30
Live Woody Moisture	%	50
Weather		
Midflame Wind Speed (upslope)	mi/h	12
Terrain		
Slope Steepness	%	20

Run Option Notes
Results

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fire line intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind is blowing upslope [SURFACE].

Output Variable	Value	Units
Surface Rate of Spread (maximum)	223.1	ft /min
Heat per Unit Area	2778	Btu/ft2
Fire line Intensity	10327	Btu/ft /
Flame Length	31.6	Ft

BehavePlus 4.0.0 (Build 276)

LHR_30MPH-tl6(50%)+gr1(50%)FMs_Treated
Sun, Mar 25, 2012 at 23:10:27

Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
First Fuel Model		tl6
Second Fuel Model		gr1
First Fuel Model Coverage	%	50
Fuel Model Type		S
Fuel Moisture		
1-h Moisture	%	2
10-h Moisture	%	3
100-h Moisture	%	5
Live Herbaceous Moisture	%	30
Live Woody Moisture	%	50
Weather		
Midflame Wind Speed (upslope)	mi/h	12
Terrain		
Slope Steepness	%	20

Run Option Notes

Two fuel model weighting method: two-dimensional spread [SURFACE].

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fire line intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind is blowing upslope [SURFACE].

Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	26.8	ft./min
Heat per Unit Area	580	Btu/ft2
Fire line Intensity	324	Btu/ft./s
Flame Length	6.6	ft.

LHR 30 MPH-sh7FM-Untreated
Tue, Jul 31, 2012 at 11:34:56

Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
Fuel Model		sh7
Fuel Moisture		
1-h Moisture	%	2
10-h Moisture	%	3
100-h Moisture	%	5
Live Herbaceous Moisture	%	30
Live Woody Moisture	%	50
Weather		
Midflame Wind Speed (upslope)	mi/h	12
Terrain		
Slope Steepness	%	40

Run Option Notes

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fire line intensity, flame length, and spread distance are always for the direction of the

Wind is blowing upslope [SURFACE].

Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	236.2	ft./min
Heat per Unit Area	2778	Btu/ft2
Fire line Intensity	10936	Btu/ft./s
Flame Length	32.4	

BehavePlus 4.0.0 (Build 276)

LHR 30 MPH-tl6(50%)&gr1(50%)-Treated

Tue, Jul 31, 2012 at 11:48:26

Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
First Fuel Model		tl6
Second Fuel Model		gr1
First Fuel Model Coverage	%	50
Fuel Model Type		S
Fuel Moisture		
1-h Moisture	%	2
10-h Moisture	%	3
100-h Moisture	%	5
Live Herbaceous Moisture	%	30
Live Woody Moisture	%	50
Weather		
Midflame Wind Speed (upslope)	mi/h	12
Terrain		
Slope Steepness	%	40

Run Option Notes

Two fuel model weighting method: two-dimensional spread [SURFACE].

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fire line intensity, flame length, and spread distance are always for the direction of the spread

Wind is blowing upslope [SURFACE].

Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	28.0	ft./min
Heat per Unit Area	580	Btu/ft2
Fire line Intensity	342	Btu/ft./s
Flame Length	6.6	ft.

FIRE BEHAVIOR MODELING SUMMARY BY FIRE SCENARIO

Fire Scenario #1 – Fire Approaching from the North and East (Late Fire Season With 60 MPH North, Northeast And East Wind Conditions in SCAL 18 Fuel Model)	
Fire Behavior Calculation Input Data • *20 percent slope* • *60 mph wind speed* • *225° aspect from north* • *45° wind direction from north*	**Anticipated Fuel Moistures** • *1-Hour Fine Fuel Moisture .....2%* • *10-Hour Fuel Moisture .....3%* • *100-Hour Fuel Moisture .....5%* • *Live Herbaceous Fuel Moisture .....30%* • Live Woody Fuel Moisture 50%
Expected Fire Behavior *Fuel Model SCAL 18 – Coastal Sage Scrub*	
Rate of Spread - *294 feet/minute*	
Fire line Intensity - *21,329BTU's/foot/second*	
Flame Length - *44.1 feet in length*	
Expected Fire Behavior in Treated Fuels *Combined Fuel Model - [tl6 – Very High Load Broadleaf Litter 50% and gs1 - Short, Sparse Dry Climate Grass 50%]*	
Rate of Spread - *79.5 feet/minute*	
Flame Length – 15.6 *feet in length*	

Fire Scenario #2 – Fire Approaching from the southwest (Late Fire Season With 30 MPH Wind Conditions in SCAL 18 Fuel Model)	
Fire Behavior Calculation Input Data • *20 percent slope* • *30 mph wind speed* • *45° aspect from north* • *225° wind direction from north*	**Anticipated Fuel Moistures** • *1-Hour Fine Fuel Moisture .....2%* • *10-Hour Fuel Moisture .....3%* • *100-Hour Fuel Moisture .....5%* • *Live Herbaceous Fuel Moisture .....30%* • *Live Woody Fuel Moisture 50%*
Expected Fire Behavior *Fuel Model SCAL 18 – Coastal Sage Scrub*	
Rate of Spread - *147 feet/minute*	
Fire line Intensity - *10695 foot/second*	
Flame Length - *32.1 feet in length*	
Expected Fire Behavior in Treated Fuels *Combined Fuel Model - [tl6 – Very High Load Broadleaf Litter 50% and gs1 - Short, Sparse Dry Climate Grass 50%]*	
Rate of Spread - *25.1 feet/minute*	
Fire line Intensity - *612 BTU's/foot/second*	
Flame Length – 8.6 *feet in length*	

Fire Scenario #3 – Fire Approaching from the North and East (Late Fire Season Santa Ana Wind Event With 60 MPH North, Northeast And East Wind Conditions in southern mixed chaparral, sh7 Fuel Model)	
Fire Behavior Calculation Input Data *20 percent slope* *60 mph wind speed* *225° aspect from north* *45° wind direction from north*	**Anticipated Fuel Moistures** *1-Hour Fine Fuel Moisture .....2%* *10-Hour Fuel Moisture .....3%* *100-Hour Fuel Moisture .....5%* *Live Herbaceous Fuel Moisture .....30%* Live Woody Fuel Moisture 50%
Expected Fire Behavior *Fuel Model SCAL 18 – Coastal Sage Scrub*	
Rate of Spread - *495 feet/minute*	
Fire line Intensity - *22905 BTU's/foot/second*	
Flame Length - *45.6 feet in length*	
Expected Fire Behavior in Treated Fuels *Combined Fuel Model - [tl6 – Very High Load Broadleaf Litter 50% and gs1 - Short, Sparse Dry Climate Grass 50%]*	
Rate of Spread - *60.9 feet/minute*	
Fire line Intensity - 890 BTU's/foot/second	
Flame Length – 10.2 *feet in length*	

Fire Scenario #4 – Fire Approaching from the south and southwest (Late Fire Season "Rare Event" With 30 MPH Wind Conditions in southern mixed chaparral, sh7 Fuel Model)	
Fire Behavior Calculation Input Data *20 percent slope* *30 mph wind speed* *45° aspect from north* *225° wind direction from north*	**Anticipated Fuel Moistures** *1-Hour Fine Fuel Moisture .....2%* *10-Hour Fuel Moisture .....3%* *100-Hour Fuel Moisture .....5%* *Live Herbaceous Fuel Moisture .....30%* *Live Woody Fuel Moisture 50%*
Expected Fire Behavior *Fuel Model SCAL 18 – Coastal Sage Scrub*	
Rate of Spread - *223 feet/minute*	
Fire line Intensity - *10327 foot/second*	
Flame Length - *31.6 feet in length*	
Expected Fire Behavior in Treated Fuels *Combined Fuel Model - [tl6 – Very High Load Broadleaf Litter 50% and gs1 - Short, Sparse Dry Climate Grass 50%]*	
Rate of Spread - *26.8 feet/minute*	
Fire line Intensity - *324 BTU's/foot/second*	
Flame Length – 6.4 *feet in length*	

<table>
<tr><td colspan="2">Fire Scenario #5 – Fire Approaching from the south and southwest (Late Fire Season “Rare Event” With 30 MPH Wind Conditions in southern mixed chaparral, sh7 Fuel Model)</td></tr>
<tr><td>Fire Behavior Calculation Input Data
40 percent slope
30 mph wind speed
45° aspect from north
225° wind direction from north</td><td>Anticipated Fuel Moistures
1-Hour Fine Fuel Moisture ……..2%
10-Hour Fuel Moisture ……3%
100-Hour Fuel Moisture ……5%
Live Herbaceous Fuel Moisture ……30%
Live Woody Fuel Moisture ……50%</td></tr>
<tr><td colspan="2">Expected Fire Behavior
Fuel Model SCAL 18 – Coastal Sage Scrub</td></tr>
<tr><td colspan="2">Rate of Spread - 236.2 feet/minute</td></tr>
<tr><td colspan="2">Fire line Intensity - 10936 foot/second</td></tr>
<tr><td colspan="2">Flame Length - 32.4 feet in length</td></tr>
<tr><td colspan="2">Expected Fire Behavior in Treated Fuels
Combined Fuel Model - [tl6 – Very High Load Broadleaf Litter 50% and gs1 - Short, Sparse Dry Climate Grass 50%]</td></tr>
<tr><td colspan="2">Rate of Spread - 28.0 feet/minute</td></tr>
<tr><td colspan="2">Fire line Intensity - 342 BTU's/foot/second</td></tr>
<tr><td colspan="2">Flame Length – 6.6 feet in length</td></tr>
</table>

APPENDIX E

Project Facility Availability Forms (Fire and Water)

The Attached Project Facility Availability Form (DPLU-399F) Dated 2/14/2014, Documents Deer Springs Fire Protection District's Requirements to Comply and Adhere to Any and All Current Fire Codes, Building Codes and County Codes Applicable At the Time of Project Start

Separate From the Conditions Outlined in The Project Availability Form (PFAF), The Deer Springs Fire Protection District Will Require a Memorandum of Agreement To Settle Prior To The Initial Phase of the Development. The Conditions of the Agreement Will Not Set Aside or Alter The Conditions In The Attached PFAF.

COUNTY OF SAN DIEGO
DEPARTMENT OF PLANNING AND LAND USE: Zoning
PROJECT FACILITY AVAILABILITY FORM, Fire

Please type or use pen

Accretive Investments, Inc. 858-546-0700
Owner's Name Phone

12275 El Camino Real, Suite 110
Owner's Mailing Address Street

San Diego CA 92130
City State Zip

ORG_____ **F**
ACCT_____
ACT_____
TASK_____
DATE_____ AMT $_____
DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION **TO BE COMPLETED BY APPLICANT**

A. ☒ Major Subdivision (TM) ☒ Specific Plan or Specific Plan Amendment
☐ Minor Subdivision (TPM) ☐ Certificate of Compliance:_____
☐ Boundary Adjustment
☒ Rezone (Reclassification) from A-70 & RR to RU & C34 zone.
☒ Major Use Permit (MUP), purpose: water reclamation
☐ Time Extension...Case No._____
☐ Expired Map...Case No._____
☒ Other_____

B. ☒ Residential . . . . . Total number of dwelling units 1,746
☒ Commercial . . . . . Gross floor area 90000
☐ Industrial . . . . . Gross floor area_____
☒ Other . . . . . Gross floor area_____

C. Total Project acreage 608 Total lots 1,746 Smallest proposed lot n/a

Assessor's Parcel Number(s)
(Add extra if necessary)

See Attached	

Thomas Bros. Page _____ Grid _____
32444 Birdsong Drive, Escondido
Project address Street
Bonsall & Valley Center 92026
Community Planning Area/Subregion Zip

OWNER/APPLICANT AGREES TO COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.
Applicant's Signature: _____ Date: 12/18/13
Address: 12275 El Camino Real, Suite 110 Phone: 858-546-0700
(On completion of above, present to the district that provides fire protection to complete Section 2 and 3 below.)

SECTION 2: FACILITY AVAILABILITY **TO BE COMPLETED BY DISTRICT**

District name Deer Springs Fire Protection District

Indicate the location and distance of the primary fire station that will serve the proposed project: DSFPD Station 1, 8709 Circle "R" Drive, Escondido CA 92026 — 5 miles to primary access to project

A. ☒ Project is in the District and eligible for service.
☐ Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation.
☐ Project is not in the District and not within its Sphere of Influence boundary.
☐ Project is not located entirely within the District and a potential boundary issue exists with the _____ District.

B. ☒ Based on the capacity and capability of the District's existing and planned facilities, fire protection facilities are currently adequate or will be adequate to serve the proposed project. The expected emergency travel time to the proposed project is 7 minutes.
☐ Fire protection facilities are not expected to be adequate to serve the proposed development within the next five years.

C. ☒ District conditions are attached. Number of sheets attached: 4
☐ District will submit conditions at a later date.

SECTION 3. FUELBREAK REQUIREMENTS

Note: The fuelbreak requirements prescribed by the fire district for the proposed project do not authorize any clearing prior to project approval by the Department of Planning and Land Use.

☐ Within the proposed project _____ feet of clearing will be required around all structures.
☒ The proposed project is located in a hazardous wildland fire area, and additional fuelbreak requirements may apply. Environmental mitigation requirements should be coordinated with the fire district to ensure that these requirements will not pose fire hazards.

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Authorized signature Chris Amestoy, Fire Chief (760)749-8001 2/12/14
Print name and title *Phone* *Date*

On completion of Section 2 and 3 by the District, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, Suite B, San Diego, CA 92123

DPLU-399F (12/09)

Deer Springs Fire Protection District

8709 Circle R Drive • Escondido, CA 92026 • *tel* 760-749-8001 • *fax* 760-749-6572

February 12, 2014

Dear Applicant,

In review of the project proposal, the Deer Springs Fire Protection District has determined that the following conditions shall apply to your development:

The DSFPD requires that this site will comply with the following and adhere to any and all current Fire codes, Building codes and County codes applicable at the time of Project start:

Fire Apparatus Access Roads. A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term that includes, but is not limited to a fire lane, public street, private street, driveway, and parking lot lane and access roadway.

Dimensions.- (a) Fire apparatus access roads shall have an unobstructed improved width of not less than 24 feet, except for single-family residential driveways; serving no more than two single-family dwellings, shall have a minimum of 16 feet of unobstructed improved width. Any of the following, which have separated lanes of one-way traffic: gated entrances with card readers, guard stations or center medians, are allowed, provided that each lane is not less than 14 feet wide.

(b) All fire apparatus access roads and driveways shall have an unobstructed vertical clearance of not less than 13 feet 6 inches. Vertical clearances or width shall be increased when, in the opinion of the fire code official, vertical clearances or road widths are not adequate to provide fire apparatus access.

Exception:

1. Upon approval by the fire code official, vertical clearances or road width may be reduced, as long as the reduction does not impair access by fire apparatus. In cases where the vertical clearance has been reduced approved signs shall be installed and maintained indicating the amount of vertical clearance.

Roadways are to be completed prior to the allowance of combustibles onsite.

One way streets are a fire department access issue.

Additional access- The fire code official is authorized to require more than one fire apparatus access road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

Authority to increase minimums- The fire code official shall have the authority to require an increase in the minimum access road widths where the fire code official determines the minimum are inadequate for fire or rescue operations.

Surface- Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus not less than 75,000 lbs. (unless authorized by the FAHJ) and shall be provided with an approved paved surface so as to provide all-weather driving capabilities.

Turning Radius- The turning radius of a fire apparatus access road shall comply with the County public and private road standards approved by the Board of Supervisors. The turning radius for a private residential driveway shall be a minimum of 28 feet, as measured on the inside edge of the improvement width or as approved by the fire code official.

Grade- The gradient for a fire apparatus access roadway shall not exceed 20.0%. Grades exceeding 15% shall not be allowed without mitigation measures. The fire code official may require additional mitigation measures where he deems appropriate. The angle of departure and the angle of approach of a fire access roadway shall not exceed 7 degrees (12 percent) or as approved by the fire code official.

Marking- When required by the fire code official, approved signs or other approved notices shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. Signs or notices shall be maintained in a clean and legible condition at all times and is replaced or repaired when necessary to provide adequate visibility. All new public roads, all private roads within major subdivisions, and all private easements serving four or more parcels shall be named. Road name signs shall comply with County of San Diego Department of Public Works Design Standard #DS-13.

Fire Lane Designation- Where the fire code official determines that it is necessary to ensure fire access, the fire code official may designate existing roadways as fire access roadways as provided by Vehicle Code Section 22500.1(public) or 22658 (private).

Roadway Design Features- Roadway design features (speed bumps, speed humps, speed control dips, etc.), which may interfere with emergency apparatus responses shall not be installed on fire access roadways, unless they meet design criteria approved by the fire code official.

Dead ends- All dead-end fire access roads in excess of 150 feet in length shall be provided with approved provisions for turning around emergency apparatus. Hammerheads do not serve as a desirable turnaround design for DSFPD.

Gates- All gates or other structures or devices which could obstruct fire access roadways or otherwise hinder emergency operations are prohibited unless they meet standards approved by the fire code official, and receive Specific Plan approval.

All automatic gates across fire access roadways and driveways shall be equipped with approved emergency key-operated switches overriding all command functions and opening the gate(s).

Gates accessing more than four residences or residential lots, or gates accessing hazardous institutional, educational or assembly occupancy group structures, shall also be equipped with approved emergency traffic control-activating strobe light sensor(s), or other devices approved by the fire code official, which will activate the gate on the approach of emergency apparatus with a battery back-up or manual mechanical disconnect in case of power failure. All automatic gates located within the development are required to have a Knox© key switch override system along with an approved emergency traffic control-activating strobe light sensor(s), i.e.; Opticom.

Fuel Modification- 100 foot fuel modification **minimum** will apply throughout entire project in accordance with the specification of County Consolidated Fire Code *§96.1.4907.2.* Additional clearance may be required as necessary depending on specific conditions on site.

Fuel Modification of combustible vegetation from sides of roadway- Combustible vegetation will be modified 20 feet from each side of the road or driveway to establish a fuel modification zone.

Required Installations- The location, type and number of fire hydrants connected to a water supply capable of delivering the required fire flow shall be provided on the public or private street, or on the site of the premises to be protected, or both, as required and approved by the fire code official. Fire hydrants shall be accessible to the fire department apparatus by roads meeting the requirements of Section 503. For fire safety during the construction, alteration or demolition of a building, see Section 1412.1.

Fire Hydrants- Fire hydrants shall be installed as required by the fire code official, using the following criteria and taking into consideration departmental operational needs. Hydrants shall be located at intersections, at the beginning radius of cul-de-sacs and at intervals identified in the following tables and criteria. Hydrants located across heavily traveled roadways shall be not considered as serving the subject property. All hydrants shall be installed and serviceable prior to the delivery of combustibles.

Waterline Extensions- The fire code official may require a waterline extension for the purpose of installing a fire hydrant if the water main is 1,500 feet or less from the property line.

Fire Sprinkler Systems- Approved automatic fire sprinkler systems will be required throughout all structures in this development.

Community Recreational Elements/Community Trail Network- With a proposed trail network of over 16 miles there needs to be several areas that will be accessible to the fire department for emergency incidents on the trails. Please add these access points to the plan for District approval.

Fire Protection Response Agreement: Separate from the above conditions, the District will require a memorandum of agreement to be settled prior to the initial phase of the development. The conditions of the agreement will not set aside or alter the above listed conditions.

Sincerely,

Chris Amestoy
Fire Chief
Deer Springs Fire Protection District

RECEIVED
MAR 08 2013
BY:

COUNTY OF SAN DIEGO
DEPARTMENT OF PLANNING AND LAND USE: Zoning
PROJECT FACILITY AVAILABILITY FORM, Water

Please type or use pen

Accretive Investments, Inc. — Owner's Name — 858-546-0700 — Phone
12275 El Camino Real, Suite 110 — Owner's Mailing Address — Street
San Diego — City — CA — State — 92130 — Zip

ORG VCMWD
ACCT
ACT 01-4433.00
TASK
DATE 2-6-2013
AMT $50.00
DISTRICT CASHIER'S USE ONLY

W

SECTION 1. PROJECT DESCRIPTION — **TO BE COMPLETED BY APPLICANT**

A.
- [X] Major Subdivision (TM)
- [ ] Minor Subdivision (TPM)
- [ ] Boundary Adjustment
- [X] Rezone (Reclassification) from A70 to RU & C34 zone.
- [X] Major Use Permit (MUP), purpose: Water Reclamation Facility
- [ ] Time Extension...Case No.
- [ ] Expired Map...Case No.
- [X] Other General Plan Amendment
- [X] Specific Plan or Specific Plan Amendment
- [ ] Certificate of Compliance:

B.
- [X] Residential ..... Total number of dwelling units 1,746
- [X] Commercial..... Gross floor area 90000 sf
- [ ] Industrial ..... Gross floor area
- [X] Other ..... Gross floor area Civic, Res/Comm Mixed Use

C. [X] Total Project acreage 608 Total number of lots 1,746

D. Is the project proposing the use of groundwater? [X] Yes [ ] No
Is the project proposing the use of reclaimed water? [X] Yes [ ] No

Assessor's Parcel Number(s) (Add extra if necessary)

59 Parcels -	
See attached list	
dated 1-7-2013	Exhibit A

Thomas Bros. Page 1049 Grid B7
East of Old Hwy 395 & South of W. Lilac Road — Project address — Street
Bonsall & Valley Center — Community Planning Area/Subregion — 92026 Zip

Owner/Applicant agrees to pay all necessary construction costs, dedicate all district required easements to extend service to the project and COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: [signature] Date: 1-24-2013
Address: 12275 El Camino Real, Suite 110, San Diego, CA 92130 Phone: 858-546-0700

(On completion of above, present to the district that provides water protection to complete Section 2 below.)

SECTION 2: FACILITY AVAILABILITY — **TO BE COMPLETED BY DISTRICT**

District Name: Valley Center Municipal Water District Service area county area of Valley Center

A. [X] Project is in the district.
- [ ] Project is not in the district but is within its Sphere of Influence boundary, owner must apply for annexation.
- [ ] Project is not in the district and is not within its Sphere of Influence boundary.
- [ ] The project is not located entirely within the district and a potential boundary issue exists with the _____ District.

B. [X] Facilities to serve the project [X] ARE [ ] ARE NOT reasonably expected to be available within the next 5 years based on the capital facility plans of the district. Explain in space below or on attached 1 (Number of sheets) Exhibit B
- [ ] Project will not be served for the following reason(s):

C. [X] **District conditions are attached. Number of sheets attached:** 1 Exhibit B
- [ ] **District has specific water reclamation conditions which are attached. Number of sheets attached:**
- [ ] **District will submit conditions at a later date.**

D. [X] **How far will the pipeline(s) have to be extended to serve the project?** as required ; to be determined

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Authorized signature: [signature] Print name Wally Grabbe
Print title District Engineer Phone (760) 735-4500 Date 3/6/2013

NOTE: THIS DOCUMENT IS NOT A COMMITMENT OF SERVICE OR FACILITIES BY THE DISTRICT
On completion of Section 2 by the district, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, San Diego, CA 92123

DPLU-399W (12/09)

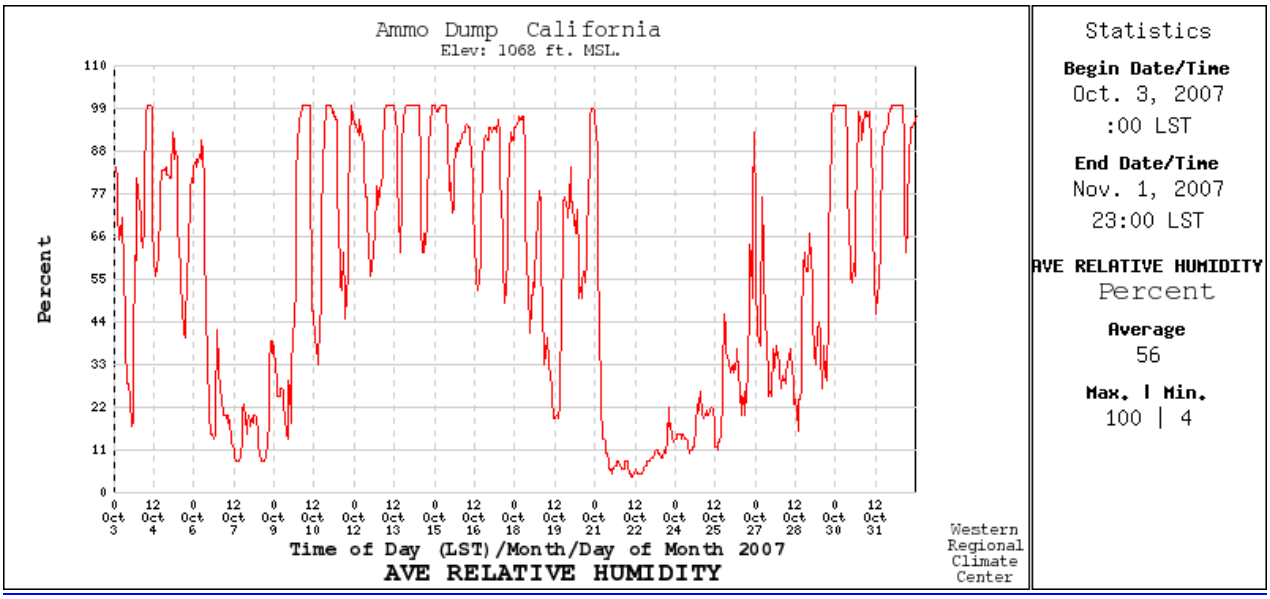
APPENDIX F

Weather Summary Charts

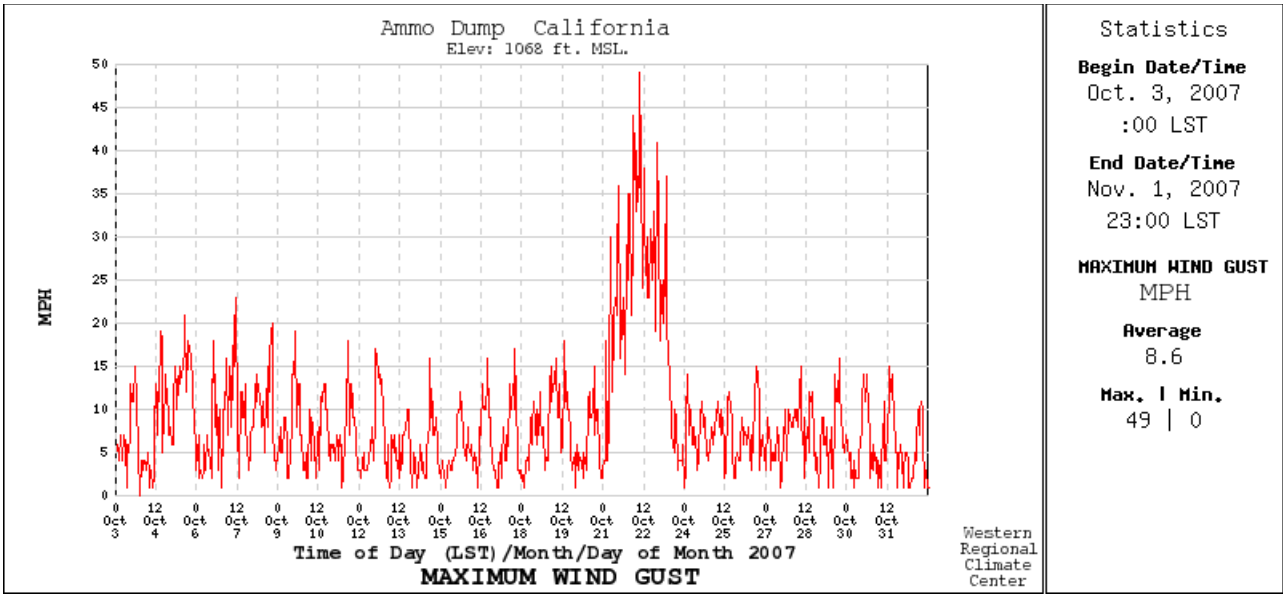
The key to how fast, how hot and at what intensity a wildland fire will burn is directly related to wind speed, wind direction, the age, composition, and condition of burnable vegetative fuel and amount of moisture in the atmosphere. Wind direction usually determines how dry or moist (expressed as relative humidity) the air will be in the wind pattern. Local weather conditions (wind speed and live and dead fuel moistures) still are the key ingredients in determining fire intensity and rate of spread.

The most critical wind pattern to the Lilac Hills Ranch is an off-shore wind coming out of the north/northeast, typically referred to as a Santa Ana wind. Such wind conditions are usually associated with strong (> 40-MPH), hot, dry winds with very low (< 15%) relative humidity.
Santa Ana winds originate over the dry desert land and can occur anytime of the year. However, they generally occur in the late fall (September through November). This is also when non-irrigated vegetation is at its lowest moisture content.

Fire agencies throughout the western United States rely on a sophisticated system of Remote Automated Weather Stations (RAWS) to monitor weather conditions and aid in the forecasting of fire danger. The data acquired from RAWS is important to modeling wildland fire behavior.
***FIREWISE* 2000, Inc.** determined that the Ammo Dump RAWS located at LATITUDE: 33.3814. LONGITUDE: 117.2856 is the closest station to the project and have been in continuous operation since June of 2001. It captured significant weather data during the major southern California fires of October 2003 and most recently the fires of 2007, shown in Figures 1 and 2 which follow:



↑ Figure 1: Ammo Dump RAWS Relative Humidity During the Fires of October, 2007. Note that the Rice Fire Started October 22, 2007. Humidity Was Recorded At 4 Percent That Day.



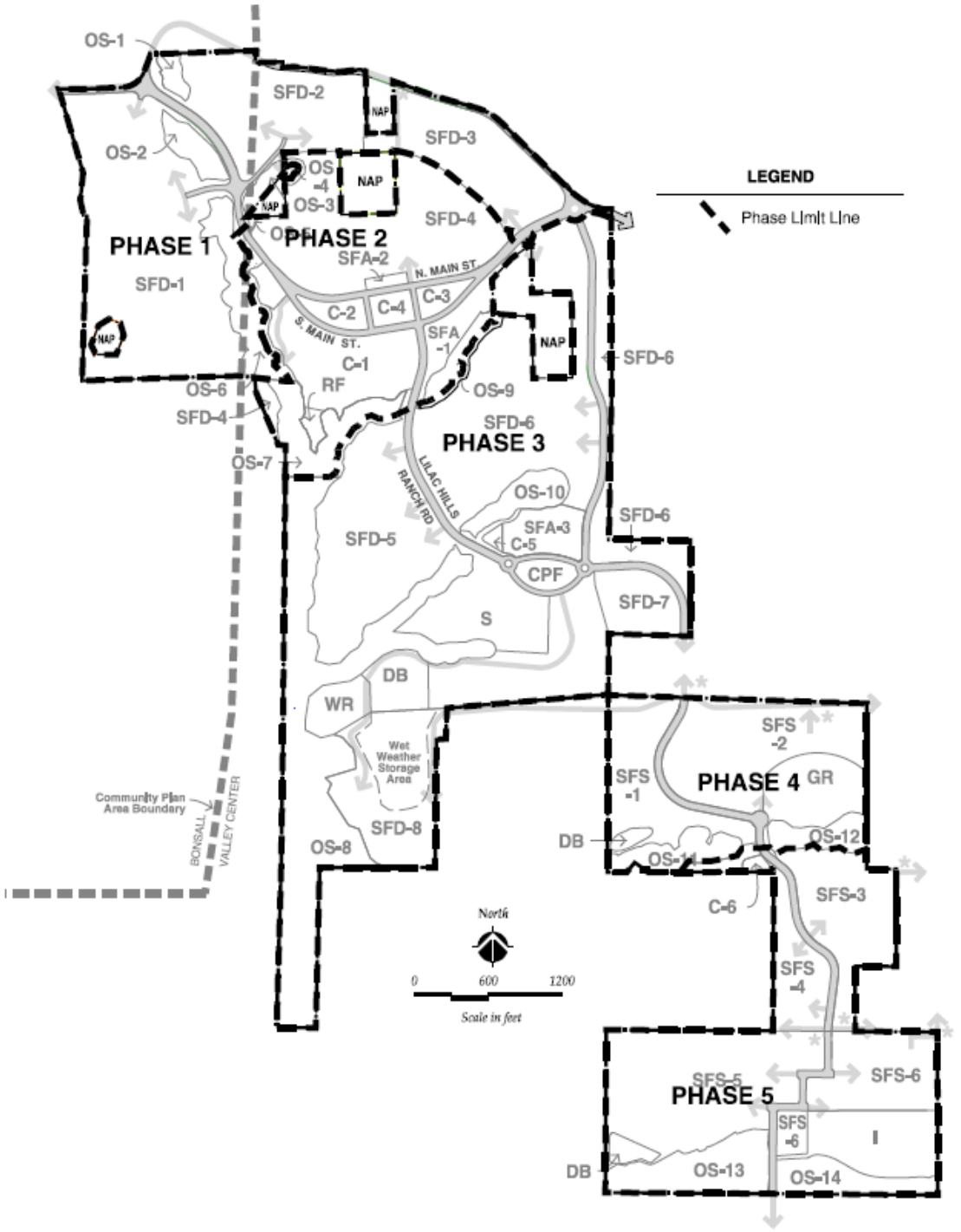
↑ Figure 2: Ammo Dump RAWS Wind Gusts During the Fires of October, 2007. Note The Peak Wind Gust Of 49 Miles Per Hour Occurred During A Very Dry Period That Is Shown In Figure 1.

In reviewing the two figures above, note that in late October the wind gusts were very strong and relative humidity was very low, an indicator of a Santa Ana wind event. For planning purposes, ***FIREWISE* 2000, Inc.** utilized 60 MPH winds as the extreme or worst case wind likely at the Lilac Hills Ranch project during low relative humidity. Higher wind speeds may occur during winter storms when humidity is high. Such winds are not a wildfire concern.

The Ammo Dump RAWS is located approximately 12 miles to the northwest of the project at an elevation of 1,068 feet. Data for all RAWS is archived in the Western Region Climate Center in Reno, Nevada. Weather data for all of October 2007 for Ammo Dump RAWS is presented in APPENDIX 'C', as an example of extreme fire weather. This historic weather data was used to help determine the more extreme fuel moisture regimes found later in this plan.

APPENDIX G

Lilac Hills Ranch Phasing Plan
and
Lilac Hills Ranch Internal Circulation Map
and
Lilac Hills Ranch Access Exhibit

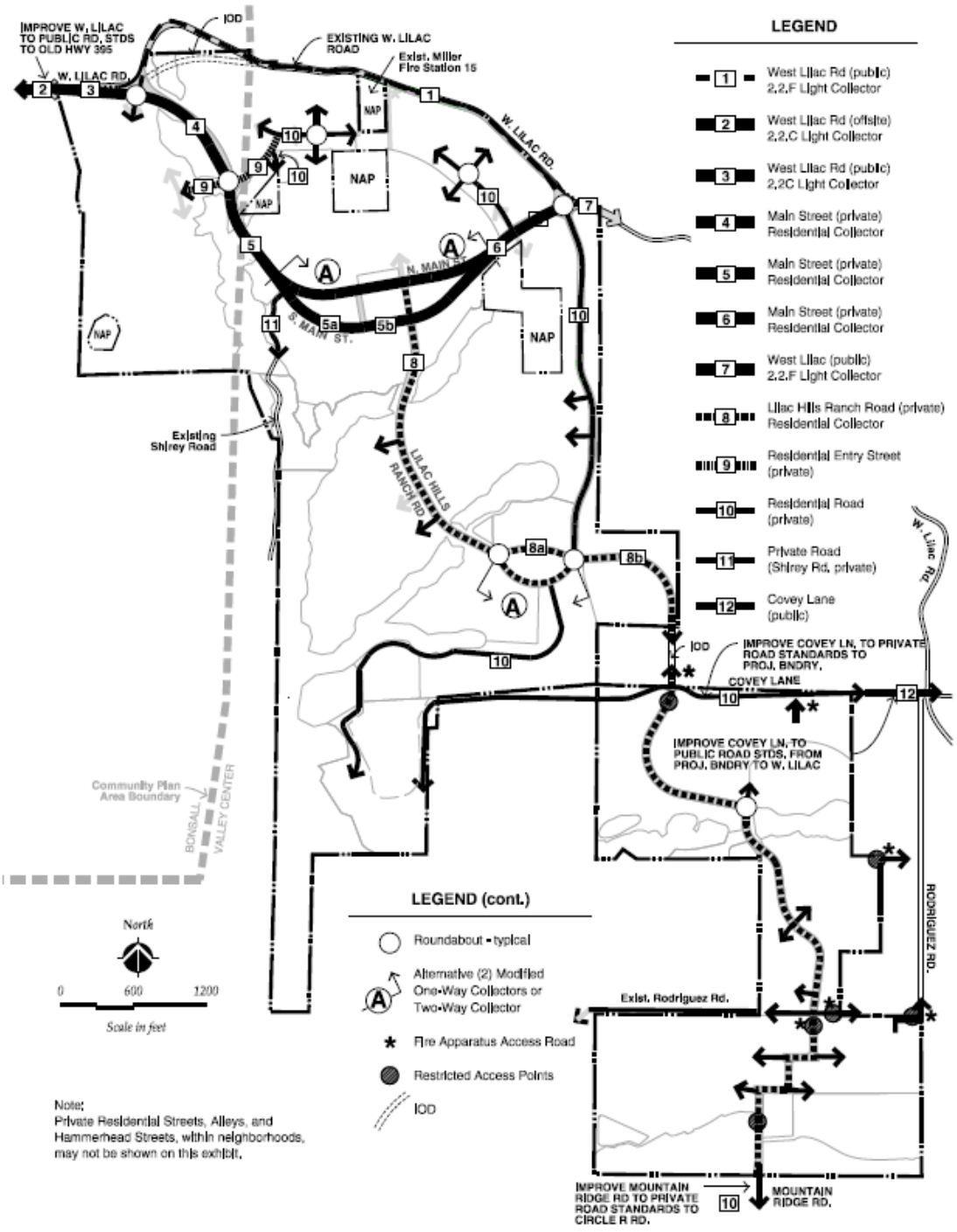


Phasing Plan

LILAC HILLS RANCH SPECIFIC PLAN

DRAFT

FIGURE 15a

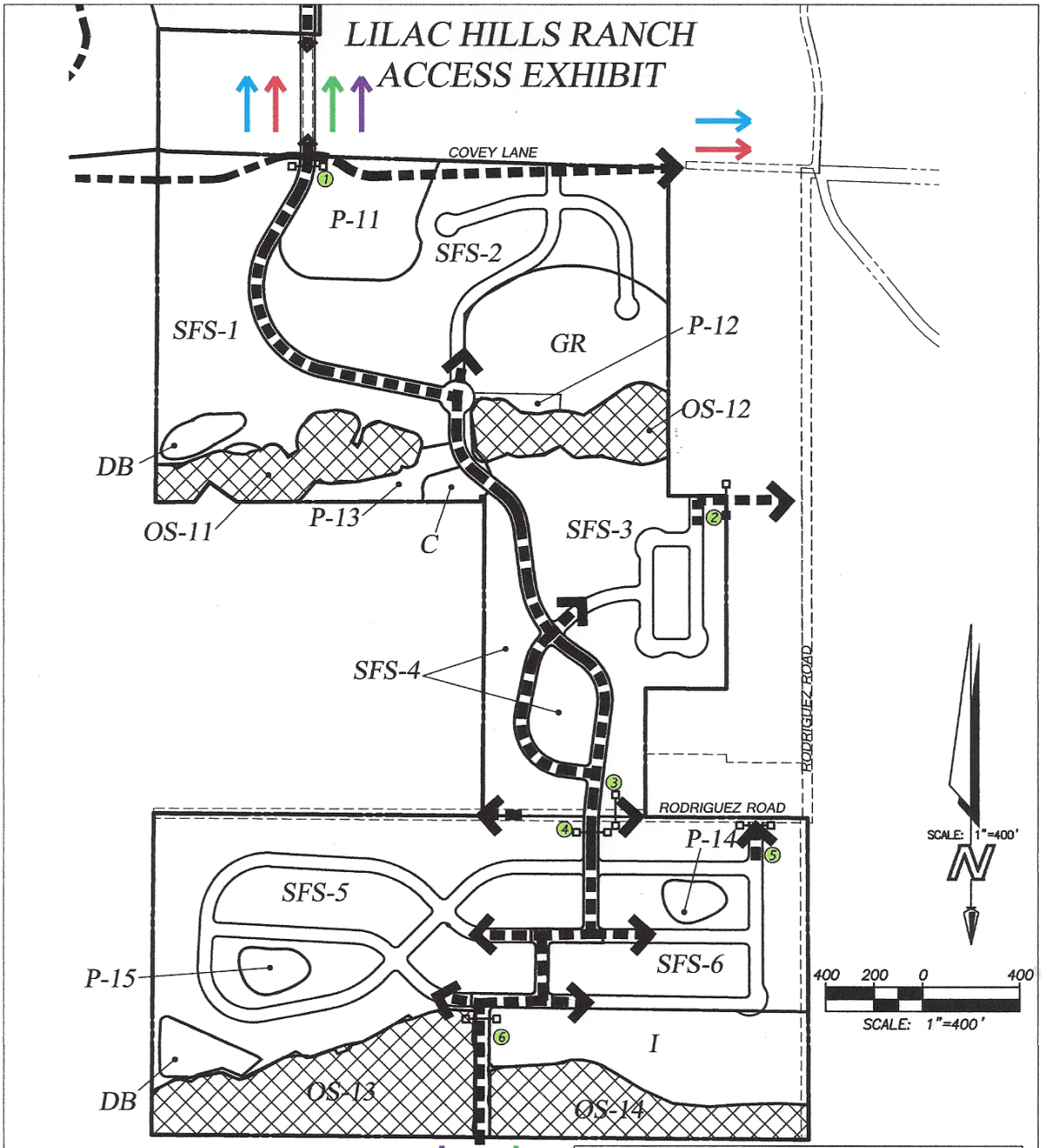


Project Internal Circulation

LILAC HILLS RANCH SPECIFIC PLAN

DRAFT

FIGURE 24



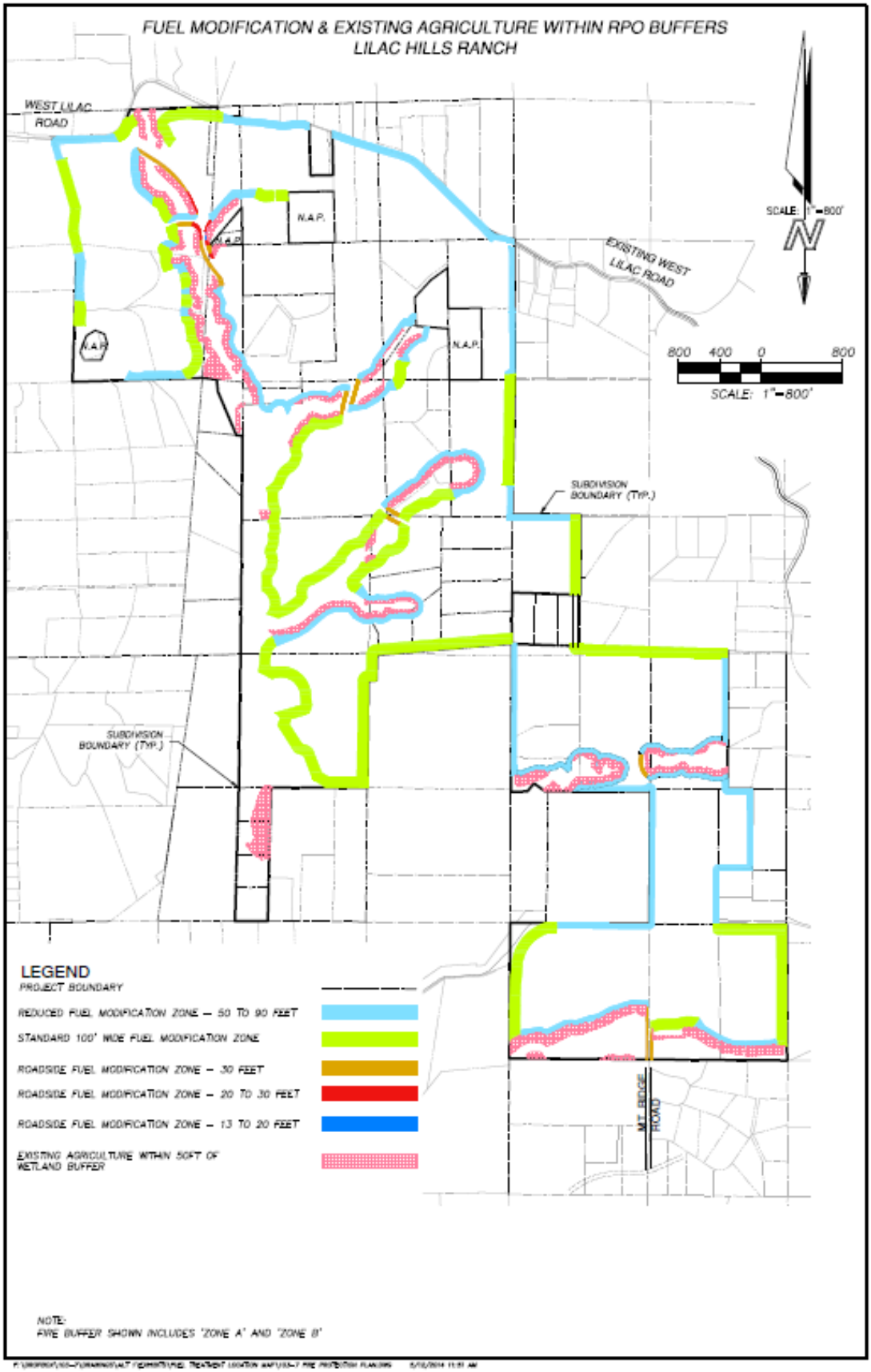
LEGEND	
SINGLE FAMILY SENIOR	SFS
COMMERCIAL/MIXED USE	C
DETENTION BASINS	DB
PARK	P
GROUP CARE/RESIDENTIAL	GR
INSTITUTIONAL/RELIGIOUS USE	I
CIRCULATION ROADS	
PRIMARY & SECONDARY ACCESS FOR SFS-1 & SFS-2	
PRIMARY & SECONDARY ACCESS FOR SFS-3 & SFS-4	
PRIMARY & SECONDARY ACCESS FOR SFS-5 & SFS-6	
PRIMARY & SECONDARY ACCESS FOR INSTITUTIONAL USE	
GATED ACCESS POINT NO. (SEE ATTACHED MEMO FOR DESCRIPTION)	1
FIRE APPARATUS ACCESS GATE	

LILAC HILLS RANCH RESTRICTED ACCESS DESCRIPTION

GATED ACCESS #	DESCRIPTION	PLANNING AREAS WITH GATE ACCESS RIGHTS
1	FIRE APPARATUS ACCESS GATE: MANNED GATE HOUSE, ALLOWING PERMANENT RESIDENTS AND GUESTS TO TRAVEL THROUGH	SFS-1, SFS-2, SFS-3, SFS-4, SFS-5, SFS-6, & INSTITUTIONAL
2	FIRE APPARATUS ACCESS GATE: RESTRICTED ACCESS GATES THAT OPEN DURING EMERGENCIES AND CAN BE ACTIVATED BY CODE, KNOX KEYS, OR COUNTY EMERGENCY RESPONSE CENTER	SFS-3 and SFS-4
3	FIRE APPARATUS ACCESS GATE: RESTRICTED ACCESS GATES THAT OPEN DURING EMERGENCIES AND CAN BE ACTIVATED BY CODE, KNOX KEYS, OR COUNTY EMERGENCY RESPONSE CENTER, AND AUTOMATIC ACCESS GATE FOR RESIDENTS ALONG RODRIGUEZ ROAD WITH A KEY FOB OR ACCESS CODE.	SFS-3, SFS-4, SFS-5, & SFS-6
4	FIRE APPARATUS ACCESS GATE AND AUTOMATIC ACCESS GATE FOR RESIDENTS WITH A KEY FOB OR ACCESS CODE	SFS-5 and SFS-6
5	FIRE APPARATUS ACCESS GATE: RESTRICTED ACCESS GATES THAT OPEN DURING EMERGENCIES AND CAN BE ACTIVATED BY CODE, KNOX KEYS, OR COUNTY EMERGENCY RESPONSE CENTER	SFS-5 and SFS-6
6	FIRE APPARATUS ACCESS GATE AND AUTOMATIC ACCESS GATE FOR RESIDENTS WITH A KEY FOB OR ACCESS CODE	SFS-5, SFS-6, & INSTITUTIONAL

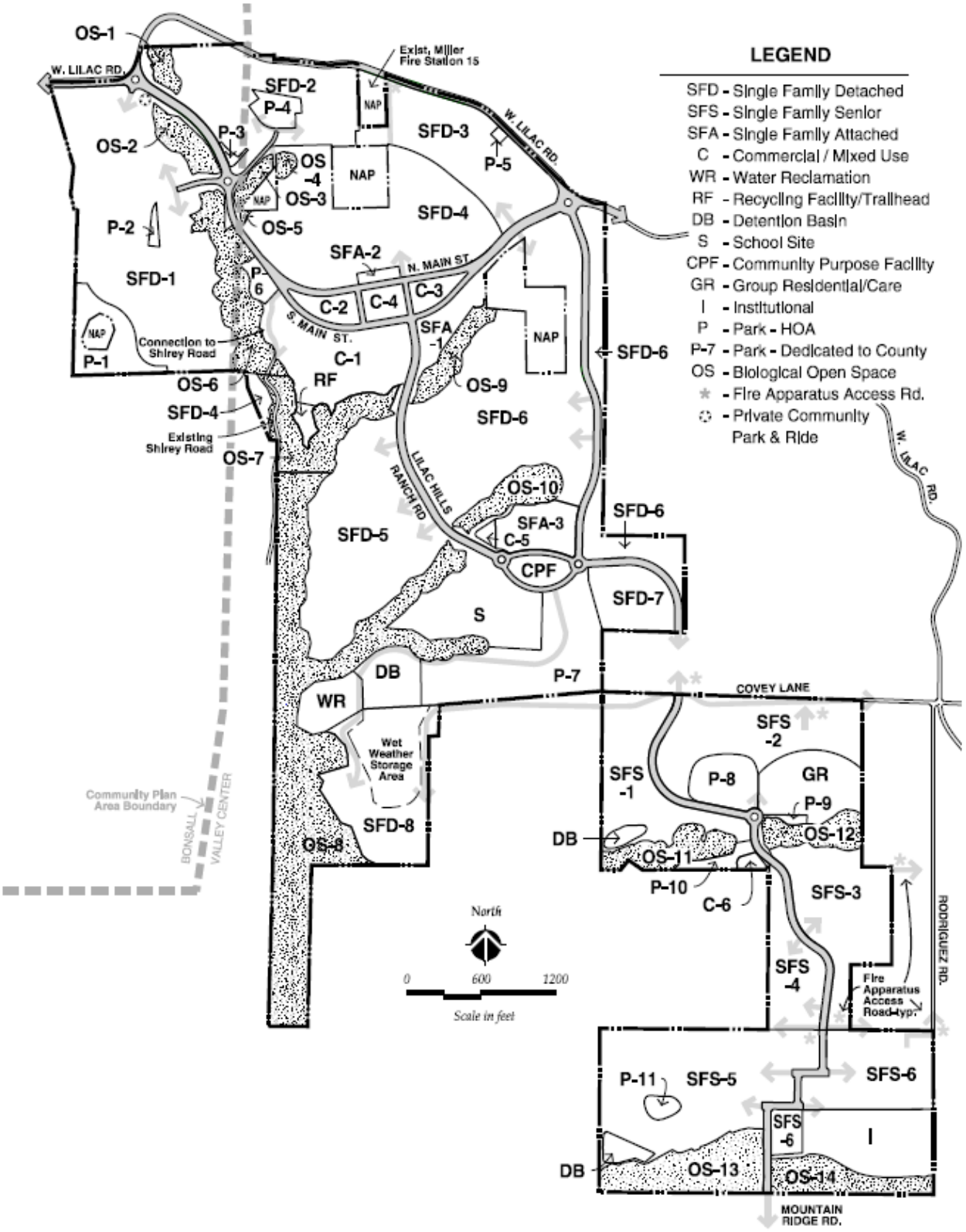
APPENDIX H

Fuel Modification and Agriculture Within RPO Wetland Or Wetland Buffer


FUEL MODIFICATION & EXISTING AGRICULTURE WITHIN RPO BUFFERS
LILAC HILLS RANCH
WEST LILAC ROAD
N.A.P.
EXISTING WEST LILAC ROAD
SCALE: 1"=800'
800 400 0 800
SCALE: 1"=800'
SUBDIVISION BOUNDARY (TYP.)
MT. EDGE ROAD
LEGEND
PROJECT BOUNDARY
REDUCED FUEL MODIFICATION ZONE – 50 TO 90 FEET
STANDARD 100' WIDE FUEL MODIFICATION ZONE
ROADSIDE FUEL MODIFICATION ZONE – 30 FEET
ROADSIDE FUEL MODIFICATION ZONE – 20 TO 30 FEET
ROADSIDE FUEL MODIFICATION ZONE – 13 TO 20 FEET
EXISTING AGRICULTURE WITHIN 50FT OF WETLAND BUFFER
NOTE:
FIRE BUFFER SHOWN INCLUDES 'ZONE A' AND 'ZONE B'

APPENDIX I

Specific Plan – Site Plan



Specific Plan Map

LILAC HILLS RANCH SPECIFIC PLAN

DRAFT

FIGURE 14

APPENDIX J

Flammap Analysis - Dudek

DUDEK

31878 CAMINO CAPISTRANO, #200
SAN JUAN CAPISTRANO, CALIFORNIA 92675
T 949.450.2525 F 949.450.2626

August 15, 2012 7449-01

Mr. Jon Rilling
The Accretive Group of Companies
12275 El Camino Real, Ste. 110
San Diego, CA 92130

Subject: ***FlamMap Fire Behavior Modeling – Lilac Hills Master Planned Community***

Dear Mr. Rilling:

This letter report summarizes Dudek's evaluation of potential fire behavior at the Lilac Master Planned Community site using FlamMap fire behavior modeling software. Modeling for the project location was conducted using site-specific fuels and topography data, and was consistent with the BehavePlus fire behavior modeling efforts prepared for the project's Draft Fire Protection Plan (Firewise 2000, April 26, 2012). FlamMap software utilizes weather, fuels, and topography data within a geographic information system (GIS) in order to graphically depict potential fire behavior across the project site. This letter summarizes our modeling inputs, modeling assumptions, and provides a graphical representation of expected fire behavior outputs for two different weather scenarios for existing and planned site conditions (Attachment 1 - Figures 1 and 2).

Prior to fire behavior modeling efforts, Dudek fire protection planners conducted a site evaluation to confirm existing fuel conditions, which informed the overall fire modeling effort. Following field evaluations, site data was compiled and processed for inclusion in the FlamMap model. Fire behavior modeling was conducted to document flame length values (a standard measure for fire behavior used by fire agency personnel) that would be expected on and adjacent the Lilac Hills site given its topography, vegetation, and weather. A discussion of modeling inputs and results is provided herein and results are provided in Figures 1 and 2.

FlamMap Fire Behavior Modeling

Predicting wildland fire behavior is not an exact science due to the many variables that must be considered. As such, the movement of a fire will likely never be fully predictable, especially considering the variations in weather and the limits of weather forecasting and the weather that

is often "created" by firestorms. Nevertheless, practiced and experienced judgment, coupled with a validated fire behavior modeling system, results in useful and accurate fire information.[1]

To be used effectively, the basic assumptions and limitations of fire behavior modeling applications must be understood.

- First, it must be realized that the fire model describes fire behavior only in the flaming front. The primary driving force in the predictive calculations is the dead fuels less than 0.25 inches in diameter. These are the fine fuels that carry fire. Fuels greater than 1 inch have little effect, while fuels greater than 3 inches have no effect on fire behavior.
- Second, the model bases calculations and descriptions on a wildfire spreading through surface fuels that are within 6 feet of the ground and contiguous to the ground. Surface fuels are often classified as grass, brush, litter, or slash.
- Third, the software assumes that weather and topography are uniform. However, because wildfires almost always burn under non-uniform conditions, creating their own weather, length of projection period and choice of fuel model must be carefully considered to obtain useful predictions.
- Fourth, fire behavior computer modeling systems are not intended for determining sufficient fuel modification zone/defensible space widths. However, it does provide the average length of the flames, which is a key element for determining defensible space distances for minimizing structure ignition.

Although FlamMap has limitations, it can still provide valuable fire behavior predictions, which can be used as a tool in the decision-making process. In order to make reliable estimates of fire behavior, one must understand the relationship of fuels to the fire environment and be able to recognize the variations in these fuels. Natural fuels are made up of the various components of vegetation, both live and dead, that occur in a particular landscape. The type and quantity will depend upon soil, climate, geographic features, and fire history. The major fuel groups of grass, shrub, trees, and slash are defined by their constituent types and quantities of litter and duff layers, dead woody material, grasses and forbs, shrubs, regeneration, and trees. Fire behavior can be predicted largely by analyzing the characteristics of these fuels. Fire behavior is affected by seven principal fuel characteristics: fuel loading, size and shape, compactness, horizontal continuity, vertical arrangement, moisture content, and chemical properties.

The seven fuel characteristics help define the 13 standard fire behavior fuel models[2] and the more recent custom fuel models developed for Southern California[3]. According to the model

[1] Rothermel, Richard C. 1983. How to predict the spread and intensity of forest and range fires. GTR INT-143. Ogden, Utah: USDA Forest Service Intermountain Research Station. GTR-INT-143. 161 p.

classifications, fuel models used for fire behavior modeling (BehavePlus, FlamMap, FARSITE) have been classified into four groups, based upon fuel loading (tons/acre), fuel height, and surface-to-volume ratio. Observation of the fuels in the field (on site) determines which fuel models should be applied in modeling efforts. The following describes the distribution of fuel models among general vegetation types for the standard 13 fuel models and the custom Southern California fuel models:

- Grasses – Fuel Models 1 through 3
- Brush – Fuel Models 4 through 7, SCAL 14 through 18
- Timber – Fuel Models 8 through 10
- Logging slash – Fuel Models 11 through 13.

In addition, the aforementioned fuel characteristics were utilized in the recent development of 40 new fire behavior fuel models[4] developed for use in the BehavePlus, FlamMap, and FARSITE modeling systems. These new models attempt to improve the accuracy of the 13 standard fuel models outside of severe fire season conditions, and to allow for the simulation of fuel treatment prescriptions. The following describes the distribution of fuel models among general vegetation types for the 40 new fuel models:

- Non-burnable – Models NB1, NB2, NB3, NB8, NB9
- Grass – Models GR1 through GR9
- Grass shrub – Models GS1 through GS4
- Shrub – Models SH1 through SH9
- Timber understory – Models TU1 through TU5
- Timber litter – Models TL1 through TL9
- Slash blowdown – Models SB1 through SB4.

Table 1 provides a description of 10 fuel models (including one non-burnable model) coded for the site that were subsequently used in the FlamMap analysis for this project.

Table 1. Fuel Model Characteristics

Fuel Model	Description	Land Cover Classification	Canopy Cover Value
0	Non-burnable	Developed	0
3	Tall grass	Marsh, wetland	0

[2] Anderson, Hal E. 1982. Aids to Determining Fuel Models for Estimating Fire Behavior. USDA Forest Service Gen. Tech. Report INT-122. Intermountain Forest and Range Experiment Station, Ogden, UT.
[3] Weise, D.R. and J. Regelbrugge. 1997. Recent chaparral fuel modeling efforts. Prescribed Fire and Effects Research Unit, Riverside Fire Laboratory, Pacific Southwest Research Station. 5p.
[4] Scott, Joe H. and Robert E. Burgan. 2005. Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 72 p.

Fuel Model	Description	Land Cover Classification	Canopy Cover Value
9	Hardwood litter	Riparian cover, woodlands	3
GR1	Short, Sparse Dry Climate Grass	Orchards, vineyards	0
GR2	Low Load, Dry Climate Grass	Disturbed areas	0
GS1	Low Load, Dry Climate Grass-Shrub	Fuel Treatment Zones (Post-development)	0
SCAL 18	Coastal sage scrub	Coastal scrub	0
SH3	Moderate Load, Humid Climate Shrub	Mulefat scrub	0
SH7	Very High Load, Dry Climate Shrub	Chaparral	0
TU5	Very High Load, Dry Climate Timber-Shrub	Eucalyptus understory	3

FlamMap Analysis

FlamMap software was utilized to graphically depict fire-modeling results for the project site and the area within 200 feet of the project boundary. FlamMap utilizes the same fire spread equations built into the BehavePlus software package, but allows for a geographical presentation of fire behavior outputs as it applies the calculations to each pixel in the associated GIS landscape[5]. Both summer weather conditions (on-shore flow) and more extreme fall weather conditions (off-shore, Santa Ana conditions) were modeled for both the existing site condition and the proposed post-development site condition.

FlamMap software requires a minimum of five (5) separate input files that represent field conditions in the analysis area, including elevation, slope, aspect, fuel model, and canopy cover. Each of these files was created as a raster GIS file using ArcGIS 10.0 software, exported as an ASCII grid file, then utilized in creating a FARSITE Landscape file that served as the base for the FlamMap runs. The resolution of each grid file and associated ASCII file that was used in the models described herein is 10 meters, based on digital terrain data available from the San Diego Association of Governments (SANDAG). In addition to the Landscape file, wind and weather data are incorporated into the model inputs. The output fire behavior variable chosen for each of the modeling runs was flame length, measured in feet.

The following paragraphs provide descriptions of the input and output variables used in processing the FlamMap models. In addition, data sources are cited and any assumptions made during the modeling process are described.

Elevation

Elevation data were derived from digital terrain data publicly available from SANDAG, projected in North American Datum 1983, California State Plane, Zone 6 with units in feet. The resolution of the file was 10 meters and elevation within the analysis area ranges from 473 feet

[5] Finney, M.A. 1998. FARSITE: Fire Area Simulator—model development and evaluation. Res. Pap. RMRS-RP-4, Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 47 p.

to 964 feet above mean sea level (AMSL). These data were utilized to create an elevation grid file, using units of feet above sea level. The elevation data are a required input file for FlamMap runs and are necessary for adiabatic adjustment of temperature and humidity and for conversion of fire spread between horizontal and slope distances.

Slope

Using ArcGIS Spatial Analyst tools, a slope grid file was generated from the elevation grid file described above. Slope measurements utilized values in percent of inclination from horizontal. Slope values in the analysis area range from 0% to 50%. The slope input file is necessary for computing slope effects on fire spread and solar radiance.

Aspect

Using ArcGIS Spatial Analyst tools, an aspect grid file was generated from the elevation grid file described above. The aspect values utilized were azimuth degrees. Aspect values are important in determining the solar exposure of grid cells.

Fuel Model

Vegetation coverage data in the form of a GIS shapefile were used in this analysis to create a fuel model file for existing conditions, which was derived from vegetative cover data mapped for the analysis area (on-site and within 100 feet of the project boundary) and edited based on field observations to include an area within 200 feet of the project boundary (from 100 to 200 feet from the project boundary). Vegetation mapping data was utilized in field efforts to classify vegetation cover type with an appropriate fuel model.

To analyze post-development fire behavior, a separate fuel model shapefile was created using the existing vegetation coverage and reclassifying fuels based on location within the proposed development. All fuels within proposed developed areas were reclassified as Fuel Model "0" to represent developed, non-combustible land uses. All fuels within the proposed fuel treatment areas were reclassified as Fuel Model "GS1". This fuel model was selected based on the fire behavior analysis prepared for the project's Draft Fire Protection Plan (Firewise 2000). The Draft Fire Protection Plan utilized a combined fuel model (50% TL6 and 50% GS1) to represent treated fuels within the proposed fuel treatment areas. However, only GS1 was used for this analysis as flame length was selected for the model output value. When utilizing combined fuel models, flame length values are derived from the higher of the calculated values for the two fuel models[6]. In this case, GS1 presents higher flame length values and was therefore used in this analysis.

[6] BehavePlus On-Line Documentation, March 16, 2010.

The result includes 10 separate fuel models utilized for the analysis area, of which, one is a non-combustible classification (e.g., developed areas). Once fuel model values were assigned to general vegetation types, the vector-based vegetation data files (existing and proposed) were converted to grid files for inclusion in FlamMap modeling. The unique fuel model assignments are presented in Table 1.

Canopy Cover

Canopy Cover is a required raster file for FlamMap operations. It is necessary for computing shading and wind reduction factors for all fuel models. Canopy cover is measured as the horizontal fraction of the ground that is covered directly overhead by tree canopy. Crown closure refers to the ecological condition of relative tree crown density. Stands can be said to be "closed" to recruitment of canopy trees but still only have 40% or 50% canopy cover. Coverage units can be categories (0–4) or percentage values (0–100).

For the purposes of the FlamMap analysis, Dudek utilized vegetation type classifications to determine canopy cover assignments. For the purposes of this analysis, tree-dominated vegetation types (e.g., woodlands and riparian areas) were assigned a value of "3," while non-tree vegetation types were assigned a value of "0." Canopy classifications by vegetation type are presented in Table 1.

Weather

Weather and fuel moisture inputs incorporated into fire behavior modeling for the site were determined by utilizing the guidelines and standards presented by the County of San Diego, Department of Planning and Land Use. These guidelines identify acceptable fire weather inputs for extreme fire conditions during summer months and Santa Ana fire weather patterns. The County analyzed and processed fire weather from Remote Automated Weather Stations (RAWS) between April 15 to December 31 in order to represent the general limits of the fire season. Data provided by the County's analysis included temperature, relative humidity, and sustained wind speed and is categorized by weather zone, including Maritime, Coastal, Transitional, Interior, and Desert.

To determine fuel moisture values for the analysis area, Dudek utilized the Fine Dead Fuel Moisture tool within the BehavePlus (v. 5.0.2) fire behavior modeling software package. The temperature, relative humidity, and wind speed data for the Transitional weather zone were utilized for this analysis based on the project location. Reference fuel moistures were calculated in BehavePlus and were based on site-specific topographic data inputs.

Table 2 presents the weather and fuel moisture input variables used for fire behavior modeling efforts.

Table 2. Fire Behavior Weather and Fuel Moisture Inputs

Model Variable	Summer (Onshore Flow)	Peak (Offshore/Santa Ana conditions)
1 h fuel moisture	3%	2%
10 h fuel moisture	5%	3%
100 h fuel moisture	7%	5%
Live herbaceous moisture	60%	30%
Live woody moisture	90%	50%
20-ft. wind speed (mph)	19 mph	41 mph
Wind direction	225°	45°

FlamMap Fuel Model Outputs

One output grid files was generated for each of the four FlamMap runs, and represents flame length (feet) in existing and proposed site conditions during Summer and Peak weather scenarios. Flame length, the length of the flame of a spreading surface fire within the flaming front, is measured from midway in the active flaming combustion zone to the average tip of the flames[7]. It is a somewhat subjective and non-scientific measure of fire behavior, but is extremely important to fireline personnel in evaluating fireline intensity and is worth considering as an important fire variable[8]. The information in Table 3 presents an interpretation of flame length and its relationship to fireline intensity.

Table 3. Fire Suppression Interpretation

Flame Length (feet)	Fireline Intensity (Btu/ft/s)	Interpretations
Under 4	Under 100	Fires can generally be attacked at the head or flanks by persons using hand tools. Hand line should hold the fire.
4 to 8	100 to 500	Fires are too intense for direct attack on the head by persons using hand tools. Hand line cannot be relied on to hold the fire. Equipment such as dozers, pumpers, and retardant aircraft can be effective.
8 to 11	500 to 1,000	Fires may present serious control problems—torching out, crowning, and spotting. Control efforts at the fire head will probably be ineffective.
Over 11	Over 1,000	Crowning, spotting, and major fire runs are probable. Control efforts at head of fire are ineffective.

SOURCE: BehavePlus 3.0.2 fire behavior modeling program (Andrews, Bevins, and Seli 2004)

[7] Andrews, Patricia L., Collin D. Bevins, and Robert C. Seli. 2004. BehavePlus fire modeling system, version 3.0: User's Guide. Gen. Tech. Rep. RMRS-GTR-106 Ogden, UT: Department of Agriculture, Forest Service, Rocky Mountain Research Station. 132p.

[8] Rothermel, Richard C. 1991. Predicting behavior and size of crown fires in the northern Rocky Mountains. Research Paper INT-438. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

Maps depicting flame length values for the Summer and Peak weather scenarios are included in Figures 1 and 2. The fire behavior modeling results for the analysis area vary depending on topography and fuel type. As FlamMap utilizes site-specific digital terrain data (including slope, vegetation, aspect, and elevation data) slight variations in predicted flame length values can be observed based on fluctuations of these attributes across the landscape. As presented, wildfire behavior in each of the fuel types varies depending on weather conditions.

Modeling outputs generated during this analysis present similar fire behavior in some areas during Summer and Peak (Santa Ana) weather scenarios. These similarities are explained through further analysis of available site data, fuel model classification, and the calculations conducted in the FlamMap software. For this analysis, fuel models were assigned to each previously-mapped vegetation type for the site. The available vegetation mapping data classified large areas of the site as either orchard or vineyard (43% of the site) or chaparral (12% of the site), which are the areas representing little change between Summer and Peak weather scenarios. First, vegetation mapping for the site was focused on habitat-based classifications and less on fuel type. When classifying vegetation types into fuel models, efforts were made to most accurately represent the fuel type observed. However, the scale at which the vegetation mapping was conducted did not allow for small-scale fuel mapping within a larger vegetation type classification. For example, small pockets of tall grass or scrub within a larger area classified as orchard were not separated for this analysis. Second, the fuel model selected to represent orchards and vineyards was Fuel Model GR1, which represents short, dry climate grass. This model was selected as it was assumed that orchards and vineyards would be actively managed and that surface fuels would be maintained to represent the conditions found in Fuel Model GR1. This model assignment assumes no transition to a crown fire based on assumed higher fuel moisture content in irrigated orchard trees and the extent of roads, landings, irrigated vegetation, flower fields, and other bare areas which serve to fragment the orchards and vineyards and isolate them from adjacent fuel beds. Lastly, the maximum flame length attainable via analysis in FlamMap and BehavePlus software for Fuel Model GR1 is 3.1 feet. The flame length outputs for a Summer fire and for a Peak fire may be similar, therefore, differentiation may be difficult as depicted in Figures 1 and 2. Additionally, those areas classified as Fuel Model SH7 (chaparral) in the south-western portion of the site had flame length values in excess of 20 feet for both Summer and Peak fires. Since these results are classified in the same flame length range for Summer and Peak fires, visual differences of the change are not discernible.

Fire Potential

Given the climatic, vegetation, and topographic characteristics of the analysis area, along with the fire behavior modeling results discussed herein, the project site is considered potentially vulnerable to wildfire starting in, burning onto, or spotting onto the site. The fire behavior

results described herein depict values based on inputs to the FlamMap software. Localized changes in slope, weather, or pockets of different fuel types are not accounted for in this analysis, but assumed across the landscape based on the available data resolution. Further, this modeling analysis assumes a correlation between the available vegetation data and fuel model characteristics. Wildfire activity may temporarily alter fuel beds, but fire behavior modeling efforts conducted for this site assume natural succession of burned areas to more mature stand conditions, resulting in a conservative (near worst-case) estimate of fire behavior. Since fire behavior for a given location will be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns, modeling results are applicable as a basis for planning, but need to be considered in context with other site variables.

Fire Behavior and Associated Fuel Modification Zones

Dudek conducted analysis of the fire behavior across the site and compared it against the proposed development footprint, product type, and proposed structure setbacks. In some instances, based on a variety of factors including the ignition resistant construction materials and methods, the anticipated wind alignment, off-site land use and vegetation type, and fire behavior, the justification for a reduced fuel modification zone is evident. There are few areas that will not be provided a full 100 feet of fuel modification zones on the site, which in many cases, is more than would be necessary given the fire-hardened structures and low projected flame lengths. Although fire behavior modeling software systems are not specifically intended for determining sufficient fuel modification zone/defensible space widths, they do provide the average length of the flames, which is a key element for determining defensible space distances for minimizing structure ignition. When coupled with experienced evaluation of the fire environment, site-specific landscape features and characteristics, development type and construction, and potential fire risk, the models do help substantiate where the most aggressive fuel modification is necessary and where it may be possible to provide reduced fuel modification zones.

Fuel modification on the site includes a variety of types (Attachment 3 – Lilac Hills Fuel Modification Zone Plan):

1. Standard 100 feet wide fuel modification zone
2. Standard 100 feet wide fuel modification zone with off-site easement
3. Partially Modified 100 feet wide fuel modification zone
4. Modified 100 feet wide fuel modification zone
5. Reduced Fuel Modification Zone

Standard 100 Feet Wide Fuel Modification Zones

Standard zones, including the version requiring off-site easements, will include two 50 foot wide zones with the first 50 feet starting at the structure. These areas include two 50 feet wide zones to break up fuel continuity and reduce spread rates and fire intensity. The first 50 feet will be irrigated, but will include plant species that are drought tolerant to minimize water use.

The outer 50 foot wide zone will be a reduced fuel zone where the most flammable species will be removed and the remaining fuel will be maintained at densities of less than 50 percent of field conditions with minimal fuel continuity. One area is proposed for 100 feet of fuel modification to include 50 feet of off-site fuel modification under a FMZ off-site easement. This FMZ will be consistent with the requirements of the full zone.

Partially Modified and Modified Fuel Modification Zones

Modified fuel modification zones are zones that include a minimum of 50 feet (Partially Modified) or all 100 feet (Modified) of the zone overlapping a wetland buffer. Buffers around wetland features are required and will provide a dual role of development set back and fuel modification. These zones are 100 feet in width except at very limited points where due to terrain or other factors, the zones deviate by 10 to 20 feet from the 100 foot total. 1. These areas provide the equivalent fuel reduction as a standard zone

Reduced Fuel Modification Zones

Reduced fuel modification zones are limited on the site. A few areas include less than 100 feet of fuel medication zone, ranging from 50 to 70 feet wide. These areas, due to the adjacent land uses and landscape cover types, produce low flame lengths and fire intensity and function consistently with a full 100 foot FMZ. Where reduced fuel modification zones are proposed, the project will condition these areas to future inspection and analysis. If, at any point, the off-site fuels should convert to a shrub dominated fuel type, then the project's HOA will be required to provide a focused fire protection plan for that specific area that analyzes the risk and offers implementable fire protection features to mitigate the potential risk, to the approval of the fire authority having jurisdiction.

SUMMARY

As presented, wildfire behavior in chaparral fuel beds on and adjacent the Project site is expected to be of moderate to high intensity during extreme, Santa Ana weather conditions with maximum sustained wind speeds of 56 mph and low fuel moistures. Chaparral fuels are predominant on site and in the area immediately surrounding the project site, which would be the fuels affecting the constructed Project. Based on the observed fuel beds east of the project site, a relatively high-intensity fire can be expected during extreme weather conditions, with flame lengths reaching approximately 43 feet and peak intensity of over 20,000 Btu/ft/s.

This type of fire would be relatively short-duration as vegetative fuels are consumed rapidly. As such, there would not be a sustained source of heat and or flame associated with site-adjacent wildland fuels. Further, the site's fuels would be converted and reduced to ground cover on most of the Project area. The post-project fuel modification areas would provide a significant reduction in the potential for fire ignition as well as the flame length, spread rate, and intensity of fires should ignition occur. A wildfire corridor occurs to the northeast of this area and

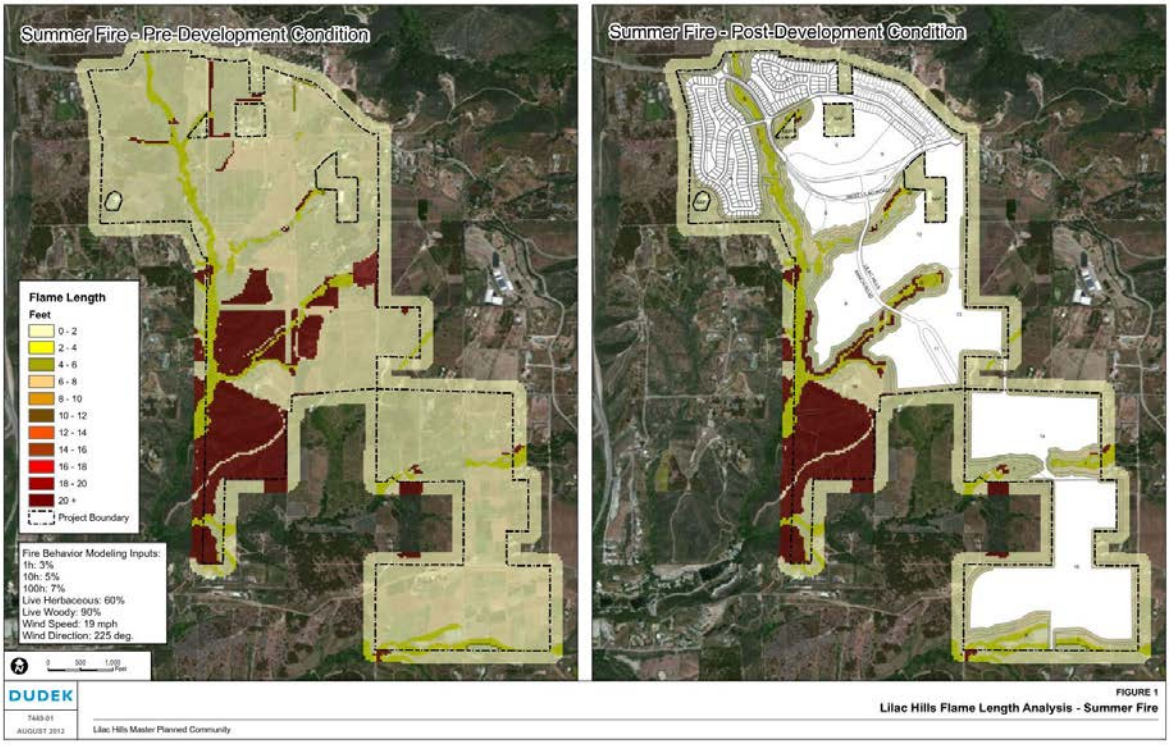
extends into San Diego County's backcountry. The latest fire code requirements, including ignition resistant construction, interior sprinklers, and fuel modification will result in a defensible community that provides fire protection benefits for the existing residences to the south/southwest. This Project site may be compared to a large fuel break once completed. Adjacent native and undisturbed fuels would readily carry fire, especially during portions of the year where vegetation moisture content falls and warm temperatures, low humidity and high winds become common. However, fires approaching the Lilac Hills project would burn into the project's fuel modification zones and with little fuel, would be extinguishable. Embers produced from a wind driven fire would likewise find few receptive fuel beds within the Lilac Hills project. The site will be largely free of combustible vegetation with only a ground cover of maintained vegetation adjacent and beneath the solar trackers.

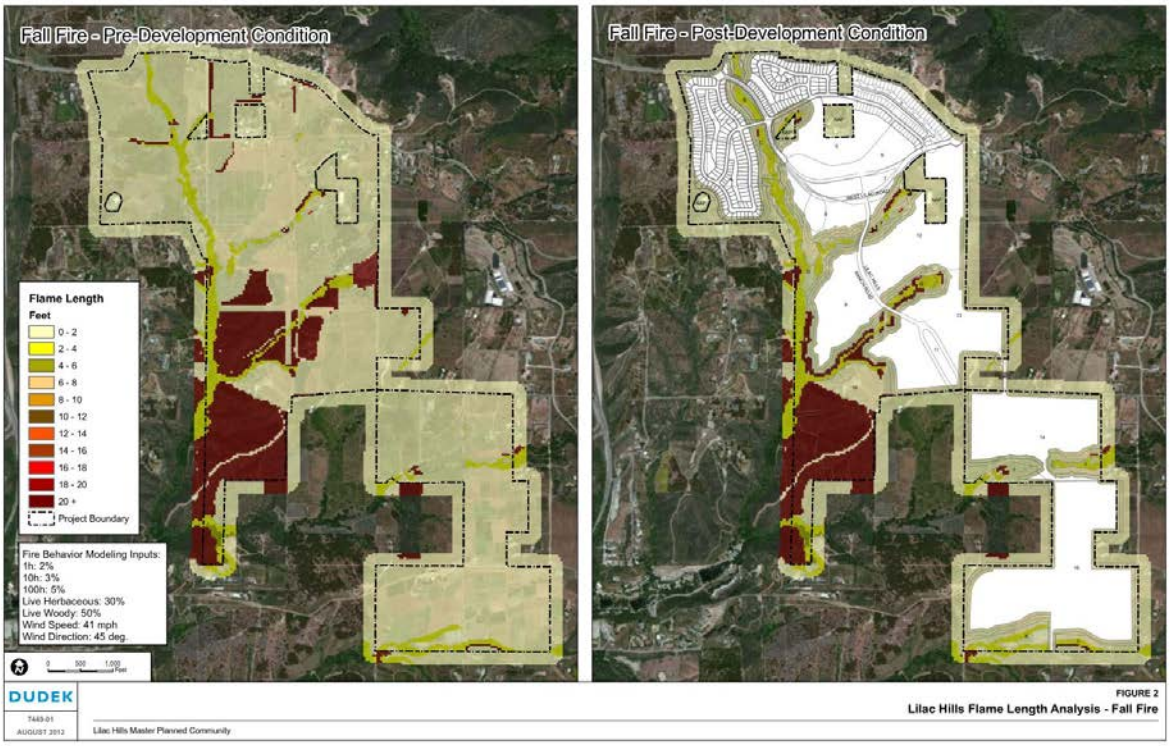
Flying embers from off-site fire may inundate the Project area during wind-driven fire events. The fuel modification zones and construction type and materials for all project features will resist ignition from ember showers. Ignition of the ground cover could result in a fast moving, but lower intensity fire that burns in a patchy manner on the site due to the highly compartmentalized fuel modification areas beneath the CPV trackers.

Sincerely,

Michael Huff, Practice Manager
Urban Forestry + Fire Protection Planning

Att: Figures 1 and 2


Summer Fire - Pre-Development Condition
Summer Fire - Post-Development Condition
Flame Length
Feet
0 - 2
2 - 4
4 - 6
6 - 8
8 - 10
10 - 12
12 - 14
14 - 16
16 - 18
18 - 20
20 +
Project Boundary
Fire Behavior Modeling Inputs:
1h: 3%
10h: 5%
100h: 7%
Live Herbaceous: 60%
Live Woody: 90%
Wind Speed: 19 mph
Wind Direction: 225 deg.
DUDEK
7449-01
AUGUST 2012
Lilac Hills Master Planned Community
FIGURE 1
Lilac Hills Flame Length Analysis - Summer Fire


Fall Fire - Pre-Development Condition
Fall Fire - Post-Development Condition
Flame Length
Feet
0 - 2
2 - 4
4 - 6
6 - 8
8 - 10
10 - 12
12 - 14
14 - 16
16 - 18
18 - 20
20 +
Project Boundary
Fire Behavior Modeling Inputs:
1h: 2%
10h: 3%
100h: 5%
Live Herbaceous: 30%
Live Woody: 50%
Wind Speed: 41 mph
Wind Direction: 45 deg.
DUDEK
7449-01
AUGUST 2012
Lilac Hills Master Planned Community
FIGURE 2
Lilac Hills Flame Length Analysis - Fall Fire

APPENDIX K

2005 – 2011 Response Data for Deer Springs Fire Protection District

(Tables Developed From Data Provided By Deer Springs Fire Protection District)

RESPONSE within IA	CY 2005				TOTAL FOR YEAR
	STATION 11	STATION 12	STATION 13	MILLER	
Medical Aid (MU)	258	230		19	507
Traffic Collision (TC)	73	76		30	179
Vehicle Fire (VF)	9	16		2	27
Vegetation Fire (VEG)	6	7	Station Not In Service	6	19
Structure Fire (STR)	4	2		2	8
Hazardous Material Response	1	40		21	62
False Alarm (FA)	9	2		0	11
Cancel = CA	52	19		25	96
Illegal Burn (IB)	4	8		8	20
Smoke Check (SC)	4	10		3	17
PSA	18	33		5	56
Mutual Aid/Assist Out of District (MUT)	33	6		145	184
Assist to other DSFPD Units	131	141		186	458
Burn Permit Inspections	---	---		---	0
Station Total Responses	**602**	**590**		**452**	**1644**
Calls per 24-Hr Shift	**1.65**	**1.62**		**1.24**	**4.50**

RESPONSE within IA	CY 2006 *				TOTAL FOR YEAR
	STATION 11	STATION 12	STATION 13	MILLER	
Medical Aid (MU)	30	24		7	61
Traffic Collision (TC)	6	5		9	20
Vehicle Fire (VF)	0	0		4	4
Vegetation Fire (VEG)	0	1	Station Not In Service	9	10
Structure Fire (STR)	0	0		0	0
Hazardous Material Response	0	1		0	1
False Alarm (FA)	7	5		11	23
Illegal Burn (IB)	0	0		3	3
Smoke Check (SC)	0	4			4
PSA	4	1		0	5
Mutual Aid/Assist Out of District (MUT)	0	0		4	4
Assist to other DSFPD Units	10	16		0	26
Burn Permit Inspections	---	---		---	0
Station Total Responses	**58**	**58**		**47**	**163**
Calls per 24-Hr Shift	**1.90**	**1.90**		**1.55**	**5.36**

*** Data Only Available For The Month Of December**

RESPONSE within IA	CY 2007				TOTAL FOR YEAR
	STATION 11	STATION 12	STATION 13	MILLER	
Medical Aid (MU)	290	278	Station Not In Service	29	
Traffic Collision (TC)	83	78		25	
Vehicle Fire (VF)	12	22		**11**	
Vegetation Fire (VEG)	4	11		15	
Structure Fire (STR)	5	13		9	
Hazardous Material Response	3	3		1	
False Alarm (FA)	44	53		23	
Cancel (CA)	115	62		65	
Illegal Burn (IB)	4	6		3	
Smoke Check (SC)	9	16		7	
PSA	29	37		4	
Mutual Aid/Assist Out of District (MUT)	15	12	Station Not In Service	54	
Assist to other DSFPD Units	92	100		157	
Burn Permit Inspections	---	---		---	0
Station Total Responses	**705**	**691**		**403**	**1799**
Calls per 24-Hr Shift	**1.93**	**1.89**		**1.10**	**4.93**

RESPONSE within IA	CY 2008				TOTAL FOR YEAR
	STATION 11	STATION 12	STATION 13	MILLER	
Medical Aid (MU)	284	150	116	35	585
Traffic Collision (TC)	68	42	12	24	161
Vehicle Fire (VF)	12	19	2	7	40
Vegetation Fire (VEG)	11	6	2	15	75
Structure Fire (STR)	3	2	2	1	8
Hazardous Material Response	0	1	0	1	2
False Alarm (FA)	38	27	20	14	99
Cancel (CA)	69	70	56	166	
Illegal Burn (IB)	4	7	5	7	23
Smoke Check (SC)	8	9	6	17	40
PSA	38	14	26	3	81
Mutual Aid/Assist Out of District (MUT)	30	12	6	112	160
Assist to other DSFPD Units	45	94	54	81	283
Burn Permit Inspections	---	---		---	0
Station Total Responses	**610**	**453**	**307**	**483**	**1853**
Calls per 24-Hr Shift	**1.67**	**1.24**	**0.84**	**1.32**	**5.08**

RESPONSE within IA	CY 2009				TOTAL FOR YEAR
	STATION 11	STATION 12	STATION 13	MILLER	
Medical Aid (MU)	307	170	141	46	664
Traffic Collision (TC)	79	64	33	25	201
Vehicle Fire (VF)	16	21	7	11	55
Vegetation Fire (VEG)	7	4	8	25	44
Structure Fire (STR)	6	4	4	2	16
Hazardous Material Response	2	1	1	0	4
False Alarm (FA)	46	36	31	11	124
Cancel (CA)	61	105	22	239	427
Illegal Burn (IB)	6	3	1	8	18
Smoke Check (SC)	21	10	16	13	60
PSA	43	17	19	2	81
Mutual Aid/Assist Out of	31	1	4	78	114

District (MUT)					
Assist to other DSFPD Units	42	59	15	69	185
Burn Permit Inspections	---	---	---	---	0
Station Total Responses	**667**	**495**	**302**	**527**	**1991**
Calls per 24-Hr Shift	**1.83**	**1.36**	**0.83**	**1.44**	**5.45**

RESPONSE within IA	CY 2010 *				TOTAL FOR YEAR
	STATION 11	STATION 12	STATION 13	MILLER	
Medical Aid (MU)	51	27	18	5	101
Traffic Collision (TC)	14	8	3	5	30
Vehicle Fire (VF)	6	2	2	0	10
Vegetation Fire (VEG)	0	0	0	1	1
Structure Fire (STR)	1	2	3	0	6
Hazardous Material Response	0	1	0	0	1
False Alarm (FA)	4	13	4	6	27
Cancel (CA)	6	18	6	33	63
Illegal Burn (IB)	0	2	0	1	3
Smoke Check (SC)	3	3	4	0	10
PSA	7	2	2	3	14
Mutual Aid/Assist Out of District (MUT)	2	0	0	0	2
Assist to other DSFPD Units	4	3	0	2	9
Burn Permit Inspections	6	4	0	0	10
Station Total Responses	**98**	**81**	**42**	**56**	**277**
Calls per 24-Hr Shift	**1.63**	**1.35**	**0.7**	**0.93**	**4.62**

*** CY 2010 Data Available Only For the Months of January & February**

RESPONSE within IA	CY 2011 *				TOTAL FOR YEAR
	STATION 11	STATION 12	STATION 13	MILLER	
Medical Aid (MU)	27	10	13	3	666
Traffic Collision (TC)	6	6	1	7	192
Vehicle Fire (VF)	1	1	0	0	45
Vegetation Fire (VEG)	0	0	0	2	51
Structure Fire (STR)	0	0	1	1	14
Hazardous Material Response	0	1	0	0	5
False Alarm (FA)	9	2	1	0	124
Cancel (CA)	9	0	4	0	303
Illegal Burn (IB)	0	0	0	0	5
Smoke Check (SC)	0	0	0	4	40
PSA	2	2	0	0	93
Mutual Aid/Assist Out of District (MUT)	1	0	0	7	86
Assist to other DSFPD Units	1	10	6	5	211
Month Total Responses	47	32	22	29	
Station Total Responses	**615**	**443**	**404**	**373**	**1835**
Calls per 24-Hr Shift	**1.68**	**1.21**	**1.11**	**1.02**	**5.03**

*** CY 2011 Data Only From the Month of December, 2011**

APPENDIX L

Automatic Aid Agreement Between Deer Springs Fire Protection District and North County Fire Protection District

AUTOMATIC AID AGREEMENT
between
DEER SPRINGS FIRE PROTECTION DISTRICT
and
NORTH COUNTY FIRE PROTECTION DISTRICT

THIS AGREEMENT, made and entered into this 24th day of April, 26, 2011, by and between the North County Fire Protection District, a special district, hereinafter referred to as "**NORTH COUNTY**" and the Deer Springs Fire Protection District, a special district, hereinafter referred to as "**DEER SPRINGS.**"

WITNESSETH

WHEREAS, both **DEER SPRINGS** and **NORTH COUNTY** maintain, an organized and equipped Fire Department, charged with the duty of fire protection and rescue within the jurisdictional limits of each of said fire districts; and

WHEREAS, investigation has disclosed it would be to the benefit of each party hereto, that the services of each Fire Department be, in certain circumstances, extended outside of the jurisdictional boundaries of each party hereto and into the jurisdictional boundaries of the other party hereto; and

WHEREAS, the parties hereto recognize that in certain circumstances, it is advantageous to utilize the nearest available fire suppression and rescue forces to provide the most effective response to emergency alarms regardless of jurisdictional boundaries; and

WHEREAS, the parties hereto both desire that in some circumstances the Fire Department of **NORTH COUNTY** will respond to fires and rescue incidents within the jurisdictional boundaries of **DEER SPRINGS** and that in some circumstances **DEER SPRINGS** will respond to fires and rescue incidents within the jurisdictional boundaries of **NORTH COUNTY**.

NOW, THEREFORE, FOR AND IN CONSIDERATION OF THE MUTUAL PROMISE, COVENANTS AND CONDITIONS HEREINAFTER SET FORTH, THE PARTIES HERETO AGREE AS FOLLOWS:

1. That, pursuant to the authority granted by Section 55632 of the Government Code, the parties hereto agree to respond to emergency fire alarms outside of its jurisdictional boundaries and into the jurisdictional boundaries of the other in accordance with the terms and conditions hereinafter set forth.

2. That the specific details of the services to be provided under this agreement shall be determined by the respective Fire Chief of each jurisdiction. It is understood that all plans which deal with emergency response shall adhere as closely as practical to the "nearest unit's" concept of first alarm response which forms the basis for this agreement. Upon the mutual consent of the Fire Chief of the parties hereto, modifications may be made, due to changing conditions, to the Automatic Aid territories.

3. That each of the parties will provide fire apparatus to jurisdictional boundaries of the other party. That within the **DEER SPRINGS/NORTH COUNTY** area, upon receipt of a verified fire alarm report, fire or rescue, the **DEER SPRINGS/NORTH COUNTY** will dispatch at least one engine company upon request and other support equipment as needed.

4. That **NORTH COUNTY** agrees to indemnify and hold **DEER SPRINGS** harmless from loss, liability, claim, suit or judgment resulting from obligations of **NORTH**

COUNTY for work or acts done or omitted by which are or may be done, or required by, or pursuant to this agreement.

DEER SPRINGS, agrees to indemnify and hold **NORTH COUNTY** harmless from any loss, liability, claim, suit or judgment resulting from obligations of **DEER SPRINGS** for work or acts done, or omitted by **NORTH COUNTY**, which are or may be done, or required by, or pursuant to this agreement. These provisions are included in accordance with Government Code, Section 895.4, and are applied to all parties herein.

5. That each party hereto shall maintain Worker's Compensation Insurance covering its own employees without cost to the other party, and each party shall pay its own personnel without cost to the other party.

6. That each of the parties hereto shall be fully responsible for all repairs, maintenance and upkeep, including fuel, oil, lubrication, parts replacement and repair of casualty damage, of all of its own equipment used pursuant to this agreement while said equipment is outside of its jurisdictional boundaries.

7. That the costs necessary to develop and provide for the necessary telephone and/or radio inter-tie between communications systems of the parties hereto shall be shared by them equally.

8. That the extraterritorial services to be rendered pursuant to this agreement shall

consist of providing first alarm fire suppression and/or rescue services. The parties shall make every effort to make available the equipment, personnel and services described in this document; however, it is understood by the parties that circumstances may arise which cause a responding party to be unable to make available part or all of the equipment, services and personnel described. The equipment, personnel and services actually made available to the requesting party shall be pursuant to the best efforts of the responding party.

9. That each party warrants and represents that it has sufficient equipment to handle normal involvements which it shall be responsible under this agreement, but neither party shall be expected to respond pursuant to this agreement with special equipment in any territory of the other party, and each party shall furnish its own special equipment for any involvement within its jurisdictional boundaries.

10. That the Fire Chief of each party hereto, shall have joint authority and responsibility for the administration of this **AGREEMENT** which they may delegate to their agents or employees in their respective Fire Departments.

11. That each party hereto shall furnish to the other in writing, the name and rank of all participating officers.

12. That no payment of any kind shall be made between the parties hereto as compensation for any services performed pursuant to this agreement except that the responding party's ALS provider may charge its authorized transport and

related fees to the patient for ALS services performed.

13. That this agreement does not conflict with or supersede an existing "Mutual Aid: Agreement between the Parties Hereto."

14. That this agreement shall be effective as of the date and year hereinabove written and continue until terminated by either party by giving notice, in writing, of its intention to terminate not less than ninety (90) days from and after the date of said notice.

IN WITNESS WHEREOF, the parties hereto have executed this **AGREEMENT** the day and year above written.

DEER SPRINGS FIRE PROTECTION DISTRICT	NORTH COUNTY FIRE PROTECTION DISTRICT
Chris Amestoy, Fire Chief	William R. Metcalf, Fire Chief/CEO
Authorized Signer Name/Title	Authorized Signer Name/Title
Signature	Signature
Approved for Form and Content:	Approved for Form and Content:
	Robert L. James, District Counsel North County Fire Protection District

APPENDIX M

County of San Diego-Department of Purchasing and Contracting — Contract 515388

Amendment No. 2 – Deer Springs Fire Protection District For Use of Fire Protection Funds

COUNTY OF SAN DIEGO – DEPARTMENT OF PURCHASING AND CONTRACTING
CONTRACT NO. 515388 AMENDMENT NO. 2

To **Deer Springs Fire Protection District**, Contractor. Pursuant to the changes clause, you are directed to make the changes described herein to the Contract or do the following described work not included in the previous agreed on Statement of Work.

Title of Contract, Project, or Program: **Deer Springs Fire Protection District for use of Fire Protection Funds**

Effective Date: **July 1, 2010**

Description of Contract Change(s) and/or Work To Be Done:

1. In RECITALS.

   A. WHEREAS: In the first sentence **Insert** "are" after the word "fire protection" then **Delete** the word "provide" after the word "fire protection".

   B. WHEREAS: In the third line of the sentence after the "California Department of Forestry" **Insert** the following: "(CDF/CAL FIRE)"

   C. WHEREAS: In the second line of the sentence after "California State Department of Forestry and Fire Protection" **Insert** the following: "(CDF/CAL FIRE)"

   D. WHEREAS: At the end of the sentences after "CDF" Insert the following: "/CAL FIRE",

2. Article 1 entitled "PROVISION OF COUNTY FUNDS". **Delete** in its entirety and **Replace** to read as follows:

   1. PROVISION OF COUNTY FUNDS: Upon execution of this Agreement, COUNTY agrees to provide County funds to ENTITY to supplement ENTITY's costs for a CDF/CAL FIRE Schedule A 4142 Agreement. Supplemental costs shall be $721,972 for FY 2007/2008; $747,241 for FY 2008/09; $773,394 for FY 2009/2010; $654,379 for FY 2010/2011; $654,349 for FY 2011/2012 and $673,979 for FY 2012/2013. Under no circumstances shall COUNTY be obligated to pay ENTITY any more funds than the amount specified herein. COUNTY will pay in arrears for actual costs for staffing as stated in Section 2 below. Staffing may be adjusted with prior written agreement between ENTITY and COUNTY COTR.

3. Article 2 entitled "ENTITY'S PROJECT" is amended as follows:

   Section 2.1: In the first sentence **Replace** "CDF" with "CDF/CAL FIRE's and **Delete** "and 4144 (Amador)".

   Section 2.2: **Delete** in its entirety and **Replace** to read as follows:

   2.2 "This agreement is contingent upon ENTITY entering and maintaining a CDF/CAL FIRE Schedule A 4142 agreement for the unamended term of the agreement ending June 30, 2013. Failure to maintain a CDF/CAL FIRE Schedule A 4142 agreement shall be considered a material breach of contract and grounds for immediate termination of this agreement by County."

   Section 2.3: **Delete** in its entirety and **Replace** to read as follows:

   2.3 "Within five (5) working days after receipt of a CDF/CAL FIRE Schedule A 4142 contract invoice, ENTITY will provide a complete copy of the CDF/CAL FIRE invoice to COUNTY along with an invoice from ENTITY requesting payment for actual costs (up to the amount specified in this contract), for staffing as stated in 2.6 below. Payment shall be net 45 "immediate" from receipt and approval of invoice unless otherwise stated. Within ten (10) working days after receipt of COUNTY payment for Schedule A 4142 services, ENTITY shall provide COUNTY with proof that ENTITY has paid the CDF/CAL FIRE invoice."

   2.4 In this section **Replace** "CDF" with "CDF/CAL FIRE" and the word "three" with "seven"; **Delete** "and 4144 (Amador) and the "s" after word agreements.

   2.5 In this section **Replace** "CDF" with "CDF/CAL FIRE" and **Delete** "and 4144 (Amador)" and the "s" after the word agreements.

   2.6 Staffing Shall be as follows: **Delete** items "a" and "b" in their entirety and **Replace** to read as follows:

   a. CDF/CAL FIRE Schedule A 4142 staffing per fire engine will consist of not less than three persons, from CDF/CAL FIRE.

   b. Staffing considered for reimbursement under this contract shall consist of five (5) Firefighter II and one-half Battalion Chief.

   2.7 No Changes

Amendment 2, Contract 515388 – Agreement Between The County Of San Diego And Deer Springs Fire Protection District For Use Of Fire Protection Funds

2.8 Entity will:

a. In this item **Delete** in its entirety and **Replace** to read as follows:

"Contract with CDF/CAL FIRE for two fire stations: Deer Springs Station 1 and Deer Springs Station 2 (Schedule A 4144)."

b. In this item **Replace** "CDF" with "CDF/CAL FIRE"; **Delete** "and 4144 (Avocado)".

c. In this item after the word "costs" **Insert** a period and **Delete** the following ", with the exception of "d" below".

d. **Delete** in its entirety and designate as "Reserved"

e. **Delete** the following from the second sentence as follows:

"or committed funds as shown as reserved in the new year approved budget;"

2.9 Missing – missed numbered in original agreement designate as "Reserved"

2.10 No Changes

2.11 No Changes

5. Section 3 USE OF FUNDS: **Delete** the second sentence in its entirety.

6. Section 4 AVAILABILITY OF FUNDS: In the third sentence after "proportionately upon" **Replace** "ninety (90)" with "one-hundred twenty (120)".

7. Section 5 TERM: **Replace** "2012" with "2013"

8. Section 16 CONTRACT ADMINISTRATION: **Delete** "Director, Department of Planning and Land Use" and **Replace** with "Deputy Chief Administrative Officer, Public Safety Group, or his/her designee"

9. Section 18 NOTICE: DEER SPRINGS FIRE PROTECTION DISTRICT ADMINISTRATOR: In the first line **Delete** "Administrator" and **Replace** with "Fire Chief" and in the last line **Delete** "Neil.mckeown2@sdcounty.ca.gov" and **Replace** with "Ernest.mauge@sdcounty.ca.gov".

Under COUNTY: In this section **Delete** in its entirety and **Replace** to read as follows:

"Raymond A. Fernandez, Deputy Chief Administrative Officer
County of San Diego Public Safety Group
1600 Pacific Coast Hwy, Suite 301
San Diego CA 92101-2441
Tel: (619) 531-4535
Fax: (619) 232-2136
Email: Raymond.Fernandez@sdcounty.ca.gov"

10. **A strikeout copy of the changes in the contract is attached hereto for reference purposes only.**

Amendment 2, Contract 515388 - Agreement Between The County Of San Diego And Deer Springs Fire Protection District For Use Of Fire Protection Funds

All other Terms and Conditions remain in effect.

IN WITNESS WHEREOF, County and Contractor have executed this Amendment effective as of the date first set forth above:

We, the undersigned Contractor, have given careful consideration to the change proposed and hereby agree, if this proposed change is approved, that we will provide all equipment, furnish all materials, except as may otherwise be noted above, and perform all services necessary for the work specified and will accept as full payment: $654,349.00 for FY 2010-11 and FY 2011-12; and $673,979.00 for FY 2012-13.

Contract term is adjusted as amended.

Cumulative Contract Total Price: $4,225,284.00

By: Ernest L Marugg Jr Date: 9/27/10

Print Name: Ernest L Marugg Jr

Deer Springs Fire Protection District
8709 Circle "R" Drive, Escondido, California 92026
Phone: 760-749-5001
Fax: 760-749-6572

THIS AMENDMENT IS NOT VALID UNLESS APPROVED BY THE DIRECTOR, DEPARTMENT OF PURCHASING AND CONTRACTING.

DEPARTMENT REVIEW AND RECOMMENDED APPROVAL:

By: Raymond A Fernandez Date: 10-6-10

RAYMOND A. FERNANDEZ
Deputy Chief Administrative Officer
Public Safety Group

APPROVED AS TO FORM AND LEGALITY:

By: [signature] Date: 10/5/10

Senior Deputy
County Counsel

APPROVED:

By: Brian P. Peters Date: 10/15/10

WINSTON F. MCCOLL, Director
Department of Purchasing and Contracting

SECOND AMENDMENT TO THE
AGREEMENT BETWEEN THE COUNTY OF SAN DIEGO AND
DEER SPRINGS FIRE PROTECTION DISTRICT
FOR USE OF FIRE PROTECTION FUNDS

County Contract No. 515388

This Agreement is entered into on _____, 2010 by and between the County of San Diego (COUNTY), a political subdivision of the State of California with its administrative headquarters at 1600 Pacific Highway, San Diego, California 92101, and Deer Springs Fire Protection District (ENTITY), with headquarters located at 8709 Circle "R" Drive, Escondido, California 92026.

RECITALS:

A. WHEREAS, fire protection districts provide fire protection and important health and safety services to the residents and their property in certain unincorporated areas of San Diego County;

B. WHEREAS, the County, by action of the Board of Supervisors on June 21, 2006, Minute Order No. 2, authorized the Director of Purchasing and Contracting to negotiate new contracts and amend existing contracts and enter into contracts of no less than three years with the California Department of Forestry (CDF/CAL FIRE), Fire Protection Districts, County Service Areas and additional Volunteer Fire Companies to improve fire protection and emergency response services in their areas; and

C. WHEREAS, ENTITY has entered into Cooperative Agreements for fire protection service with California State Department of Forestry and Fire Protection (CDF/CAL FIRE) to provide fire protection services, and

D. WHEREAS, the County is authorized to support ENTITY's efforts in providing fire protection services.

E. WHEREAS, COUNTY and ENTITY desire to set forth the terms and conditions on which COUNTY will provide funds to ENTITY.

F. WHEREAS, the Agreement shall consist of this pro forma Agreement and Exhibit A, ENTITY's contract with CDF/CAL FIRE.

NOW, THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. PROVISION OF COUNTY FUNDS: Upon execution of this Agreement, COUNTY agrees to provide County funds to ENTITY to supplement ENTITY's costs for a CDF/CAL FIRE Schedule A 4142 Agreement. Supplemental costs shall be $721,972 for FY 2007/2008; $747,241 for FY 2008/2009; $773,394 for FY 2009/2010; $654,349 for FY 2010/2011; $654,349 for FY 2011/2012 and $673,979 for FY 2012/2013. Under no circumstances shall COUNTY be obligated to pay ENTITY any more funds than the amount specified herein. COUNTY will pay in arrears for actual costs for staffing as stated in Section 2 below. Staffing may be adjusted with prior written agreement between ENTITY and COUNTY COTR.

2. ENTITY'S PROJECT: ENTITY shall use County Funds solely for the following public purpose:

2.1 California Forestry Department (CDF/CAL FIRE) Schedule A 4142 contract services (attached Exhibit A).

2.2 This agreement is contingent upon ENTITY entering and maintaining a CDF/CAL FIRE Schedule A 4142 agreement per the amended term of the agreement ending June 30, 2013. Failure to maintain a CDF/CAL FIRE Schedule A 4142 agreement shall be considered a material breach of contract and grounds for immediate termination of this agreement by County

2.3 Within five (5) working days after receipt of a CDF/CAL FIRE Schedule A 4142 contract invoice, ENTITY will provide a complete copy of the CDF/CAL FIRE invoice to COUNTY along with an invoice from ENTITY requesting payment for actual costs (up to the amount specified in this contract), for staffing as stated in 2.6 below. Payment shall be set as "immediate" from receipt and approval of invoice unless otherwise stated. Within ten (10) working days after receipt of COUNTY payment for Schedule A 4142 services, ENTITY shall provide COUNTY with proof that ENTITY has paid the CDF/CAL FIRE invoice.

2.4 The effective date of both agreements will be for Fiscal Year 2006/2007 at the time CDF/CAL FIRE begins the first of seven years of the Schedule A 4142 agreement with ENTITY.

2.5 ENTITY through CDF/CAL FIRE Schedule A 4142 agreement will maximize mutual aid and automatic aid agreements to improve emergency response within the affected districts.

2.6 Staffing shall be as follows:

a. CDF/CAL FIRE Schedule A 4142 staffing per fire engine will consist of not less than three persons, from CDF/CAL FIRE.

b. Staffing considered for reimbursement under this contract shall consist of five (5) FFF and one-half Battalion Chief.

2.7 ENTITY will provide all requested information pertaining to water sources, mains and hydrants as requested.

2.8 ENTITY will:

a. Contract with CDF/CAL FIRE for two fire stations: Deer Springs Station 11 and Deer Springs Station 12 (Schedule A 4142).

b. If the CDF/CAL FIRE Schedule A 4142 costs exceed the County contribution, ENTITY is responsible to pay those excess amounts.

c. Pay all ongoing operating costs, equipment/apparatus replacement, and fleet maintenance costs.

d. [Reserved]

e. Annual Funding report -The Entity shall provide a funding report on or before August 31st of each fiscal year. The report shall contain appropriate documentation evidencing that the funds were spent in accordance with the contract. The County at its sole discretion may disallow any funds it deems improperly spent or committed and reduce future funds by the disallowed amount. The County shall notify the Entity within 30 days of receipt of any report of disallowances.

At the end of the contract term, if the County disallows any funds improperly spent or committed, the Entity shall return any disallowed funds to the County within 30 days of receiving notification.

2.9 [Reserved]

2.10 ENTITY agrees to meet and resolve any conflict with County to a satisfactory and mutually acceptable solution.

2.11 ENTITY will work with County as requested to improve Insurance Services Office ratings for insurance purposes and improved Emergency Medical Services response with approval of the Chief Officer of the District.

3. USE OF FUNDS: ENTITY shall use all COUNTY funds provided by this contract for the purpose specified in Paragraph 2 of this Agreement.

4. AVAILABILITY OF FUNDS. COUNTY's obligation for payment of any Agreement beyond the current fiscal year is contingent upon the availability of funding from which payment can be made. No legal liability on the part of the COUNTY shall arise for payment beyond June 30 of the calendar year unless funds are designated by the COUNTY and are made available for such performance. COUNTY shall have the right to terminate this Agreement or reduce compensation and service levels proportionately upon one-hundred-twenty (120) days' written notice to Contractor in the event that Federal, State or COUNTY funding for this Agreement ceases or is reduced prior to the ordinary expiration of the term of this Agreement. In the event of reduction of funding for the Agreement, COUNTY and ENTITY shall meet within ten (10) days of written notice to renegotiate this Agreement based upon the modified level of funding. In this case if no agreement is reached between COUNTY and ENTITY within 10 days of the first meeting, either party shall have the right to terminate this Agreement within ten (10) days written notice of termination.

5. COMPLIANCE WITH ALL LAWS AND REGULATIONS. In using County funds, ENTITY shall comply with all applicable federal, state and local laws and regulations including, but not limited to, the California Environmental Quality Act (CEQA)

6. TERM. This Agreement shall expire on June 30, 2015.

7. TERMINATION FOR CAUSE. Upon ENTITY'S breach of this Agreement, COUNTY may terminate this Agreement by giving ENTITY written notice of such termination and specifying the effective date thereof, at least five days before the effective date of such termination. As of the effective date of termination, COUNTY shall have no obligation to make any further payments to ENTITY

irrespective of the amount of expenditures made by ENTITY. In no event shall ENTITY be entitled to any loss of profits on the portion of this Agreement so terminated, or to any other consequential damages, compensation, benefits, reimbursements or ancillary services other than as herein expressly provided. ENTITY shall refund all unexpended County Funds and submit all supporting written documentation (as described in Paragraph 4, above) within thirty days of written notice of termination.

8. TERMINATION FOR CONVENIENCE. Either party may terminate this Agreement by giving 120 days' written notice to the other party.

9. PARAGRAPHS THAT SURVIVE TERMINATION. If this Agreement is terminated for any reason pursuant to Paragraphs 8 or 9 or after the Term expires, the following Paragraphs shall survive and remain in effect: 3, 4, 5, 12, 13 and 16.

10. NO ASSIGNMENT. ENTITY shall not assign or transfer any interest in this Agreement without the prior written consent of COUNTY.

11. AUDIT AND INSPECTION OF RECORDS. ENTITY shall maintain such records and make such reports as required by COUNTY'S Contract Administrator to enable COUNTY to determine whether ENTITY is using County Funds properly. At any time during normal business hours and as often as COUNTY may deem necessary, ENTITY shall make available to COUNTY for examination all of its records with respect to all matters related to this Agreement and shall permit COUNTY to audit, examine, copy and make excerpts or transcripts from such records, and make audits of all invoices, materials, payrolls, records of personnel and other data regarding all matters related to this Agreement. Unless otherwise specified by COUNTY, ENTITY'S records shall be made available for examination in San Diego County. ENTITY shall maintain such records in an accessible location and condition for a period of not less than four years following receipt of County Funds under this Agreement unless COUNTY agrees in writing to an earlier disposition. The State of California and any federal ENTITY having an interest in the use of County Funds shall have the same rights as those conferred on COUNTY by this Agreement.

12. INDEPENDENT CONTRACTOR. COUNTY'S interest is that ENTITY use County Funds for the purpose specified in Paragraph 2. ENTITY'S performance under this Agreement shall be as an independent contractor with sole control of the means and manner for using County Funds provided under this Agreement. ENTITY shall complete this Agreement according to ENTITY'S own means and methods of work which shall be in the exclusive charge and control of ENTITY and shall not be subject to control or supervision of COUNTY except as to the purpose for which County Funds are used. ENTITY is, for all purposes arising out of this Agreement, an independent contractor, and neither ENTITY nor ENTITY'S employees shall be deemed to be COUNTY employees. In no event shall ENTITY or ENTITY'S employees be entitled to any benefits to which COUNTY employees are entitled, including but not limited to, overtime, any retirement benefits, workmen's compensation benefits, and injury leave or other leave benefits.

13. GOVERNING LAW. This Agreement shall be construed and interpreted according to the laws of the State of California.

14. AUDIT COSTS. ENTITY shall reimburse COUNTY for all costs incurred to investigate and audit ENTITY'S performance under this Agreement if ENTITY is subsequently found to have violated the terms of this Agreement. Reimbursement shall include all direct and indirect expenditures to conduct the investigation or audit. COUNTY may deduct all such costs from any amounts not yet paid ENTITY under this Agreement.

15. ENTIRE AGREEMENT. This Agreement constitutes the entire agreement between the parties and supersedes all previous oral or written understandings, representations or agreements related to the subject matter of this Agreement. This Agreement may not be changed except by written amendment signed by both parties.

16. CONTRACT ADMINISTRATION. The Deputy Chief Administrative Officer, Public Safety Group, or his/her designee shall administer this Agreement on behalf of COUNTY. The General Manager shall administer this Agreement on behalf of ENTITY. The parties may change their contract administrator by giving prior written notice to the other party of the name and address of the new contract administrator.

17. NO WAIVER. No failure, inaction, neglect or delay by COUNTY in exercising any of its rights under this Agreement shall operate as a waiver, forfeiture or abandonment of such rights or any other rights under this Agreement.

18. NOTICE. Any notice or notices required or permitted to be given pursuant to this Agreement shall be personally served by the party giving notice or shall be served by certified mail. Notices shall be sufficient if personally served on or if sent by certified mail, postage prepaid, addressed to:

DEER SPRINGS FIRE PROTECTION DISTRICT, ADMINISTRATOR:

District Fire Chief, Deer Springs Fire Protection District
8709 Circle "R" Drive
Escondido, California 92026
Tel: (760) 749-8091
Fax: (760) 749-6572
ernest.marugg@fire.ca.gov

COUNTY:

Raymond A. Fernandez, Deputy Chief Administrative Officer
County of San Diego Public Safety Group
734 W. Beech Street, Suite 301
San Diego CA 92101-2441
Tel: (619) 534-4535
Fax: (619) 232-2436
Email: Raymond.Fernandez@sdcounty.ca.gov

19. ACKNOWLEDGEMENT OF FUNDING. ENTITY shall identify the COUNTY as the source of funding or, if applicable, one of the sources of funding in any public announcements that are made regarding ENTITY'S project. Acknowledgement of COUNTY'S funding role, for example, should be included in publicity materials related to the project. In addition, ENTITY shall apprise COUNTY of any future special events related to ENTITY'S project for which ENTITY used County Funds provided under this Agreement so that COUNTY can determine what, if any, role it should play in the special event.

20. COUNTY EMPLOYEES. ENTITY shall not hire any COUNTY employee to implement any part of the project for which COUNTY is providing funds without the prior written approval of COUNTY.

Amendment 2 Agreement Between The County Of San Diego And Deer Springs Fire Protection District For Use Of Fire Protection Funds

IN WITNESS HEREOF, the parties have executed this Agreement on the date first written above.

DEER SPRINGS FIRE PROTECTION DISTRICT

By: _____
Deer Springs Fire Protection District
5709 Circle "R" Drive
Escondido, California 92026

Date 9/27/10

COUNTY OF SAN DIEGO

By: _____
WINSTON T. McCOLL, Director
Department of Purchasing and Contracting

Date 10-15-10

APPROVED AS TO FORM AND LEGALITY

By: _____
Senior Deputy County Counsel

Date: 10/5/10

APPENDIX N

FUEL MODIFICATION ZONES ANALYSIS – DUDEK

Fuel Modification Zones

Fire Behavior and Associated Fuel Modification Zones

Dudek conducted analysis of the fire behavior across the site and compared it against the proposed development footprint, product type, and proposed structure setbacks. In some instances, based on a variety of factors including the ignition resistant construction materials and methods, the anticipated wind alignment, off-site land use and vegetation type, or favorable terrain and fire behavior, the justification for a reduced fuel modification zone is evident. Most of the site will be provided a full 100 feet of fuel modification zone. Where not possible, the reduced fuel modification is considered more than would be necessary for fire protection given the fire-hardened structures, favorable terrain, light fuels and low projected flame lengths. Although fire behavior modeling software systems are not specifically intended for determining sufficient fuel modification zone/defensible space widths, they do provide the average length of the flames, which is a key element for determining defensible space distances for minimizing structure ignition. When coupled with experienced evaluation of the fire environment, site-specific landscape features and characteristics, development type and construction, and potential fire risk, the models do help substantiate where the most aggressive fuel modification is necessary and where it may be possible to provide reduced fuel modification zones.

Fuel modification on the site includes a variety of types (Attachment 1 – Lilac Hills Fuel Modification Zone Plan):

1. Standard 100 feet wide fuel modification zone
2. Agriculture-adjacent fuel modification zone (varying width adjacent to irrigated agriculture lands)
3. Reduced Fuel Modification Zone – 50 to 90 feet
4. Roadside Fuel Modification Zone – 20 feet (exception where sensitive wetland vegetation, which is typically high moisture content vegetation, constrains achievement of 20 feet)

Although there are several fuel modification zone types, each will be permanently marked in the field so that annual maintenance is facilitated. Hard and electronic copies of the fuel modification zones and their required maintenance and final plant palettes and densities will be provided by the community HOA or similar entity to all fuel maintenance contractors and successful contract completion will be based on these plans.

The following descriptions provide summaries of the site's fuel modification zones as well as site characteristics that provide justification for reductions from the standard 100 feet. Please refer to the associated Lilac Hills Ranch Fuel Modification Zone exhibit for location of each fuel modification zone type and Fire Protection Plan *Appendix J* for FlamMap fire behavior modeling and relation to reduced fuel modification areas.

Standard 100 Feet Wide Fuel Modification Zones

Standard zones will include two 50 foot wide zones with the first 50 feet starting at the structure. These areas include two 50 feet wide zones to break up fuel continuity and reduce spread rates and fire intensity. The first 50 feet will be irrigated, but will include plant species that are drought tolerant to minimize water use. The outer 50 foot wide zone will be a reduced fuel zone where the most flammable species will be removed and the remaining fuel will be maintained at densities of less than 50 percent of field conditions with minimal fuel continuity. Some of these areas overlap LBZs fully or partially.

Reduced Fuel Modification Zones

Reduced fuel modification zones are limited on the site. A few areas include less than 100 feet of fuel medication zone, ranging from 50 to 90 feet wide. These areas, due to the adjacent land uses and landscape cover types, produce low flame lengths and fire intensity and function consistently with a full 100 foot FMZ. In one instance, the extreme northwest portion of the project, terrain and wind alignment justifies a reduced fuel modification zone and a non-combustible landscape wall will be placed at the top of slope as an additional fire protection measure. Where reduced fuel modification zones are proposed, the project will condition these areas to future inspection and analysis. If, at any point, the off-site fuels should convert to a shrub dominated fuel type, then the project's HOA will be required to provide a focused fire protection plan for that specific area that analyzes the risk and offers implementable fire protection features to mitigate the potential risk, to the approval of the fire authority having jurisdiction.

Agriculture-Adjacent Fuel Modification Zones

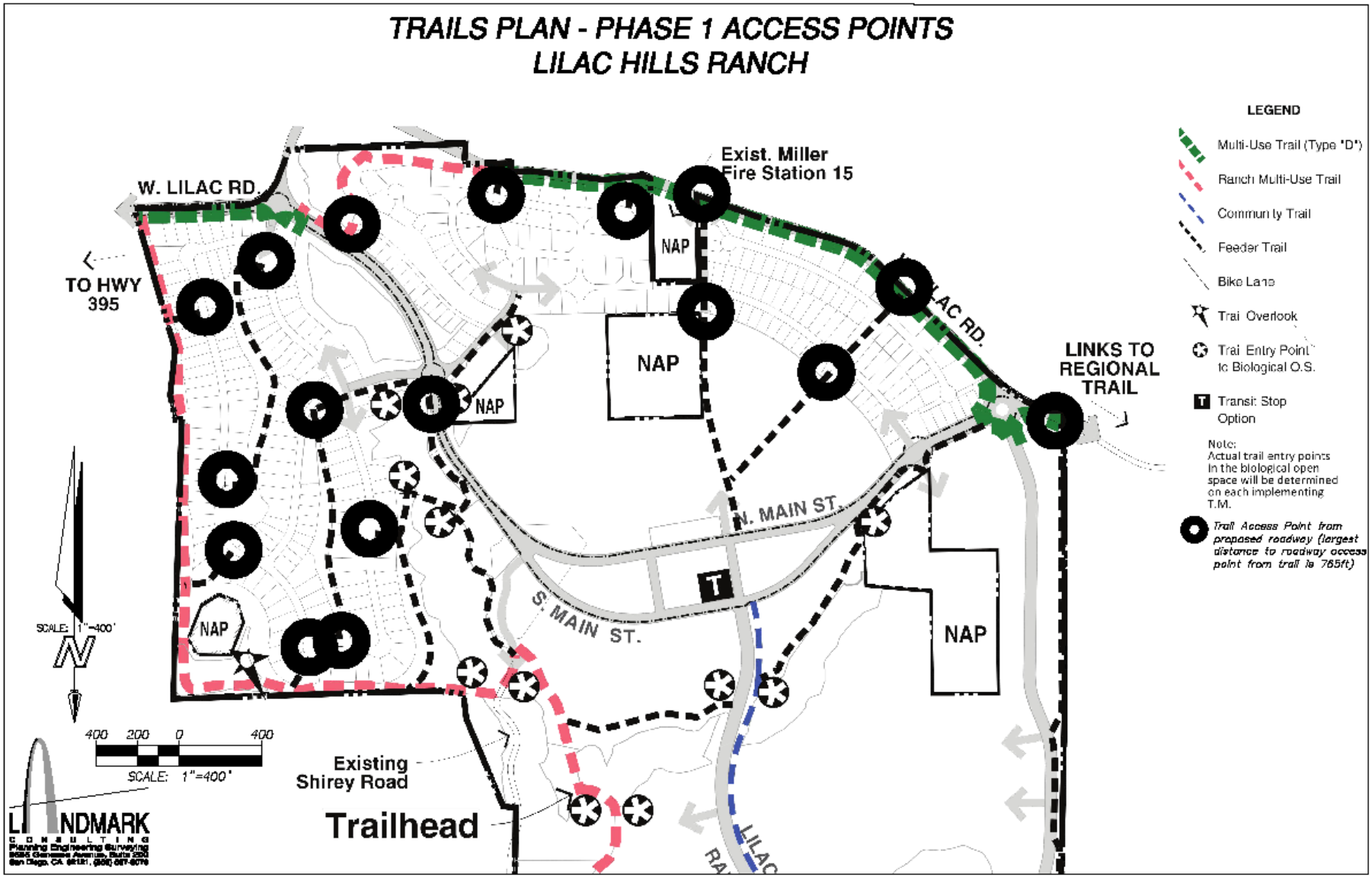
Agriculture-adjacent fuel modification zones vary from 30 feet to 100 feet wide and include irrigated agriculture at the outer edge of the zone, in most cases associated with a wetland buffer. The irrigated agriculture areas vary from roughly 50 to over 100 feet in width. In no case are the irrigated agriculture lands relied on as the only fuel modification. These areas augment provided fuel modification zones. The combined fuel modification zones and adjacent irrigated agriculture areas perform in substantial conformance with a standard 100 feet wide fuel modification zone due to the fuel types, irrigation throughout the zone and agriculture, and ongoing maintenance.

Roadside Fuel Modification Zones

Roadside fuel modification zones throughout the site where adjacent to unmaintained, developed landscapes will be at least 30 feet wide on each side and in some cases, will be adjacent to irrigated agriculture areas. Roadside fuel modification areas are commonly 20 feet wide (County Consolidated Fire Code) so the project exceeds the standard.

APPENDIX O

TRAILS PLAN - PHASE 1 ACCESS POINTS MAP


TRAILS PLAN - PHASE 1 ACCESS POINTS
LILAC HILLS RANCH
W. LILAC RD.
TO HWY 395
Exist. Miller Fire Station 15
NAP
NAP
NAP
NAP
NAP
LILAC RD.
LINKS TO REGIONAL TRAIL
N. MAIN ST.
S. MAIN ST.
T
SCALE: 1"=400'
400 200 0 400
SCALE: 1"=400'
Existing Shirey Road
Trailhead
LANDMARK CONSULTING
Planning Engineering Surveying
LEGEND
Multi-Use Trail (Type "D")
Ranch Multi-Use Trail
Community Trail
Feeder Trail
Bike Lane
Trail Overlook
Trail Entry Point to Biological O.S.
Transit Stop Option
Note:
Actual trail entry points in the biological open space will be determined on each implementing T.M.
Trail Access Point from proposed roadway (largest distance to roadway access point from trail is 765ft)

June 6, 2014

APPENDIX P

Lilac Hills Ranch
Road Standard Comparison Matrix

Lilac Hills Ranch

Road Standard Comparison Matrix

Road Name	Graded Width (min)	Road Surfacing Width (min)	Horizontal Radius (min)	Design Speed	Maximum Grade	Sidewalk	Parking	Tangent Between Curves (min)	Intersecting Road Separation (min)	Paved Shldr Width (min)[3]	Maximum/Acceptable Capacity (ADT)	Projected ADT
Main Street (before couplet)												8430
Proposed	64ft	45ft	500ft	30mph	7.2%	1 or both sides	See Note 3	54ft (horizontal)/140ft (vertical)	770ft	5'	9500	
Private Road Standard	28ft	24ft	200ft	30mph	10.0%	none	none	N/A	N/A	N/A	1500	
Public Road Standard (2.2C)	64ft-78ft	40ft-54ft	500ft	40mph	9.0%	both sides	both sides	400ft	300ft	8ft	9500	
Consolidated Fire Standards		24ft (as lane 14'min wide if median)	28' (dwys)		20.0%							
Main Street (from couplet eastward)												2960
Proposed	31ft	40ft	350ft	30mph	8.5%	1 or both sides	See Note 3	350ft (horizontal)/100ft (vertical)	445ft	5'	7800	
Private Road Standard	28ft	24ft	200ft	30mph	10.0%	none	none	N/A	N/A	N/A	1500	
Public Road Standard (2.1P)	52ft	28ft	500ft	40mph	9.0%	both sides	both sides	400ft	300ft	2ft	7800	
Consolidated Fire Standards		24ft (as lane 14'min wide if median)	28' (dwys)		20.0%							
Lilac Hills Ranch Road												4540
Proposed	29.5ft - 64ft	25ft - 42ft	300ft	30mph	10.0%	1 or both sides	See Note 3	N/A	252ft	none	10900	
Private Road Standard	28ft	24ft	200ft	30mph	10.0%	none	none	N/A	N/A	N/A	2500	
Public Road Standard (Res. Collector)	60ft	40ft	300ft	30mph	11.0%	both sides	both sides	N/A	200ft	8ft	4500	
Consolidated Fire Standards		24ft (as lane 14'min wide if median)	28' (dwys)		20.0%							
Shirey Road												0
Proposed	28ft	24ft	100ft	20mph	18.2%	none	See Note 3	N/A	60ft	none	100	
Private Road Standard	28ft	24ft	100ft	20mph	20.0%	none	none	N/A	N/A	N/A	100	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Covey Lane												1110
Proposed	32ft	24ft	200ft	30mph	10.0%	none	See Note 3	N/A	206ft	none	2500	
Private Road Standard	28ft	24ft	200ft	30mph	20.0%	none	none	N/A	N/A	N/A	2500	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Mountain Ridge Road												2220
Proposed	28ft	23ft	200ft	15mph	16.6%	none	See Note 3	N/A	470ft	none	2500	
Private Road Standard	28ft	24ft	200ft	30mph	20.0%	none	none	N/A	N/A	N/A	2500	
Public Road Standard (Res. Collector)	60ft	40ft	300ft	30mph	12.0%	both sides	both sides	N/A	200ft	8ft	4500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "G"												630
Proposed	31ft	23ft	200ft	30mph	10.1%	1 side	See Note 3	N/A	300ft	none	750	
Private Road Standard	28ft	24ft	150ft	15mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	13.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "NN"												640
Proposed	31ft	23ft	200ft	30mph	6.0%	1 side	See Note 3	N/A	981ft	none	750	
Private Road Standard	28ft	24ft	150ft	15mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	13.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "Z"												700
Proposed	34ft	23ft	500ft	30mph	10.5%	side (trail other side)	See Note 3	N/A	471ft	none	750	
Private Road Standard	28ft	24ft	150ft	15mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "E" (west of Street "C")												230
Proposed	31ft	23ft	200ft	15mph	9.3%	1 side	See Note 3	N/A	595ft	none	750	
Private Road Standard	28ft	24ft	150ft	15mph	20.0%	none	none	N/A	N/A	N/A	750	

April 3, 2013

Lilac Hills Ranch
Road Standard Comparison Matrix

Road Name	Graded Width (min)	Road Surfacing Width (min)	Horizontal Radius (min)	Design Speed	Maximum Grade	Sidewalk	Parking	Tangent Between Curves (min)	Intersecting Road Separation (min)	Paved Shldr Width (min)[5]	Maximum/Acceptable Capacity (ADT)	Projected ADT
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "Z" (east of Street "C")												1580
Proposed	31ft	25ft	200ft	30mph	7.5%	1 side	See Note 3	N/A	358ft	none	2500	
Private Road Standard	28ft	24ft	200ft	30mph	20.0%	none	none	N/A	N/A	N/A	2500	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "T"												250
Proposed	34ft	25ft	500ft	30mph	4.3%	2 sides	See Note 3	N/A	309ft	none	750	
Private Road Standard	28ft	24ft	150ft	25mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "S"												130
Proposed	31ft	25ft	480ft	30mph	7.9%	1 side	See Note 3	N/A	619ft	none	750	
Private Road Standard	28ft	24ft	150ft	25mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "C"												1230
Proposed	28ft	25ft	200ft	20mph	13.1%	1 side	See Note 3	N/A	343ft	none	2500	
Private Road Standard	28ft	24ft	200ft	30mph	20.0%	none	none	N/A	N/A	N/A	2500	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "V"												140
Proposed	31ft	25ft	200ft	30mph	2.0%	1 side	See Note 3	N/A	270ft	none	750	
Private Road Standard	28ft	24ft	150ft	25mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "U"												350
Proposed	28ft	25ft	200ft	25mph	6.0%	none	See Note 3	N/A	262ft	none	750	
Private Road Standard	28ft	24ft	150ft	25mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "E"												470
Proposed	34ft	25ft	200ft	20mph	14.0%	side (trail other sid	See Note 3	N/A	301ft	none	750	
Private Road Standard	28ft	24ft	150ft	25mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "H"												470
Proposed	31ft	25ft	250ft	30mph	5.1%	1 side	See Note 3	N/A	995ft	none	750	
Private Road Standard	28ft	24ft	150ft	25mph	20.0%	none	none	N/A	N/A	N/A	750	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "B" (Dawson)												0
Proposed	28ft	24ft	N/A	15mph	14.4%	none	See Note 3	N/A	408ft	none	100	
Private Road Standard	28ft	24ft	100ft	20mph	20.0%	none	none	N/A	N/A	N/A	100	
Public Road Standard (Res. Road)	56ft	36ft	200ft	30mph	15.0%	both sides	both sides	N/A	200ft	6ft	1500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							
Street "F"												2090

April 3, 2013

Lilac Hills Ranch
Road Standard Comparison Matrix

Road Name	Graded Width (min)	Road Surfacing Width (min)	Horizontal Radius (min)	Design Speed	Maximum Grade	Sidewalk	Parking	Tangent Between Curves (min)	Intersecting Road Separation (min)	Paved Shldr Width (min)[5]	Maximum/Acceptable Capacity (ADT)	Projected ADT
Proposed	34ft	25ft	400ft	5mph/30mp	11.3%	1 side	See Note 3	N/A	326ft	none	2500	
Private Road Standard	28ft	24ft	200ft	30mph	20.0%	none	none	N/A	N/A	N/A	2500	
Public Road Standard (Res. Collector)	60ft	40ft	300ft	30mph	12.0%	both sides	both sides	N/A	200ft	8ft	4500	
Consolidated Fire Standards		24ft	28' (dwys)		20.0%							

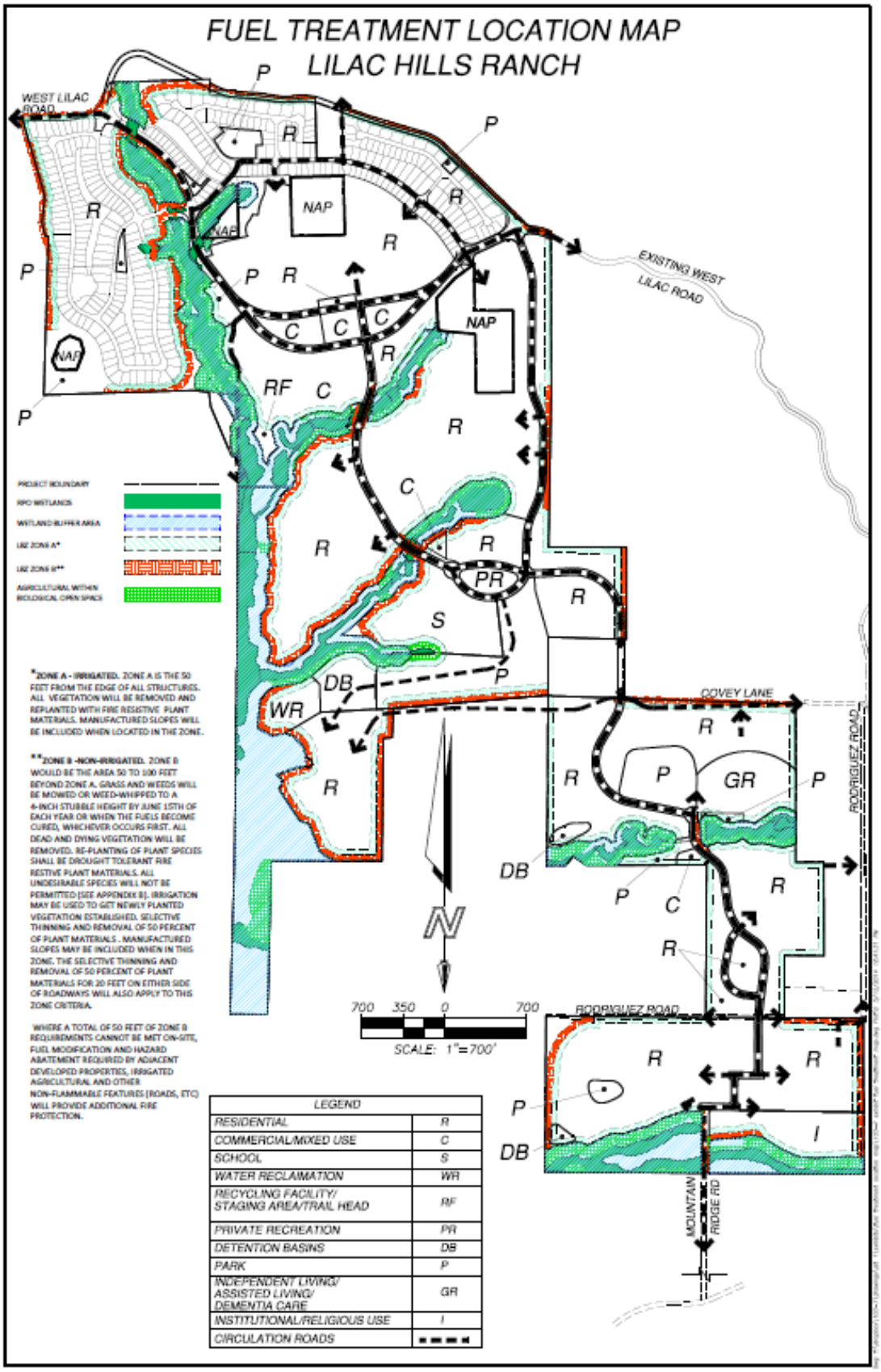
NOTES:
1. All proposed intersections satisfy standards for corner sight distance requirements
2. All Public Drainage standards are met except that culvert access roads are only provided on circulation roads
3. Parking only provided along housing frontages (please see attached Parking Analysis Exhibit for location of proposed parking)
4. Public Lighting Standards will be met
5. Paved Shoulder width is inclusive of bike lanes

April 3, 2013

April 3, 2013

EXHIBIT 1

FUEL TREATMENT LOCATION MAP


FUEL TREATMENT LOCATION MAP
LILAC HILLS RANCH
WEST LILAC ROAD
EXISTING WEST LILAC ROAD
COVEY LANE
RODRIGUEZ ROAD
MOUNTAIN RIDGE RD
PROJECT BOUNDARY
RPO WETLANDS
WETLAND BUFFER AREA
LRZ ZONE A*
LRZ ZONE B**
AGRICULTURAL WITHIN BIOLOGICAL OPEN SPACE
*ZONE A - IRRIGATED. ZONE A IS THE 50 FEET FROM THE EDGE OF ALL STRUCTURES. ALL VEGETATION WILL BE REMOVED AND REPLANTED WITH FIRE RESISTIVE PLANT MATERIALS. MANUFACTURED SLOPES WILL BE INCLUDED WHEN LOCATED IN THE ZONE.
**ZONE B -NON-IRRIGATED. ZONE B WOULD BE THE AREA 50 TO 100 FEET BEYOND ZONE A. GRASS AND WEEDS WILL BE MOWED OR WEED-WHIPPED TO A 4-INCH STUBBLE HEIGHT BY JUNE 15TH OF EACH YEAR OR WHEN THE FUELS BECOME CURED, WHICHEVER OCCURS FIRST. ALL DEAD AND DYING VEGETATION WILL BE REMOVED. RE-PLANTING OF PLANT SPECIES SHALL BE DROUGHT TOLERANT FIRE RESTIVE PLANT MATERIALS. ALL UNDESIRABLE SPECIES WILL NOT BE PERMITTED (SEE APPENDIX B). IRRIGATION MAY BE USED TO GET NEWLY PLANTED VEGETATION ESTABLISHED. SELECTIVE THINNING AND REMOVAL OF 50 PERCENT OF PLANT MATERIALS . MANUFACTURED SLOPES MAY BE INCLUDED WHEN IN THIS ZONE. THE SELECTIVE THINNING AND REMOVAL OF 50 PERCENT OF PLANT MATERIALS FOR 20 FEET ON EITHER SIDE OF ROADWAYS WILL ALSO APPLY TO THIS ZONE CRITERIA.
WHERE A TOTAL OF 50 FEET OF ZONE B REQUIREMENTS CANNOT BE MET ON-SITE, FUEL MODIFICATION AND HAZARD ABATEMENT REQUIRED BY ADJACENT DEVELOPED PROPERTIES, IRRIGATED AGRICULTURAL AND OTHER NON-FLAMMABLE FEATURES (ROADS, ETC) WILL PROVIDE ADDITIONAL FIRE PROTECTION.
700 350 0 700
SCALE: 1"=700'
LEGEND
RESIDENTIAL R
COMMERCIAL/MIXED USE C
SCHOOL S
WATER RECLAIMATION WR
RECYCLING FACILITY/ STAGING AREA/TRAIL HEAD RF
PRIVATE RECREATION PR
DETENTION BASINS DB
PARK P
INDEPENDENT LIVING/ ASSISTED LIVING/ DEMENTIA CARE GR
INSTITUTIONAL/RELIGIOUS USE I
CIRCULATION ROADS