Fire Protection Plan
SHADOW RUN RANCH

TM 5223RPL Environmental Log # 00-02-035
Pauma Valley, CA
County of San Diego

First Submitted November 2, 2009
Corrections to comments Jan 29, 2010 Submitted Oct 10, 2012
Corrections to comments Nov 30, 2012
December 10, 2013

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Shadow Run Ranch
FIRE PROTECTION PLAN
November 2, 2009
October 10, 2012
December 10, 2013

Executive Summary

This Fire Protection Plan (FPP) evaluates the proposed Shadow Run Ranch development to ensure it does not unnecessarily expose people or structures to fire risks and hazards. The FPP identifies and prioritizes the measures necessary to adequately mitigate those impacts. 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 and fire resistive building materials, fire protection systems and equipment, impacts to existing emergency services, defensible space and vegetation management.

The project was analyzed to identify potential adverse impacts and to identify adequate measures for impacts resulting from wildland fire hazards. The evaluation determined that the California Department of Forestry and Fire Protection (CAL FIRE) will be able to provide adequate fire protection and emergency services. CAL FIRE (under the State Responsibility Area Agreement) as well as other fire departments and fire protection districts, can respond under 'Auto Aid' or be requested through Mutual Aid agreement, to respond in the event of wildfire that may be a risk to the development. Response times, the County Fire Code and the proximity of the development to the Wildland Urban Interface (WUI) require that residential fire sprinklers be installed in all residences.

In addition, this FPP lists fuel modification requirements to mitigate the exposure of people or structures from a significant risk of loss, injury or death from wildland fires. Zone 1 will be an irrigated landscaped zone and is commonly called the 'defensible space' zone for fire suppression forces and protects structures from radiant and convective heat. This landscaped zone is permanently irrigated and consists of fire resistant and maintained plantings. Zone 2 is the area beyond Zone 1, including manufactured slopes and excluding all prohibited highly combustible native vegetation, but permits plantings with very specific criteria. Individual home owners will be responsible to the San Diego County Fire Marshal for the annual completion of all designated fuel modification treatments in common areas prior to June 15th or when fuels become cured.

To support the water requirements for the project it will be annexed into the Yuima Municipal Water District, further the development will particiapte in the Community Facilities Distirict to provide funding for Fire Protection.

Finally, this plan and its requirements will be incorporated by reference into the final project conditions of approval to ensure compliance with codes/regulations and significance standards.

TM 5223RPL Shadow Run Ranch
FIRE PROTECTION PLAN

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APPENDICES

Shadow Run Ranch - TM 5223RPL
FIRE PROTECTION PLAN

1.0 - INTRODUCTION

This Fire Protection Plan (FPP) has been prepared for Sherrill Ann Schoepe, General Partner-Shadow Run Ranch LLC. The purpose of the FPP is to assess the potential impacts resulting from wildland fire hazards and identify the measures necessary to adequately mitigate those impacts. 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 fire resistive building features, fire protection systems and equipment, impacts to existing emergency services, defensible space, and vegetation management. The plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect one or more at-risk communities and essential infrastructures. The plan recommends measures that property owners will take to reduce the probability of ignition of structures throughout the area addressed by the plan.

The plan will be submitted to and approved by San Diego County Department of Planning and Development Services (PDS) and is based upon San Diego County requirements, Wildland Fire Protection Plans and Planning. Document preparation is consistent with County guidance and referenced material is the 2011 Consolidated Fire Code and applicable State of California requirements.

2.0 PROJECT LOCATION, DESCRIPTION AND ENVIRONMENTAL SETTING

2.1 Project Location

The proposed project site is located in a rural area of San Diego County in the un-incorporated area of Pauma Valley. The location is north side of Pala Road (SR-76), west of Adams Drive, Assessor's Parcel numbers 111-080-07, 08,09,10,18, & 19; 111-070-12 & 13; and portions of 111-080-14, 15, & 16.

2.2 Project Description

The project design consists of forty-five (44) single-family estate lots of a minimum of 2. acres net each, and three open space lots of varying sizes. Open space Lot 45, comprised of 33.28 gross acres, is located in the east central section of the site, and will retain its existing agricultural use. Open space Lot 46, comprised of 92.15 gross acres, is located along the western and northern property edge. Open space Lot 46 is a biological open space area that includes a portion of Frey Creek. Open space Lot 47, comprised of 7.96 acres, is located in the northeast portion of the site. Lot 47 will be developed for active and passive recreational uses as part of the Planned Residential Development. It contains an existing reservoir, the footprint of the reservoir is nearly 3. acres in size and the body contains approximately 41. acre feet of water. Water from the reservoir is used to gravity feed irrigation of the groves. The site is 248.26 gross acres, of which 114.7 acres will be developed. Existing zoning is 'Limited Agriculture'. The General Plan category is 'Estate Development'. The land is currently a grove with the majority in various types of citrus and limited avocado.

Figure 1: USGS Topography

Figure 2: Depicts Open Space

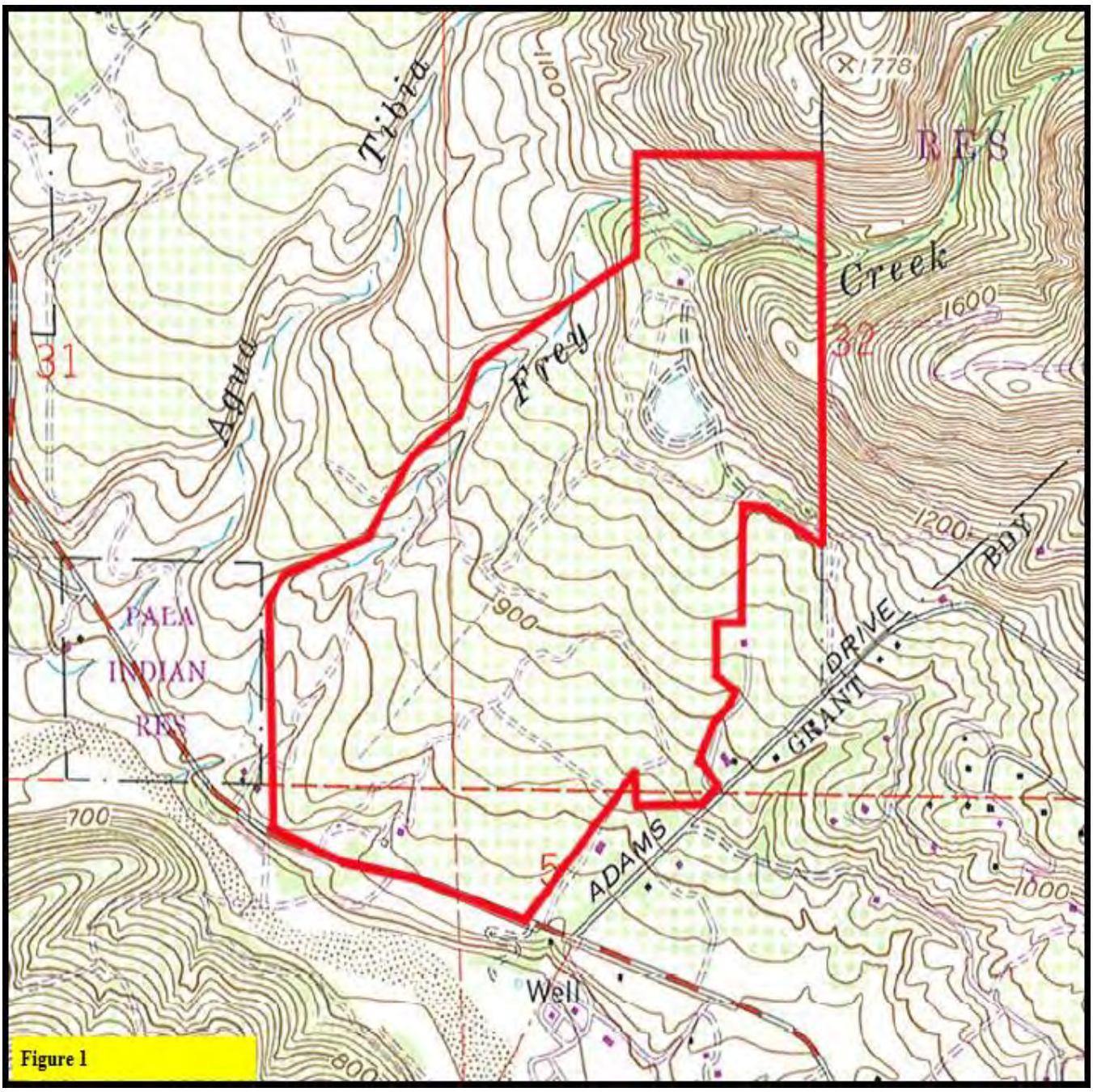
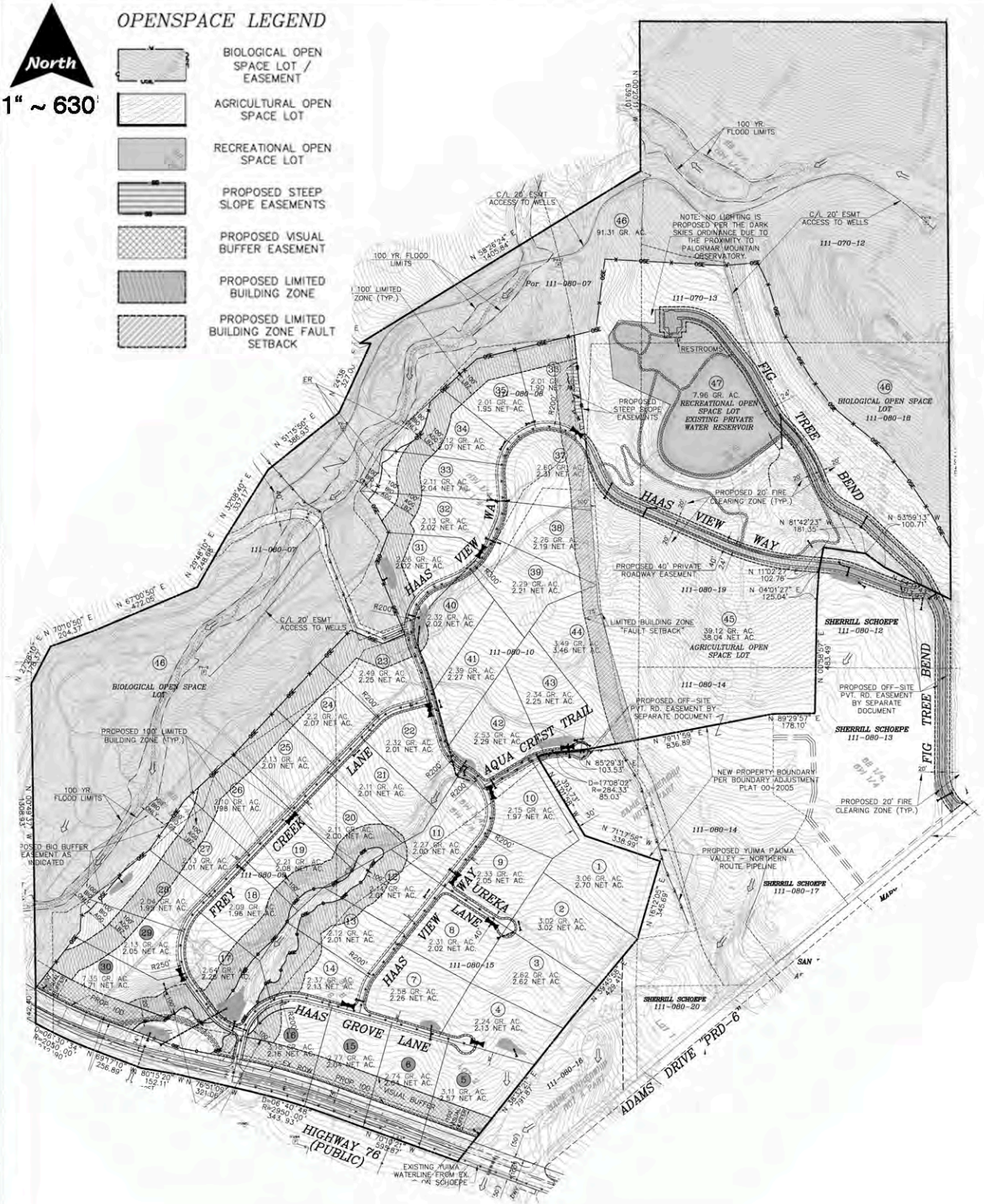

Tibbet
Agua
Frey
Creek
RES
1778
1100
1600
1200
BDY
900
700
800
1000
31
32
5
PALA
INDIAN
RES
GRANT
DRIVE
ADAMS
Well

Figure 1



Tentative Map

Figure 2

2.3 Environmental Setting

2.3.1 Dates of Site Inspections/Visits Conducted - Three site visits were conducted between the period of December 2007 and November 2009, as well as several telephone calls to determine pertinent information.

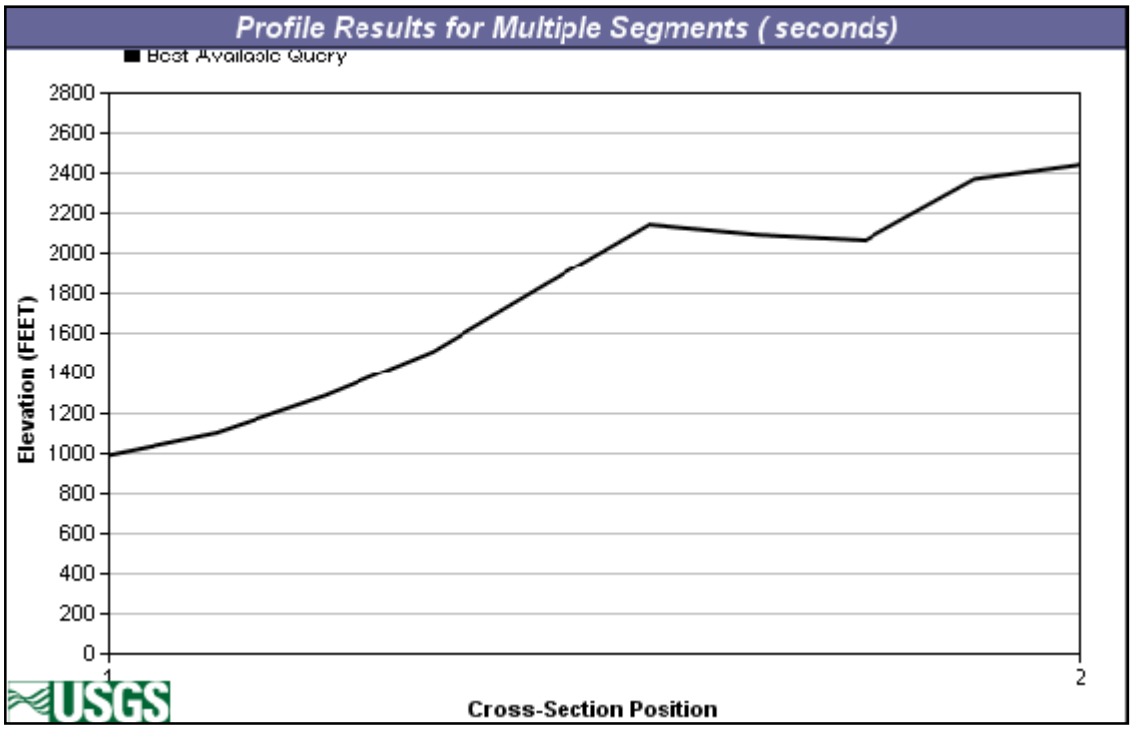
Site Visit & Purpose	Date
#1 Initial field visit Evaluate lot layout and primary and secondary access road locations	Dec. 14, 2007
#2 Field visit Evaluate vegetation, road conditions, and fire access, photos	Jan. 10, 2008
#3 Field visit Evaluate vegetation re-growth, re-new photos and review Fire Station	Nov. 6, 2009
#4 Field visit Evaluate Secondary Access	Jan 10/13, 2010

2.3.2 Topography - The project site is presently undeveloped and located in hilly terrain in a very high fire hazard severity zone approximately twenty-seven (27) miles inland from the ocean. The slopes on and adjacent to the site range between 10% and 25% as viewed from SR-76 looking north. The average slope within the area to be developed is 10% with a slope of 38% from the pond at the northern end of the property. On-site elevations range from 729 ft. at SR-76 to 1415 ft. at the north end of the property.

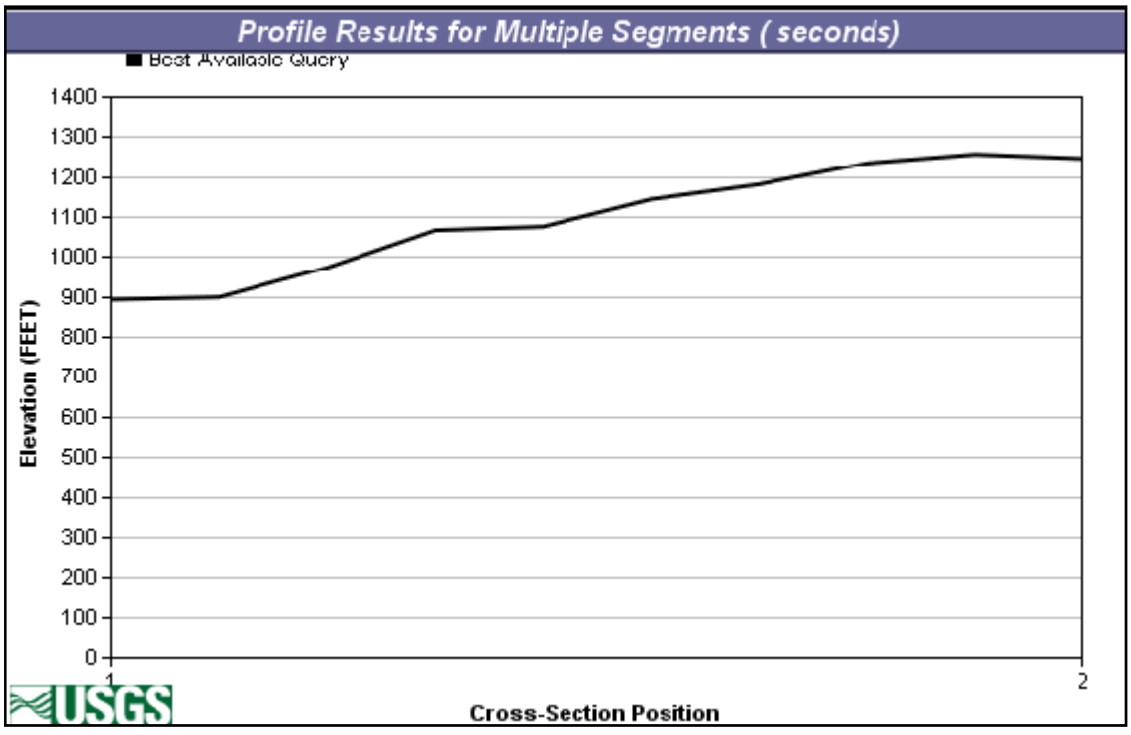
Figures 3, 4, and 5 depict topographic changes from property the boundary.

In the infrared depiction (figure 3 in red) of the area surrounding the proposed development, note those areas benefitting from irrigation and/or shading of the ground are red. The green line starts at the NE project boundary.

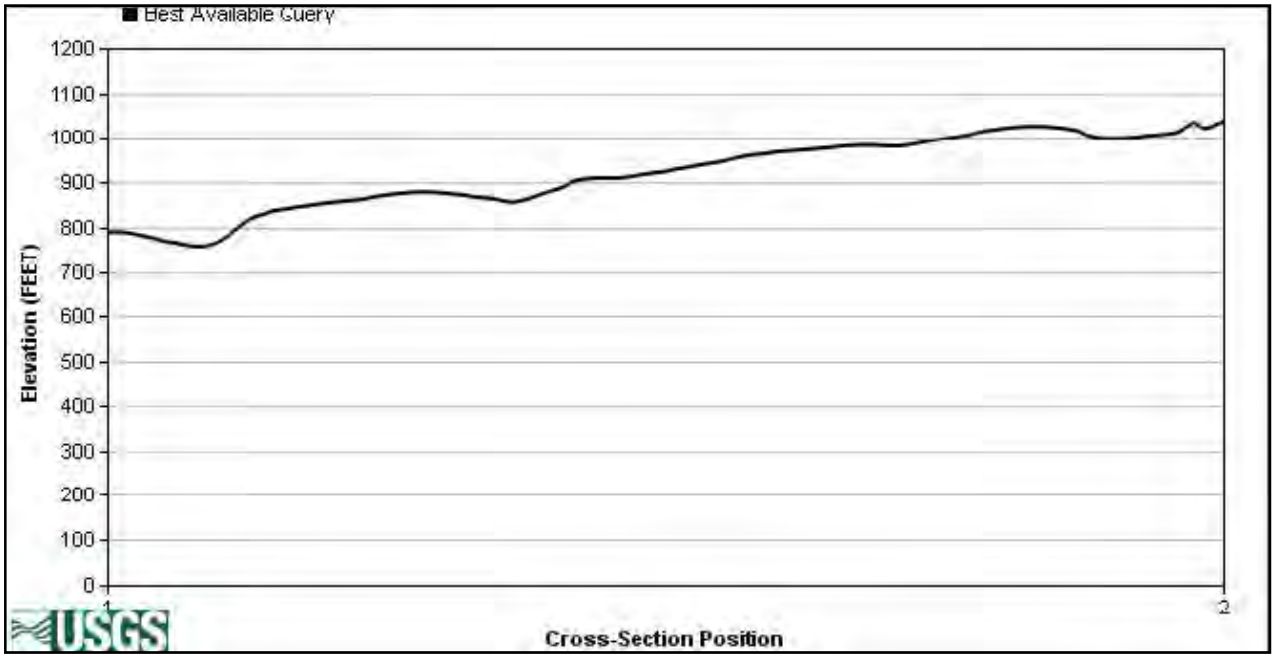
- Blue stream beds depict drainage that intersects with the project site at Frey Creek.
- The green line, a distance of approximately ***10,100 feet***, is profiled below. The line illustrates a graphic representation of slope along the line.



● The cross section below (green line) depicts elevation changes at the foothill area below Adams Dr. St. east.



- The cross section below (green line) depicts the elevation changes across the project site. The west end of the line is relatively flat terrain prior to the Frey Creek drainage.



2.3.3 Climate - The climate within the project area would be characterized as a Mediterranean, with generally mild, wet (14 -16 inches per year) winters and the bulk of the annual precipitation falling between January and March. Long, hot and very dry summer seasons frequently occur with occasional multi-year droughts.

The most critical wind pattern to the project area 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 (> 60-MPH), hot, dry winds with very low (5 to 9 percent) relative humidity. Santa Ana winds are caused by high-pressure weather systems 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.

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) and is associated with higher relative humidity readings (Transitional Zone ranges 10 to 14 percent or greater) 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.

The following chart represents the typical summer, Santa Ana and peak fire weather (climate conditions) elements for this Fire Protection Plan:

Period	Temperature	Relative Humidity	Sustained Wind
Summer	90-109F	10-14 %	19 mph
Santa Ana	90-109 F	5-9%	28 mph
Peak/Gust	90-109 F	5-9%	60mph

2.3.4 On-site Vegetation – The project site is currently used for agricultural operations. There are several distinct and different native plant communities bordering the grove to the west within Frey Creek drainage, and to the east Open Space (predominantly Coastal Sage Scrub). Species found in the area include ceanothus, chamise, black sage, laurel sumac, California buckwheat, and native, non-native grasses and invasive plant species (See Bio Map Exhibit 1). Normally, if left undisturbed, the natural vegetation in the project Open Space Easement areas on the north and east facing slopes could become a Fuel Model SH7 (Chaparral with 1 hour fuels of 5 tons/acre and 10 hour fuels of 4 tons/acre) and/or SCAL 18 (Sage/Buckwheat with 1 hour fuels of 5.5 tons/ac and 10 hour fuels of .8 tons/acre). A Coast Live Oak Woodland exists in the lower center of the project. The area in and around this woodland is considered disturbed habitat. Native vegetation has been removed, resulting in little or no ground fuel.

Frey Creek is shown as a “blue-line” stream which runs through the property in a north to south direction parallel to the western project boundary. It has several classifications: South Coast Live Oak Riparian Forest intermixed with Coastal Sage Scrub and area(s) of South Sycamore Alder Riparian Woodland. Note the lack of ground fuel in the drainage channel.

Photo Depiction of Site and Vegetation follows

Frey Creek Area, Western Boundary:

Note sparse shrubs, grasses and rocks in the creek channel and the adjacent citrus grove in the background.

Location of the 40 ft. easement, no improvements to be made.

The drainage is mostly rock with oak trees on approaches.

Note the citrus grove in the background**.**

Frey Creek is on the right side of the photo. Note the sycamore, oaks, and Coastal Sage Scrub native plant species.

The ground fuel lacks continuity. There is considerable rock in the drainage.

Open Space North of Lot 46

Typical Coastal Sage Scrub in shown in the foreground.

Note the grove area and Open Space below

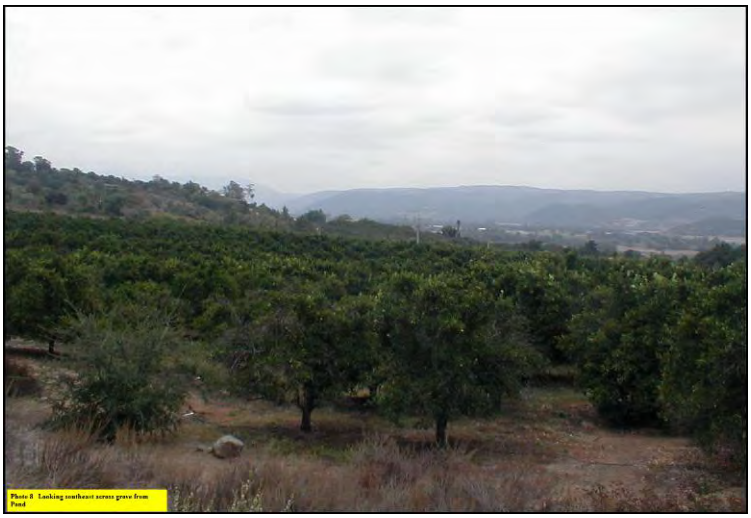
Vegetative fuel is sparse with considerable rock outcroppings.

View of slope to ridge and fuel loading.

Grove Photos

Typical grove maintenance pictured with best practice of no ground litter or trimmings. Note good separation between the rows.

View of the grove area to the southeast is pictured (taken below the pond, above the open space).



The pond is approximately 3 acres in size and contains approximately 41 acre feet of water.

The pond will remain a feature in the Recreation Area, and will continue to be the source of water for the grove after development.

The entire Lot is planned for Zone 1

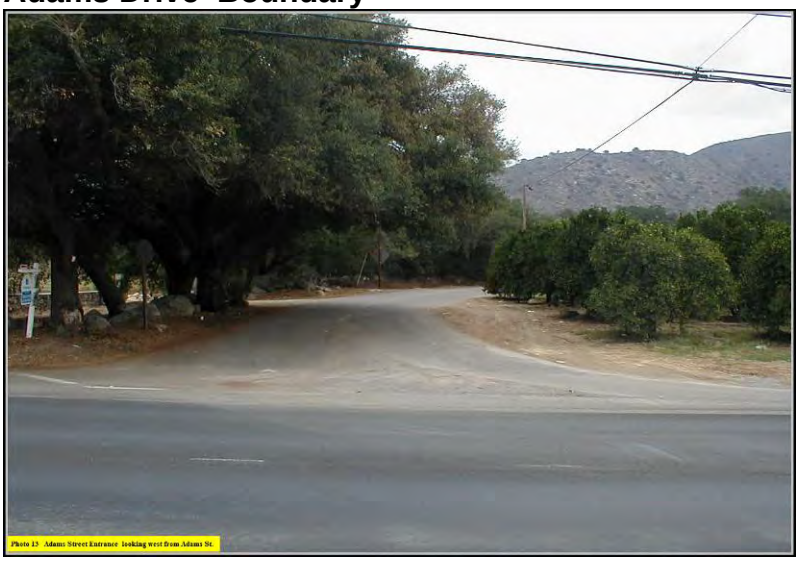
Interior Lower Oak Woodland.

Note the lack of ground fuel. The area is within an LBZ. Oaks will remain and be limbed up.

Shown is a typical rocky outcropping within the project interior.

Shown is an improved area at the bottom of the oak woodland.

Adams Drive Boundary



This area is located at the proposed entrance off Adams Dr.

The ground fuel has been removed from under the oaks.

The area off Adams Dr. that has oaks interspersed with shrubs and grasses.

Shown is an area off Adams Dr. with well maintained and irrigated grove(s).

There is good access to the project perimeter on the west side of the road.

BIOLOGY EXHIBIT

NOTE:

PERMANENT SIGNS WILL BE REQUIRED ALONG THE BOUNDARY BETWEEN OPEN SPACE EASEMENT AND THE LIMITED BUILDING ZONE. THEY WILL BE INSTALLED AT INTERVALS OF 100 FEET. THE SIGNS WILL BE CORROSION RESISTANT AND 6"x9" MINIMUM SIZE, ON POSTS NOT LESS THAN THREE FEET IN HEIGHT FROM THE GROUND SURFACE. SIGNS MAY BE ATTACHED TO FENCING IN LIEW OF ATTACHING THEM TO A SEPARATE POST. THE SIGNS WILL STATE THE FOLLOWING.

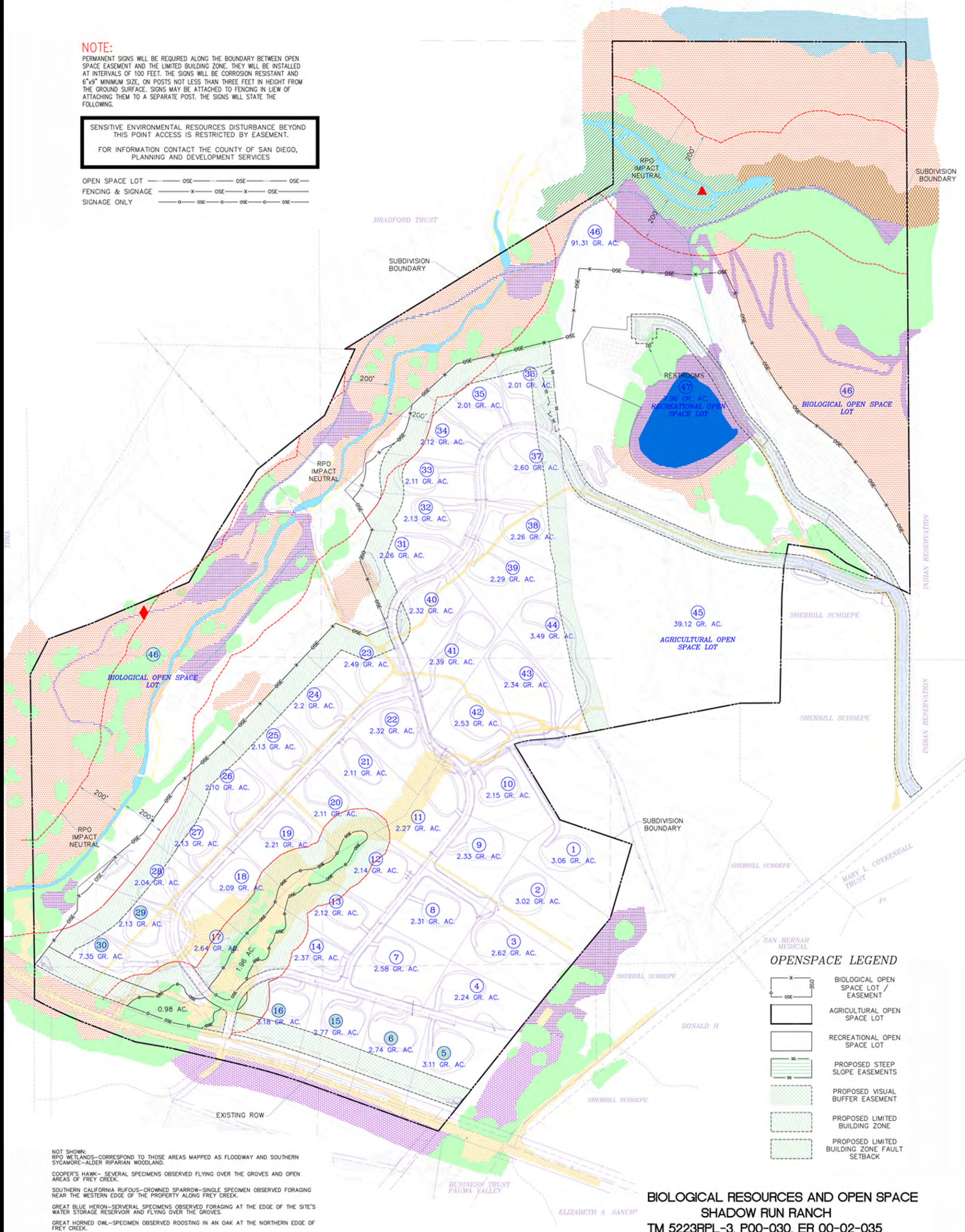
SENSITIVE ENVIRONMENTAL RESOURCES DISTURBANCE BEYOND THIS POINT ACCESS IS RESTRICTED BY EASEMENT.

FOR INFORMATION CONTACT THE COUNTY OF SAN DIEGO, PLANNING AND DEVELOPMENT SERVICES

OPEN SPACE LOT — OSE —

FENCING & SIGNAGE — X — OSE — X — OSE —

SIGNAGE ONLY — o — OSE — o — OSE — o — OSE —



OPENSPACE LEGEND

- BIOLOGICAL OPEN SPACE LOT / EASEMENT
- AGRICULTURAL OPEN SPACE LOT
- RECREATIONAL OPEN SPACE LOT
- PROPOSED STEEP SLOPE EASEMENTS
- PROPOSED VISUAL BUFFER EASEMENT
- PROPOSED LIMITED BUILDING ZONE
- PROPOSED LIMITED BUILDING ZONE FAULT SETBACK

NOT SHOWN:
RPO WETLANDS–CORRESPOND TO THOSE AREAS MAPPED AS FLOODWAY AND SOUTHERN SYCAMORE–ALDER RIPARIAN WOODLAND.

COOPER'S HAWK– SEVERAL SPECIMENS OBSERVED FLYING OVER THE GROVES AND OPEN AREAS OF FREY CREEK.

SOUTHERN CALIFORNIA RUFOUS–CROWNED SPARROW–SINGLE SPECIMEN OBSERVED FORAGING NEAR THE WESTERN EDGE OF THE PROPERTY ALONG FREY CREEK.

GREAT BLUE HERON–SERVERAL SPECIMENS OBSERVED FORAGING AT THE EDGE OF THE SITE'S WATER STORAGE RESERVOIR AND FLYING OVER THE GROVES.

GREAT HORNED OWL–SPECIMEN OBSERVED ROOSTING IN AN OAK AT THE NORTHERN EDGE OF FREY CREEK.

RED–SHOULDERED HAWK–SEVERAL SEEN FLYING OVER THE GROVES AND WOODED AREAS OF FREY CREEK.

TURKEY VULTURE–SEVERAL ADULT SPECIMENS OBSERVED SOARING OVER THE PROPERTY AND ROOSTING ONSITE.

YELLOW WARBLER–THIS SPECIES WAS REPORTED FROM THE SITE BY URS IN 2001.

WHITE–TAILED KITE–SINGLE SPECIMEN OBSERVED FORAGING OVER FREY CREEK.

BLUE–GRAY GNATCATCHER–BREEDING PAIR OBSERVED FORAGING NEAR THE CENTRAL WESTERN EDGE OF THE PROPERTY ALONG FREY CREEK.

BEWICK'S WREN–OBSERVED ONSITE IN AREAS OF DENSE BRUSH AND THE RIPARIAN AREAS ALONG FREY CREEK.

MOUNTAIN LION–DIAGNOSTIC TRACKS OBSERVED NEAR THE THE SOUTHWESTERN CORNER OF THE PROPERTY WITHIN THE FLOODPLAIN OF FREY CREEK.

BOBCAT– SCATS AND TRACKS OBSERVED IN VARIOUS AREAS, INDICATING MOVEMENT THROUGHOUT MOST OF PROPERTY.

SAN DIEGO DESERT WOODRAT– THIS SPECIES WAS REPORTED FROM THE SITE BY URS IN 2001.

MULE DEER–SCATS AND TRACKS OBSERVED ONSITE IN VARIOUS AREAS, MOSTLY ALONG THE FRINGE OF FREY CREEK.

Prepared by:

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JULIA L. GROEBNER, BS
ASSOCIATE BIOLOGIST

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N

200 100 0 200 400 600

SCALE IN FEET
GRAPHIC SCALE

BIOLOGY EXHIBIT

BIOLOGICAL RESOURCES AND OPEN SPACE
SHADOW RUN RANCH
TM 5223RPL-3, P00-030, ER 00-02-035

LEGEND

- CC = CHAMISE CHAPARRAL (HOLLAND CODE #37200)
- CSS = DIEGAN COASTAL SAGE SCRUB (HOLLAND CODE #32500)
- SSRAW = SOUTHERN SYCAMORE–ALDER RIPARIAN WOODLAND (HOLLAND CODE #62400)
- SCLORF = SOUTHERN COAST LIVE OAK RIPARIAN FOREST (HOLLAND CODE #61310)
- F = FLOODWAY (HOLLAND CODE #13200)
- CLO = COAST LIVE OAK WOODLAND (HOLLAND CODE #71160)
- OW = OPEN WATER (HOLLAND CODE #13100)
- DH = DISTURBED HABITAT (HOLLAND CODE #11300)
- D = URBAN/DEVELOPED (HOLLAND CODE #12000)
- FIELD= FIELD/PASTURE (HOLLAND CODE #18310)
- ORCHARDS = ORCHARDS AND VINEYARDS (HOLLAND CODE #18100)
- = ORANGE–THROATED WHIPTAIL
- = COASTAL WESTERN WHIPTAIL
- = PROPOSED RPO WETLAND BUFFER / IMPACT NEUTRAL

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2.3.5 Fire History - The available data suggests that in the second half of the 20th Century the frequency of small fires increased in southern California while their average size decreased. In San Diego County this has resulted in an increased rate of burning in low elevation coastal scrub land, especially the coastal sage scrub formation near the urban development areas. It also indicates over 600 fires in the foothills and mountains from 1910-1999. However, recently several years of drought have contributed to major fires (in excess of 50,000 acres) that have swept through San Diego County. This has resulted in large losses of property and damaged watershed.

Based on the above information, the fuel modeling in this report reflects the worst case scenarios that could be expected in the future.

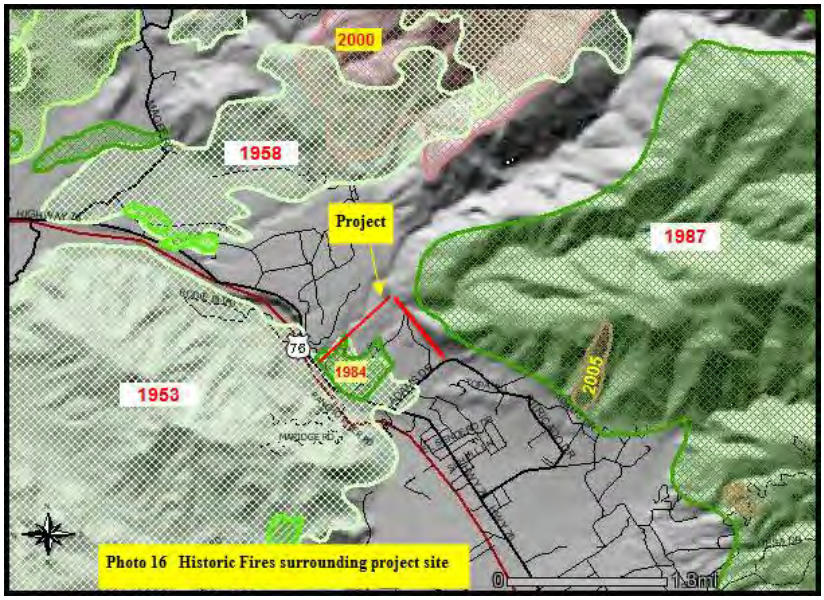


Photo 16 Historic Fires surrounding project site

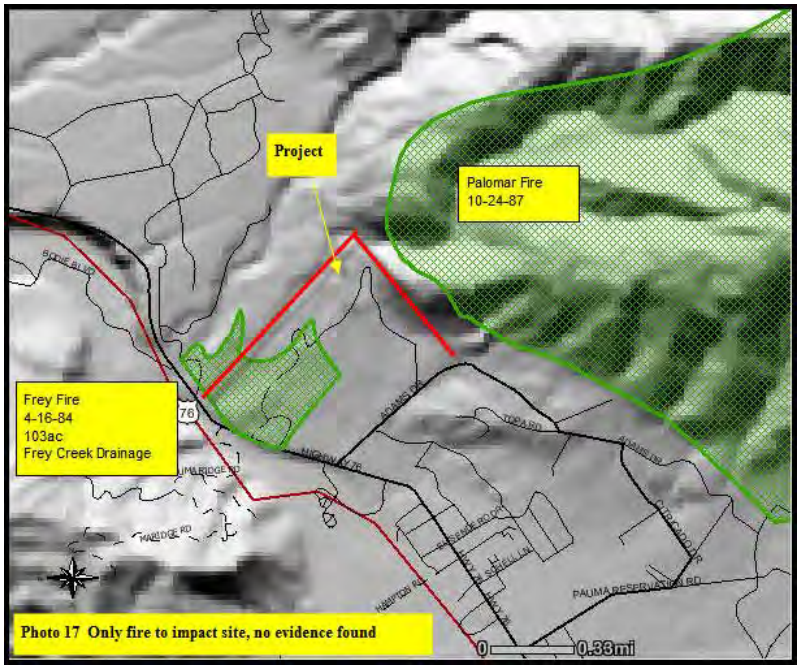


Photo 17 Only fire to impact site, no evidence found

2.3.6 On-site and Off-site Land Uses - The existing parcel of land proposed for development is currently a producing grove. There are groves on many of the surrounding off-site properties and many in large acre, developed parcels. See Ortho Photo Exhibit.

2.3.7 Public and Private Ownership of Land in the Vicinity - The applicant owns all property within TM 5223. All other properties in the vicinity are existing groves, or undeveloped private parcels. Other surrounding land uses consist of Pauma Indian Reservation to the north and east, Pala Indian Reservation to the south and west, or scattered estate residential development and agricultural operations to the northwest and southeast.

3.0 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

A Fire Protection Plan evaluates the potential adverse environmental impacts that the proposed residential development may have from wildland fire and proposes appropriate mitigations for any adverse impacts to ensure that this development does not unnecessarily expose people or structures to a significant risk of loss, injury or death in regard to wildland fire. The following guidelines for the determination of significance are used:

1. Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

2. Would the project result in inadequate emergency access?

3. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance service ratios, response times or other performance objectives for fire protection?

4. Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

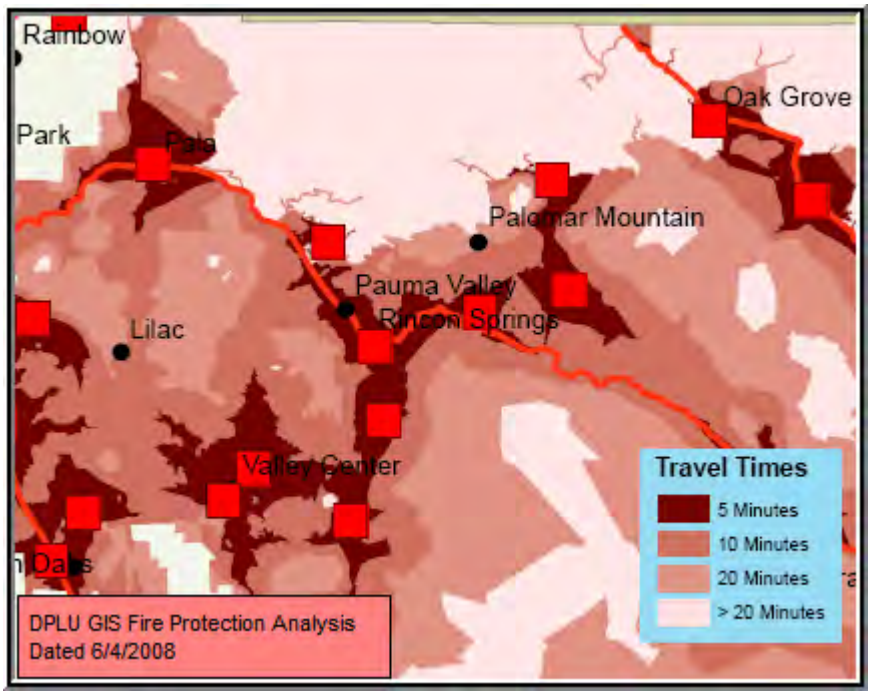
4.0 ANALYSIS OF PROJECT EFFECTS

The project demonstrates compliance within the requirements of the current San Diego County Consolidated Fire Code of 2011. The comprehensive Fire Protection Plan and the project design are consistent with the San Diego County DPLU recommendations including fuel modification.

The project meets the emergency response objectives identified in the Public Facilities Element of the County General Plan or offers Same Practical Effect.

4.1 Adequate Emergency Services

The project site is located within the response area of CAL FIRE Rincon Station and is staffed year round by agreement with Yuima Municipal Water District, Mootamai Municipal Water District and Pauma Municipal Water District, and a higher level of service is obtained by contract with the County of San Diego. CAL FIRE Rincon Station is approximately 4.8 miles from the project. It would meet the 10 minute Estate Response requirements.



4.2 Access Roads and Gates

The proposed access and egress to the project site is from three (3) locations. One from SR-76 and two (2) from Adms Dr. Adams Dr. access points are located in the northeast and southeast portions of the project area. All access points will require 20 ft. roadside fuel treatment. Access points will not be gated.

All interior roadways shall comply with San Diego County Private Road standards. The private subdivision interior access roads on the tentative map shall be a minimum of 24 feet of unobstructed improved width with an unobstructed vertical clearance of not less than 13 ft. and 6 inches. Single family residential driveways shall have a minimum of 16 ft. of improved width. Unobstructed radius width for cul-de-sacs and turn around locations shall be a minimum of 36 ft.

All roads within the development and the access roads shall be all-weather, paved surfaces capable of supporting fire apparatus weighing up to 75,000 pounds. No roadways within the subdivision will exceed 20 percent. Those sections of a roadway that are over 15% shall meet the additional requirements listed in the County Consolidated Fire Codes (CFC) for roads over 15% (Portland cement concrete [PCC] surface and have a deep broom finish perpendicular to the direction of travel to enhance traction).

All dead end roadways exceeding 150 ft. in length shall be provided with approved means for the turning around of emergency apparatus. All roads and streets shall meet the minimum 28 ft. turning radius measured from the inside edge of the improvement width. The minimum radius width for all cul-de-sacs shall be 36 ft.

4.3 Water Supply

The project will obtain its water supply from the Yuima Municipal Water District. An extension of the public water system with new pipelines, and hydrants will be built to serve the area.

The required fire flow for the project is 2500 gpm. Section 96.1.508.3 of the San Diego Consolidated Fire Code stipulates these requirements for development in 'High Fire Hazard' areas. In addition, the required flow and pressure must meet the demands required for residential sprinkler systems.

Hydrants shall be located at intersections, at the beginning radius of cul-de-sacs and at intervals identified in the Code and approved by the Fire Marshal. Hydrants located across heavily traveled roadways shall not be considered as serving the subject property.

4.4 Ignition Resistant Construction and Fire Protection Systems

All structures shall meet the standards set in the San Diego County Building Code, as outlined in Section 92.1.704A thru Section 92.1.707A. Components shall meet the Standards of Quality as provided for in Section 703A**.** A synopsis of construction standards can be found in APPENDIX 'E'. Suitable products for decks and patios can be found in APPENDIX 'D'. All residential structures will have automatic fire sprinklers. The fire sprinkler system shall meet National Fire Protection Standard-NFPA 13D.

4.5 Defensible Space and Vegetation Management

4.5.1 Off-site Fire Hazard and Risk Assessment – The proposed developed area is located in a very high fire hazard severity zone about twenty-seven (27) miles inland from the ocean. The proposed Estate Development is bordered by undeveloped private land on the north and scattered estate development to the east. SR-76 borders on the southern boundary. Open space will remain to the west in the Frey Creek drainage extending north at the perimeter. A notable wildland fire threat will come from a wildland wildfire burning in the off-site highly flammable native and non-native vegetation north and northeast east of this proposed development. This is mostly undeveloped land and the greatest threat to this development will be firebrands carried a long distance (one mile or more) by fire drafts or strong winds. An additional wildfire threat is possible from the west under typical or extreme prevailing southwest wind conditions.

4.5.2 On-site Fire Hazard and Risk Assessment - As of the date of this plan, all of the vegetation that has the potential to burn is an active irrigate grove maintained to a high level. An oak woodland in the lower southern end of the project would offer some risk, however there in no ground fuel. An analysis of past fire in the immediate area found no fire has ever burned through the site. The Frey Creek Fire came the closest in the southwesterly corner. In the area just south of Lot 47 there exists a band of native Coastal Sage Scrub.

The mixed chaparral, characterized as a Fuel Model SCAL 18 – Sage/Buckwheat will be of the most concern for the project area during a worst case scenario northeastern wind pattern (Santa Ana) with hot dry wind speeds that could reach 70 MPH. These conditions would be similar to what was experienced in recent extreme fire events. In this vegetation type, a high percentage of the vegetation would have an abundance of dead material. This is especially true of the black sage and sumac plants. This is due to

the effects of the local Mediterranean climate where warm wet winters promote new growth and long, hot and very dry summer seasons sometimes occur. Occasionally, multi-year droughts cause significant parts of these plants to die back. All of these plants are adapted to the intense wildfires that they need for species regeneration. However, when fire occurs at too frequent intervals, the Coastal Sage Scrub plant community reverts to a more flammable, less desirable community of short-lived annual grasses with little wildlife value and poor ability to protect the soil. The on-site wildland fire threat from this native vegetation can be mitigated within the development with the required fuel modification and utilization of "*firewise*" landscaping criteria.

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 northeast of the development. In addition, a typical fire day with a southwest wind will create a high wildland wildfire hazard. However, the proposed fuel modification treatments, "*firewise*" landscaping, and the use of ignition resistive building standards, which include the use of Class 'A' roof and non-combustible fire resistive exterior wall materials, will lower the risk for potential loss of structures to less than significant levels. Fuel treatment and setback will all but eliminate direct fire impingement and radiant heat from around the perimeter of the structures.

4.6 Vegetative Fuel Assessment.

The minute-by-minute movement of a wildland fire will probably never be totally predictable–certainly not 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 BehavePlus Fire Modeling System has been used to predict the wildland fire behavior (rate-of-spread, fireline intensity and flame length) for the northeastern and southwestern 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 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 three (3") inches in diameter are not included in the calculations at all (Andrews 1986)".

BehavePlus, Version 4.0, is an updated and enhanced form of the BEHAVE System. The BEHAVE 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. Regardless of the limitations expressed, experienced wildland fire managers can use the BEHAVE modeling system to project the expected fire intensity, rate-of-spread and flame lengths with a reasonable degree of certainty for use in fire protection planning purposes.

The ***FIREWISE*** **2000, Inc.** evaluation team used the computer based BEHAVE Plus v4.0 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 residential building lots for Tract 5223 (See APPENDIX 'C' for actual calculations). The projections

are based on scenarios that are "worst case" San Diego County fire assumptions.

Four (4) different fire scenarios are presented based on "worst case" fire weather assumptions for the project area, and one (1) fire scenarios based on "typical" fire weather projections for comparison. 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 two (2) separate BEHAVE Plus predications: one for the untreated fuels, and one for the treated fuels following the completion of the required fuel modification work. The tables also 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.

Table 4.6.1
Fire Scenario # 1
(Late Fire Season With 70 MPH North, Northeast And East Wind Conditions)
Open Space Area North to Northeast of Project

Fire Behavior Calculation Input Data	Anticipated Fuel Moistures
• 37% downslope to Grove • 28 mph Midflame wind speed • 180° aspect from north • 45° wind direction from north	* 1-Hour Fine Fuel Moisture of ……..…..2% * 10-Hour Fuel Moisture of……..……3% * 100-Hour Fuel Moisture of ……..……5% * Live Herbaceous Fuel Moisture of…...30% * Live Woody Fuel Moisture of…….....50%
Expected Fire Behavior Untreated Combined Fuel Model [SH7 – Dry Climate Shrub 40% and SCAL 18 - Sage/Buckwheat 60%]	
Rate of Spread - 447.7 feet/minute	
Fireline Intensity - 41939 BTU's/ft2	
Flame Length - 60.2 feet in length	

This is a snapshot of the expected fire behavior of the area off site that did not burn in the most recent fire event.

Table 4.6.2
Fire Scenario #2
(Late Fire Season With 70 MPH North, Northeast And East Wind Conditions)

Fire Behavior Calculation Input Data	Anticipated Fuel Moistures
• 12 percent slope • 28 mph Midflame wind speed • 0° aspect from north • 45° wind direction from north	* 1-Hour Fine Fuel Moisture of ……..…..2% * 10-Hour Fuel Moisture of.....……..……3% * 100-Hour Fuel Moisture of ……..……5% * Live Herbaceous Fuel Moisture of…...30% * Live Woody Fuel Moisture of…….....50%

Expected Fire Behavior Fuel Model SH7
Rate of Spread - 588.5 feet/minute
Fireline Intensity - 27244 BTU's/ft2
Flame Length - 49.4 feet in length
Expected Fire Behavior in Treated Fuels Combined Fuel Model - [tl9 – Very High Load Broadleaf Litter 50% and gr1 - Short, Sparse Dry Climate Grass 50%]
Rate of Spread - 96.2 feet/minute
Fireline Intensity - 4647 BTU's/foot/second
Flame Length - 23.9 feet in length

Table 4.6.3
Fire Scenario # 3
(Typical 19 MPH South, West and Southwest Wind Conditions)
Frey Creek Drainage Open Space

Fire Behavior Calculation Input Data	Anticipated Fuel Moistures
• Cross drainage modeled flat • 7.6 mph Midflame wind speed • 270° aspect from north • 270° wind direction from north	* 1-Hour Fine Fuel Moisture of …..……..…..2% * 10-Hour Fuel Moisture of..……..……3% * 100-Hour Fuel Moisture of ……..……..…..5% * Live Herbaceous Fuel Moisture of…....30% * Live Woody Fuel Moisture of…….....50%

Expected Fire Behavior Combined Fuel Model [sh7 – Dry Climate Shrub 40% and SCAL 18 - Sage/Buckwheat 60%]
Rate of Spread - 119.8 feet/minute
Fireline Intensity - 9393 BTU's/foot/second
Flame Length - 30.2 feet in length

Table 4.6.4
Fire Scenario # 4
(Rare event 30 MPH South, West and Southwest Wind Conditions)
Frey Creek Drainage Open Space

Fire Behavior Calculation Input Data	Anticipated Fuel Moistures
• cross drainage modeled flat • 12 mph Midflame wind speed • 270° aspect from north • 270° wind direction from north	* 1-Hour Fine Fuel Moisture of …..……..…..2% * 10-Hour Fuel Moisture of..……..……3% * 100-Hour Fuel Moisture of ……..……..…..5% * Live Herbaceous Fuel Moisture of…....30%

	*** Live Woody Fuel Moisture of…….....50%**
Expected Fire Behavior Combined Fuel Model [sh7 – Dry Climate Shrub 40% and SCAL 18 - Sage/Buckwheat 60%]	
Rate of Spread - 190.3 feet/minute	
Fireline Intensity - 15899BTU's/foot/second	
Flame Length - 38.5 feet in length	
Expected Fire Behavior Limited Riparian Areas TL 9 Model for Broadleaf Litter	
Rate of Spread - 34.9 feet/minute	
Fireline Intensity - 337 BTU's/foot/second	
Flame Length - 6.5 feet in length	

Table 4.6.4
Fire Scenario # 5
(Typical 19 MPH South, West and Southwest Wind Conditions)
Interior Oak Woodland with no ground fuel

Fire Behavior Calculation Input Data	Anticipated Fuel Moistures
• 11 percent slope • 7.6 mph Midflame wind speed • 270° aspect from north • 270° wind direction from north	* 1-Hour Fine Fuel Moisture of ……..2% * 10-Hour Fuel Moisture of……..3% * 100-Hour Fuel Moisture of ……..5% * Live Herbaceous Fuel Moisture of…...60% * Live Woody Fuel Moisture of…….....100%
Expected Fire Behavior TL 6 Broadleaf Litter	
Rate of Spread - 34.9 feet/minute	
Fireline Intensity - 337 BTU's/foot/second	
Flame Length - 6.5 feet in length	

Table 4.6.5
Fire Scenario # 6
(Late Fire Season With 70 MPH North, Northeast And East Wind Conditions)
Interior Oak Woodland with no ground fuel

Fire Behavior Calculation Input Data	Anticipated Fuel Moistures
• 11 percent slope • 28 mph Midflame wind speed • 270° aspect from north • 45° wind direction from north	* 1-Hour Fine Fuel Moisture of ……..2% * 10-Hour Fuel Moisture of……..3% * 100-Hour Fuel Moisture of ……..5% * Live Herbaceous Fuel Moisture of…...60% * Live Woody Fuel Moisture of…….....100%
Expected Fire Behavior	

TL 6 Broadleaf Litter
Rate of Spread - 68 feet/minute
Fireline Intensity - 4,846 BTU's/foot/second
Flame Length - 22.3 feet in length
No Litter or ground fuel What if results

Table 4.6.6
Fire Scenario # 7
(Late Fire Season With 70 MPH North, Northeast And East Wind Conditions)
Irrigated Grove Area

Fire Behavior Calculation Input Data	Anticipated Fuel Moistures
• 12 percent slope • 28 mph Midflame wind speed • 45° aspect from north • 225° wind direction from north	* 1-Hour Fine Fuel Moisture of ……5% * 10-Hour Fuel Moisture of……7% * 100-Hour Fuel Moisture of ……10% * Live Herbaceous Fuel Moisture of……. 60% * Live Woody Fuel Moisture of…….....100%
Expected Fire Behavior **(Simulated Fuel Model 9 – Riparian Hardwoods with Leaf Litter)**	
Rate of Spread - 161.2 feet/minute	
Fireline Intensity - 1048 BTU's/foot/second	
Flame Length - 11 feet in length	
Tl 6 Model produced 8ft Flame Lengths **However there currently exists no ground litter the primary carrier.**	

In summary, the tables below show the change in fire rate of spread, intensity and flame length for the two worst case scenarios following the completion of the required fuel modification as compared to pre-treatment fire behavior.

TABLE 4.6.2 – (Fire Scenario #2 –North of Park Santa Ana event)

Prior to Fuel Treatment			After Fuel Treatment Non-Irrigated	
Rate of Spread	588.5 ft/min		Rate of Spread	96.2 ft/min
Fireline Instensity	27244 BTU/ft/sec	VS.	Fireline Instensity	4647 BTU/ft/sec
Flame Length	**49.4 Feet**		Flame Length	**23.9 Feet**

4.7 Required Fuel Modification Zones for Buildings, Structures and Access Roads

Projects located in Hazardous Fire Areas shall include Fuel Management Zones (FMZ) surrounding all structures. San Diego County Code stipulates that the FMZ is a minimum of 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 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 County Wildland Interface plant list (See APPENDIX 'A').

The proposed intention is to treat the entire parcel. It will remain irrigated and maintained as a producing grove.

- Limited Building Zone (LBZ): A 100' LBZ easement shall be dedicated along the lots bordering Frey Creek's. The LBZ will border the 200' biological buffer. It will require that any structures in the zone be non-habitable.

Below are detailed definitions and required treatments for the Fuel Modification Zones. There are two zones both irrigated Zone 1 for each parcel, the buildable pad and remainder of the parcel planted in grove. Essentially, the entire parcel will be treated as Zone 1. *Landscaping will extend off the pad and encompasses any area disturbed in the grading process.* In addition, the edges of roadways and driveways must be treated to prevent ignition starts and to provide safe ingress and egress should a wildfire occur. Each of these zones is described below in greater detail.

All distances in this report are measured horizontally. These distances are depicted on the Fuel Treatment Map, included herein as Exhibit 'I'. Prior to construction on any building site, all roads (primary and secondary) for this development shall be accepted by the San Diego County Fire Marshal.

The responsibility for the fuel modification maintenance defined below shall remain with the current owners and any subsequent owners, and as such shall run with the land. In the event the project is repossessed or sold, the unit/agency holding title to the property will be responsible for such maintenance. Fuel Modification Zones will be the responsibility of each individual homeowner. Location of the structure on the pad must meet the County setback requirements. The entire buildable pad area will be maintained to Zone 1 standards with ornamental plantings. The remainder of the parcel will be grove, irrigated and maintained to Zone 1 standards.

- **Buildable Pad Area (Parcel Owner Maintained) - *Shown as yellow on the Fuel Treatment Exhibit. Other Zone 1 Locations shown as lt Green HOA Maintained for Lot 48 and interior Road Ways.***

Defined

Zone 1 Standards (Buildable Pad Area) comprises the setback area around a structure (front, back and side yards) and is commonly called the defensible space zone. It is an irrigated zone and shall be free of all combustible construction and materials. The setback area will be a minimum of 25 ft. from the edge of the buildable pad. The average buildable pad is approximately 20,000 square ft.

Required Landscaping

The area will be cleared of all existing vegetation and replanted with drought tolerant and irrigated fire resistant lawns, ground covers and shrubs. Landscaping shall be irrigated and primarily consist of fire resistant, maintained native or ornamental plantings usually less than 18 inches in height. However, this zone may contain occasional fire resistant trees and single well-spaced ornamental shrubs up to 48 inches in height intermixed with ground covers and lawn. Shrubs and ground covers may be located no closer than 5 ft. from the structure provided these plants will not carry fire to the structure. Non-flammable concrete patios, driveways, swimming pools, walkways, boulders, rock, and gravel can be used to break up fuel continuity within Zone 1.

Plants in this zone need to be fire resistant and shall not include any pyrophytes that are high in oils and resins such as pines, eucalyptus, cedar, cypress or juniper species. Thick, succulent or leathery leaf species with high moisture content

are the most 'fire resistant'. Refer to APPENDIX 'A' County of San Diego's desirable plant list and APPENDIX 'B' for Prohibited Plants for plant selection.

Trees must be planted so that when they reach maturity the tips of their branches are at least 10 feet away from any structure. They must have a minimum of 6 ft. of vertical separation from low growing, irrigated vegetation beneath the canopy of the tree.

Required Maintenance

The pad area surrounding the house shall be maintained year round by the individual property owner(s) within their property boundary (lot lines) as required by this FPP. The parcel owner of record shall maintain all fuel modification zones beyond the edge of the pad which includes manufactured slopes. Shrubs and trees are to be annually maintained free of dead material. Trees will be maintained so that their crown cover will be more than ten (10) ft. from any structure. All tree crowns will be separated by twenty (20) ft. and maintained to keep a separation of six (6) ft. between the ground fuels (shrubs and ground covers) and the lower limbs. All trees must be maintained to the current ANSI A300 standards (*Tree, Shrub, and Other Woody Plant Maintenance — Standard Practices {Pruning)*. Also, see www.ansi.com.

- **Fuel Modification Zone 1 (Parcel Owner Maintained) - *Shown as no-color on the Fuel Treatment Exhibit, remainder of parcel, grove area.***

Defined

Zone 1 standards will be applied to the remainder of the parcel with the noted exception being the grove. It will remain irrigated and maintained to a high standard, free of all combustible construction and materials. This Zone 1 standard area as shown on the Fuel Treatment Map beginning at the edge of the pad disturbed area and extending outward to parcel lines.

Required Maintenance

The remainder of the parcel shall remain irrigated (private water source) and maintained free of trimmings with leaf litter kept to a minimum. Dead or dying trees shall be removed. Integrity of rows shall be maintained for access. Grove maintenance 'Best Practice Standards' shall apply.

- **Fuel Modification Zone 2 (Parcel Owner Maintained), *shown as DARK BROWN on the Fuel Treatment Exhibit. Lots 11, 18 and 19.***

Defined Natural Slope Thinning Zone

Beginning at the outer edge of Zone 1, Zone 2 is the area between 50 and 100 ft. from the edge of the buildable pad. Non-irrigated and currently vegetated with oak woodland, all ground vegetation has been removed and is consistently covered with large boulders. See photo(s) showing Interior Oak Woodland.

Required Landscaping Natural Slope Thinning Zone at 70% to Cover

All flammable native plants (See San Diego County Prohibited Plant List in APPENDIX 'B') shall be removed with the resulting 50 - 100 ft. of treated area non-irrigated. It may be replanted with low growing (maximum 18 inches in height) and low fuel volume "ground cover" vegetation or native grasses and occasional well-spaced (separated by a minimum of twenty {20} ft.), low growing fire resistant shrubs (See APPENDIX 'A').

Additionally, the following native species will be totally removed from natural slope fuel modification areas: Chamise (Adenostoma faeiculatum); California sagebrush (Artemisia californica); flat-topped buckwheat (Eriogonum fasciculatum); and, black sage (Salvia mellifera).

Required Maintenance
Low growing plants and ground covers are to be maintained to a height of 18 inches or less. Retained native shrubs will be trimmed and maintained to 48 inches, with occasional interior thinning. It is most important that plantings are thinned and maintained in a mosaic. Maintenance will be on-going throughout the year as needed. Native annual and perennial grasses will be allowed to grow and produce seed during the winter and spring. As grasses begin to cure (dry out), they will be cut to four (4) inches or less in height. This usually occurs prior to June 1st of each year.

- **Fuel Modification Zone 3 (HOA Maintained), *shown as LIGHT BROWN on the Fuel Treatment Exhibit.***

Defined 30 ft. Access Thinning Zone
This standard applies to access roadways into the development off Adams Dr.

Required Landscaping Natural Slope Thinning Zone @ 50% to Cover
All flammable native plants (See San Diego County Prohibited Plant List in APPENDIX 'B') shall be removed. It may be replanted with low growing (maximum 18 inches in height) and low fuel volume 'ground cover' vegetation or native grasses and occasional well spaced (separated by a minimum of twenty {20} ft.), low-growing, fire resistant shrubs (See APPENDIX 'A').

Required Maintenance
Low growing plants and 'ground covers' are to be maintained to a height of 18 inches or less. Retained native shrubs will be trimmed and maintained to 48 inches, with occasional interior thinning. It is most important that plantings are thinned and maintained in a mosaic. Maintenance will be on-going throughout the year as needed. Native annual and perennial grasses will be allowed to grow and produce seed during the winter and spring. As grasses begin to cure (dry out), they will be cut to four (4) inches or less in height. This usually occurs prior to June 1st of each year.

4.8 Streets' and Roadways' Road Side Maintenance--Parcel Owner Maintained

Site access roads will receive Fuel Modification to a total of 20 feet along each side of roadways. Interior roadways treatment will be 20 ft. off the edge of the road bed. Access areas may be irrigated, and planted to Zone 1 criteria.

Maintenance: Criteria established for Zone 1 and Zone 2 will be required on all access roadways.

4.9 Cumulative Impact Analysis

The combination of San Diego County's weather, fuel, and terrain has often contributed to intense, uncontrolled wildland fires. This was clearly evident in the devastating Cedar, Paradise and Otay Fires of October 2003, and the more recent Witch Creek/Rice Fires of November 2007.

Typically, the areas of greatest concern are adjacent to urbanized areas or where residences are intermixed with contiguous open space. As the population of San Diego County increases and the Wildland Urban Interface (WUI) expands, fire hazards and

risks will continue to be encountered. Increased vehicular access for this residential subdivision by way of improving an existing road and building a new access road will increase human activities in the immediate area and therefore an increased risk of fire may result, causing increasing the risk of injury, property loss, or death.

The approval of this proposal, the already approved development in the area, dedicated large acreage open space, and future development will increase fire concerns. Urbanization and the ability to supply adequate fire protection will impact risk factors for the immediate area. At present, the density of development in this area of San Diego County is relatively low and includes properties with large groves and areas that appear to be compliant with fuel modification and weed abatement practices.

5.0 - MITIGATION MEASURES AND DESIGN CONSIDERATIONS

- All structures will be built to current code requirements. Requirements provide for ignition resistant construction standards and NFPA compliant automatic sprinkler system. APPENDIX 'E' provides the most critical elements to protect the structure from ember intrusion during a catastrophic wildfire event.

- Building pads will be carved out of the existing grove area. The entire parcel will be treated as an irrigated zone. The grove area had a high maintenance standard at the time of the site visit with no trimmings or extensive leaf litter evident.

- This report and its recommendations shall be incorporated by reference into the final project conditions of approval to ensure compliance with codes/regulations and significance standards. This plan also sets forth a requirement to manage and control invasives (exotics) in open space easements.

5.1 Parcel Owner Responsibilities and Requirements

1. Each lot owner is personally responsible for all fuel treatment measures within their property lot(s). Where these zones extend onto an adjoining lot within the development, the lot owner benefiting from the fuel treatment shall be allowed to perform the work on the adjacent property.

2. All roadside fuel treatment within the subdivision is the maintenance responsibility of the HOA.

3. **TRASH DUMPING OR DISPOSAL OF YARD TRIMMINGS IN THE FUEL TREATMENT ZONES SHALL NOT BE ALLOWED.**

4. The Fuel Treatment Zones, as depicted on the Fuel Treatment Map, shall be recorded against all lots

5. All individual plans for additional structures, where allowed, shall be approved by the Fire Marshal and will comply with the Fire Protection Plan. There will be a fee to check these plans.

6. Trees shall be placed and maintained so that their crown cover at maturity will be more than ten (10) ft. from any structure.

7. All plants will be in accordance with the San Diego County Recommended Plant List (See APPENDIX 'A') or as approved by the San Diego County Fire Marshal.

8. Upon the sale of a lot to a new owner, a copy of the Fire Protection Plan shall be provided as a condition of the sale.

9. The San Diego County Fire Chief will be the enforcing agency official should the requirements of this plan be dismissed. Through the enforcing agency, abatement processes will be used to take corrective action if needed.

10. Change of Use Guidelines and Policy

Each parcel of the_development which is vegetated with grove trees will be treated as a Zone 1 area, which requires all vegetation to be irrigated and maintained free of combustible vegetation. The purpose of this requirement is to ensure that if grove trees are retained, they will continue to be irrigated. If an individual lot owner opts to remove the trees, or cease watering the HOA will be responsible for monitoring and noticing owner about requirement for irrigation/clearing on their lot. Should irrigation cease and result in dead or dying grove area, on any individually owned parcel, the HOA shall enforce the requirements as described in Section 4.7 of the approved Fire Protection Plan .

In part, dead and dying trees shall be removed immediately, An irrigated Zone 1 will be maintained around the residence for a distance of fifty (50) feet., This landscaped zone usually consists of fire resistant and maintained plantings usually less than 18 inches high, intermixed with ground cover, and/or lawn. Plants in irrigated Zone 1 are to be fire resistant, and should not include any pyrophytes that are high in oils and resins, such as pines, eucalyptus, cedar and juniper species. Trees must be planted so that when they reach maturity their branches are at least 10-feet away from any structure.

Following the irrigated Zone 1, shall be Zone 2, which shall encompass the remainder of the parcel. Irrigation, partial irrigation or non-irrigation will be used in this zone depending upon the plant species selected.

This zone may include replanted single or small clusters of trimmed fire resistant native and ornamental shrubs up to 48 inches in height and trimmed native or ornamental trees limbed up to 6 feet from the ground. Trees either remaining or planted are required to have 20ft canopy separation at maturity.. Mulches, chips and other small multi-cuttings (cut to less than 2 inches in diameter and 4-inches in length) should be evenly spread over the area to prevent grass and weed encroachment. This mulching concept helps to maintain the soil moisture for the designated plants and minimizes any soil erosion. Invasives shall be removed; all native grasses or weeds are to be mowed or weed-whipped to a 4 inch stubble height. Year around maintenance will be required.

5.2 Additional Requirements

- If the landowner is aware of any state or federal listed species on their property, the U.S. Fish and Wildlife Service should be notified prior to the abatement.

- Debris and trimmings produced by thinning and pruning will be removed from the site, or, if left, shall be converted into mulch and evenly dispersed to a maximum depth of four inches. Such trimmings will not be within 50 ft. of structures.
- Any damaged or replacement window, siding, roof coverings, and specific non-combustible wall will meet or exceed the original intent of the fire protection discussed in this plan.
- This plan and its requirements shall be incorporated by reference into the final project conditions of approval.

5.3 FUEL TREATMENT MAP

A pocket folder containing Exhibit I - FUEL TREATMENT MAP can be found following this FPP depicting the location of all proposed fuel modification treatment locations and other mitigation measures.

6.0 - CONCLUSIONS

This FPP evaluated the adverse environmental effects that a proposed residential 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.

- The requirements of this FPP provide the fuel modification standards to mitigate the exposure of people or structures to a significant risk of loss, injury or death. The 'buildable pad setback area' and Zone 1 criteria provide the defensible space zone for fire suppression forces and will protect structures from radiant and convective heat. This zone will also be a landscaped zone that is permanently irrigated and consists of fire resistant and maintained plantings. The remainder of the parcel will remain in irrigated and maintained grove.
- The development will have adequate emergency access in terms of access and construction standards for roadways and streets. CAL FIRE, and/or nearby fire departments through mutual aid, will provide fire protection. Residential sprinklers and 'ignition resistive construction standards', will ensure homes will remain safe in a wildland fire situation that may occur in proximity to the development.
- Water supplies via mains and hydrants, will provide water for fire protection. Within the Recreational Area pond will provide for agrculutrual irrigation and as a water source for firefighting rescources if needed.

7.0 - LIST OF PREPARERS, PERSONS AND ORGANIZATIONS CONTACTED

7.1 List of Preparers

The principal author and preparer of this Fire Protection Plan is David C. Bacon, President of ***FIREWISE*** **2000, Inc.**, a San Diego County DPLU certified wildland fire consultant. Other ***FIREWISE*** **2000, Inc.** members contributed to this plan with comments and peer review. These members include Monty Kalin, Senior Wildland Fire Associate.

7.2 List of Persons Contacted During the Course of this Project

1. Mark Thompson, TSR Consultants
2. Dan Masson, Masson and Associate Engineer
3. Property Manager for Shadow Run Ranch

8.0 - REFERENCES

Literature Referenced in this Fire Protection Plan

1. *BEHAVE: Fire Behavior Prediction and Fuel Modeling System - BURN Subsystem, Part 1.* General Technical Report INT-194. January 1986. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401.

2. *BEHAVE: Fire Behavior Prediction and Fuel Modeling System - BURN Subsystem, Part 2.* General Technical Report INT-260. May 1989. Patricia L. Andrews and Carolyn H. Chase, United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401.

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4. County of San Diego Ordinance No. 9915 – *An Ordinance Amending Appendix II-A of the County Fire Code Relating to Wildland/Urban Interface Standards*.

5. *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.

6. National Fire Protection Association - NFPA 1144 *Standard for Protection of Life and Property from Wildfire* (2002) and *NFPA 13, 13-R & 13-D, 2002 Editions*

7. *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.

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

9. California Code of Regulations, Title 14, section 1280; California Public Resources Codes sections 4201 through 4204 & International Urban – Wildland Interface Code, 2003, 2003 edition,

10. California Government Code, sections 51175 through 51189; the 2007 Fire Code portion of the CBSC, including appendices to Chapters 1 & 4 and appendices B, F & H, the 2006 International Fire Code (IFC)

11. *County of San Diego, Consolidated Fire Code, 2011.*

12. *County of San Diego. Fire Prevention Measures to Provide Defensible Space in the Unincorporated Area of the County. Board of Supervisors, Land Use Agenda Item May 15, 2002.*

13. *County of San Diego. Fire, Defensible Space and You, August 1998*

14. *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.*

15. *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.*

16. *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 United States Department of Agriculture - Forest Service

17. *The California State and Local Responsibility Area Fire Hazard Severity Zone Map*

9.0 APPENDICES

Recommended Plant List	**APPENDIX 'A'**
Prohibited/Invasive Plant List	**APPENDIX 'B'**
Behave Plus Version 4 Fire Behavior Calculations	**APPENDIX 'C'**
Non-combustible & Ignition Resistant Building Materials	**APPENDIX 'D'**
Fire Resistive Construction	**APPENDIX 'E'**
Project Facility Availability Form - Fire	**APPENDIX 'F'**
Project Facility Availability Form - Water	**APPENDIX 'G'**
Fuel Treatment Exhibit	**APPENDIX 'H'**

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 to 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.

Firewise 2000, Inc. Note: The plant list which follows was developed using the plants found on the San Diego County approved plant list. This list was then compared to those plants which are suitable for the climatic zone in which the project is located. Only those plants suitable for the project area listed below. The list is therefore shorter than that provided by the County. By providing this custom list, plants that are likely to be killed or seriously damaged by frost or will not perform in hot dry conditions have been eliminated. Firewise 2000 believes that the planting of species suited to the site is essential to fire management goals and is a environmentally sound practice.

San Diego County
Customized Acceptable Plant List
For Shadow Run Ranch

No.	Type	Genus	Species	Common Name
1	Annual	Lupinus spp.	nanus	Lupine
2	Groundcover	Achillea	millefolium	Yarrow
3	Groundcover	Arctostaphylos spp.		Manzanita
4	Groundcover	Cerastium	tomentosum	Snow-in-Summer
5	Groundcover	Coprosma	kirkii	Creeping Coprosma
6	Groundcover	Cotoneaster spp.		Redberry
7	Groundcover	Drosanthemum	hispidum	Rosea Ice Plant
8	Groundcover	Dudleya	pulverulenta	Chalk Dudleya
9	Groundcover	Dudleya	virens	Island Live-Forever
10	Groundcover	Eschscholzia	californica	California Poppy
11	Groundcover	Ferocactus	viridescens	Coast Barrel Cactus
12	Groundcover	Gaillardia	grandiflora	Blanket Flower
13	Groundcover	Gazania spp.		Gazania
14	Groundcover	Helianthemum spp.		Sunrose
15	Groundcover	Lantana spp.		Lantana
16	Groundcover	Lasthenia	californica	Common Goldfields
17	Groundcover	Lasthenia	glabrata	Coastal Goldfields
18	Groundcover	Lupinus spp.		Lupine
19	Groundcover	Myoporum spp.		Myoporum
20	Groundcover	Pyracantha spp.		Firethorn
21	Groundcover	Rosmarinus	officinalis	Rosemary
22	Groundcover	Santolina	chamaecyparissus	Lavender Cotton
23	Groundcover	Trifolium	frageriferum	O'Connor's Legume
24	Groundcover	Verbena	rigida	Verbena
25	Groundcover	Viguiera	laciniata	San Diego Sunflower
26	Groundcover	Vinca	major	Periwinkle
27	Groundcover	Vinca	minor	Dwarf Periwinkle
28	Perennial	Coreopsis	gigantea	Giant Coreopsis
29	Perennial	Coreopsis	grandiflora	Coreopsis
30	Perennial	Coreopsis	maritima	Sea Dahlia
31	Perennial	Coreopsis	verticillata	Coreopsis

32	Perennial	Heuchera	maxima	Island Coral Bells
33	Perennial	Iris	douglasiana	Douglas Iris
34	Perennial	Kniphofia	uvaria	Red-Hot Poker
35	Perennial	Lavandula spp.		Lavender
36	Perennial	Penstemon spp.		Penstemon
37	Perennial	Satureja	douglasii	Yerba Buena
38	Perennial	Sisyrinchium	bellum	Blue-Eyed Grass
39	Perennial	Sisyrinchium	californicum	Golden-Eyed Grass
40	Perennial	Solanum	xantii	Purple Nightshade
41	Perennial	Zauschneria	'Catalina' ?	Catalina Fuschia
42	Perennial	Zauschneria	californica	California Fuschia
43	Perennial	Zauschneria	cana	Hoary California Fuschia
44	Shrub	Agave	americana	Desert Century Plant
45	Shrub	Agave	Amorpha fruticosa	False Indigobush
46	Shrub	Agave	deserti	Shaw's Century Plant
47	Shrub	Agave	shawii	NCN
48	Shrub	Agave		Century Plant
49	Shrub	Arbutus	menziesii	Madrone
50	Shrub	Arctostaphylos spp.		Manzanita
51	Shrub	Atriplex	canescens	Hoary Saltbush
52	Shrub	Atriplex	lentiformis	Quail Saltbush
53	Shrub	Baccharis	pilularis	Coyote Bush
54	Shrub	Baccharis	salicifolia	Mule Fat "R"
55	Shrub	Carissa	macrocarpa	Natal Plum
56	Shrub	Ceanothus spp.		California Lilac
57	Shrub	Cistus spp.		Rockrose
58	Shrub	Cneoridium	dumosum	Bush rue
59	Shrub	Comarostaphylis	diversifolia	Summer Holly
60	Shrub	Convolvulus	cneorum	Bush Morning Glory
61	Shrub	Dalea	attenuata v orcuttii	Orcutt's Delea
62	Shrub	Elaeagnus	pungens	Silverberry
63	Shrub	Encelia	californica	Coast Sunflower
64	Shrub	Encelia	farinosa	White Brittlebush
65	Shrub	Eriobotrya	deflexa	Bronze Loquat
66	Shrub	Eriophyllum	confertiflorum	Golden Yarrow
67	Shrub	Escallonia spp.		Escallonia
68	Shrub	Feijoa	sellowiana	Pineapple Guava
69	Shrub	Fouqueria	splendens	Ocotillo
70	Shrub	Fremontodendron	californicum	Flannelbush
71	Shrub	Fremontodendron	mexicanum	Southern Flannelbush
72	Shrub	Galvezia	juncea	Baja Bush-Snapdragon
73	Shrub	Galvezia	speciosa	Island Bush-Snapdragon
74	Shrub	Garrya	elliptica	Coast Silktassel
75	Shrub	Garrya	flavescens	Ashy Silktassel
76	Shrub	Heteromeles	arbutifolia	Toyon
77	Shrub	Lantana spp.		Lantana
78	Shrub	Lotus	scoparius	Deerweed
79	Shrub	Mahonia spp.		Barberry
80	Shrub	Malacothamnus	clementinus	San Clemente Island Bush Mallow

81	Shrub	Malacothamnus	fasciculatus	Mesa Bushmallow
82	Shrub	Melaleuca spp.		Melaleuca
83	Shrub	Mimulus spp.		Monkeyflower
84	Shrub	Nolina	parryi	Parry's Nolina
85	Shrub	Photinia spp.		Photinia
86	Shrub	Pittosporum	crassifolium	NCN
87	Shrub	Pittosporum	rhombifolium	Queensland Pittosporum
88	Shrub	Pittosporum	tobira 'Wheeleri'	Wheeler's Dwarf
89	Shrub	Plumbago	auriculata	Cape Plumbago
90	Shrub	Prunus	caroliniana	Carolina Laurel Cherry
91	Shrub	Prunus	ilicifolia	Hollyleaf Cherry
92	Shrub	Prunus	lyonii	Catalina Cherry
93	Shrub	Puncia	granatum	Pomegranate
94	Shrub	Pyracantha spp.		Firethorn
95	Shrub	Rhamus	alaternus	Italian Buckthorn
96	Shrub	Rhamus	californica	Coffeeberry
97	Shrub	Rhaphiolepis spp.		Rhaphiolepis
98	Shrub	Rhus	continus	Smoke Tree
99	Shrub	Rhus	integrifolia	Lemonade Berry
100	Shrub	Rhus	laurina	Laurel Sumac
101	Shrub	Rhus	ovata	Sugarbush
102	Shrub	Rhus	trilobata	Squawbush
103	Shrub	Romneya	coulteri	Matilija Poppy
104	Shrub	Rosa	californica	California Wild Rose
105	Shrub	Rosa	minutifolia	Baja California Wild Rose
106	Shrub	Salvia spp.		Sage
107	Shrub	Sambucus spp.		Elderberry
108	Shrub	Symphoricarpos	mollis	Creeping Snowberry
109	Shrub	Syringa	vulgaris	Lilac
110	Shrub	Teucrium	fruticans	Bush Germander
111	Shrub	Verbena	lilacina	Lilac Verbena
112	Shrub	Xylosma	congestum	Shiny Xylosma
113	Shrub	Yucca	schidigera	Mojave Yucca
114	Shrub	Yucca	whipplei	Foothill Yucca
115	Tree	Acer	macrophyllum	Big Leaf Maple
116	Tree	Acer	saccarum	Sugar Maple
117	Tree	Acer	saccharinum	Silver Maple
118	Tree	Alnus	rhombifolia	White Alder "R"
119	Tree	Arbutus	unedo	Strawberry Tree
120	Tree	Brahea	armata	Blue Mexican Palm
121	Tree	Brahea	edulis	Guadalupe Palm
122	Tree	Ceratonia	siliqua	Carob
123	Tree	Cercis	occidentalis	Western Redbud
124	Tree	Cerdidium	floridum	Blue Palo Verde
125	Tree	Cornus	nuttallii	Mountain Dogwood
126	Tree	Cornus	stolonifera	Redtwig Dogwood
127	Tree	Elaeagnus	angustifolia	Russian Olive
128	Tree	Eriobotrya	japonica	Loquat
129	Tree	Gingko	biloba "Fairmount"	Fairmount Maidenhair Tree

130	Tree	Gleditisia	triacanthos	Honey Locust
131	Tree	Juglans	californica	California Walnut
132	Tree	Juglans	hindsii	California Black Walnut
133	Tree	Lagerstroemia	indica	Crape Myrtle
134	Tree	Ligustrum	lucidum	Glossy Privet
135	Tree	Liquidambar	styraciflua	Sweet Gum
136	Tree	Liriodendron	tulipifera	Tulip Tree
137	Tree	Lyonothamnus	floribundus ssp. Asplenifolius	Fernleaf Catalina Ironwood
138	Tree	Melaleuca spp.		Melaleuca
139	Tree	Myoporum spp.		Myoporum
140	Tree	Nerium	oleander	Oleander
141	Tree	Parkinsonia	aculeata	Mexican Palo Verde
142	Tree	Pistacia	chinensis	Chinese Pistache
143	Tree	Pistacia	vera	Pistachio Nut
144	Tree	Pittosporum	phillyreoides	Willow Pittosporum
145	Tree	Platanus	acerifolia	London Plane Tree
146	Tree	Platanus	racemosa	California Sycamore "R"
147	Tree	Populus	alba	White Poplar
148	Tree	Populus	fremontii	Western Cottonwood "R"
149	Tree	Populus	trichocarpa	Black Cottonwood "R"
150	Tree	Prunus	caroliniana	Carolina Laurel Cherry
151	Tree	Prunus	cersifera ‘Newport’	Newport Purple-Leaf Plum
152	Tree	Prunus	ilicifolia	Hollyleaf Cherry
153	Tree	Prunus	lyonii	Catalina Cherry
154	Tree	Prunus	serrulata ‘Kwanzan’	Flowering Cherry
155	Tree	Prunus	xblireiana	Flowering Plum
156	Tree	Prunus	yedoensis ‘Akebono’	Akebono Flowering Cherry
157	Tree	Quercus	agrifolia	Coast Live Oak
158	Tree	Quercus	engelmannii	Engelmann Oak
159	Tree	Quercus	suber	Cork Oak
160	Tree	Rhus	lancea	African Sumac
161	Tree	Salix spp.		Willow "R"
162	Tree	Tristania	conferta	Brisbane Box
163	Tree	Ulmus	parvifolia	Chinese Elm
164	Tree	Ulmus	pumila	Siberian Elm
165	Tree	Umbellularia	californica	California Bay Laurel "R"
166	Vine	Antigonon	leptopus	San Miguel Coral Vine
167	Vine	Distictis	buccinatoria	Blood-Red Trumpet Vine
168	Vine	Keckiella	cordifolia	Heart-Leaved Penstemon
169	Vine	Lonicera	japonica ‘Halliana’	Hall’s Honeysuckle
170	Vine	Lonicera	subspicata	Chaparral Honeysuckle
171	Vine	Solanum	jasminoides	Potato Vine

APPENDIX "B"

UNDESIRABLE PLANT LIST

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

References:

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City of Vista, California 1997. Undesirable Plants. Section 18.56.999. Landscaping Design, Development and Maintenance Standards.

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County of Los Angeles Fire Department. 1998. Fuel Modification Plan Guidelines. Appendix I, Undesirable Plant List, and Appendix II, Undesirable Plant List.

APPENDIX "C"
FIRE BEHAVIOR CALCULATIONS

BehavePlus 4.0.0 (Build 276)

Scenario 1 Open Space Santa Ana Event

1. Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
First Fuel Model		sh7
Second Fuel Model		SCAL18
First Fuel Model Coverage	%	40
Fuel Model Type		D
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	mi/h	28
Wind Direction (from north)	deg	45
Terrain		
Slope Steepness	%	37
Aspect	deg	180

Notes

Fuel/area modeled is outside project site. Impact to Lot 45

2. Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	447.7	ft/min
Fireline Intensity	41939	Btu/ft/s
Flame Length	60.2	ft
Direction of Maximum Spread (from north)	226	deg

BehavePlus 4.0.0 (Build 276)

Scenario 2 Open Space Santa Ana Event Lot 45
Thu, Nov 12, 2009 at 11:28:07

3. 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	mi/h	28
Wind Direction (from north)	deg	45
Terrain		
Slope Steepness	%	12
Aspect	deg	0
Notes		

4. Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	588.5	ft/min
Fireline Intensity	27244	Btu/ft/s
Flame Length	49.4	ft
Direction of Maximum Spread (from north)	225	deg

BehavePlus 4.0.0 (Build 276)

Scenario 3 Typical On-Shore Fry Creek
Thu, Nov 12, 2009 at 11:44:59

5. Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
First Fuel Model		SH7
Second Fuel Model		SCAL18
First Fuel Model Coverage	%	40
Fuel Model Type		d
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	mi/h	7.6
Wind Direction (from north)	deg	270
Terrain		
Slope Steepness	%	0
Aspect	deg	270
Notes		

6. Run Option Notes

7. Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	119.8	ft/min
Fireline Intensity	9393	Btu/ft/s
Flame Length	30.2	ft
Direction of Maximum Spread (from north)	90	deg

BehavePlus 4.0.0 (Build 276)

Scenario 4 Rare Event Fry Creek
Thu, Nov 12, 2009 at 11:49:23

8. Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
First Fuel Model		SH7
Second Fuel Model		SCAL18
First Fuel Model Coverage	%	40
Fuel Model Type		d
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	mi/h	12
Wind Direction (from north)	deg	270
Terrain		
Slope Steepness	%	0
Aspect	deg	270
Notes		

9. Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	190.3	ft/min
Fireline Intensity	15899	Btu/ft/s
Flame Length	38.5	ft
Direction of Maximum Spread (from north)	90	deg

BehavePlus 4.0.0 (Build 276)

Scenario 5 Interior Oak Woodland On-Shore
Thu, Nov 12, 2009 at 12:00:35

10. Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
Fuel Model		tl6
Fuel Moisture		
1-h Moisture	%	2
10-h Moisture	%	3
100-h Moisture	%	5
Live Herbaceous Moisture	%	60
Live Woody Moisture	%	100
Weather		
Midflame Wind Speed	mi/h	12
Wind Direction (from north)	deg	270
Terrain		
Slope Steepness	%	0
Aspect	deg	270
Notes		

11. Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	34.9	ft/min
Fireline Intensity	337	Btu/ft/s
Flame Length	6.5	ft
Direction of Maximum Spread (from north)	90	deg

BehavePlus 4.0.0 (Build 276)

Scenario 6 Interior Oak Woodland Santa Ana
Thu, Nov 12, 2009 at 12:03:48

12. Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
Fuel Model		tl6
Fuel Moisture		
1-h Moisture	%	2
10-h Moisture	%	3
100-h Moisture	%	5
Live Herbaceous Moisture	%	60
Live Woody Moisture	%	100
Weather		
Midflame Wind Speed	mi/h	28
Wind Direction (from north)	deg	45
Terrain		
Slope Steepness	%	0
Aspect	deg	270
Notes		

13. Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	122.2	ft/min
Fireline Intensity	1181	Btu/ft/s
Flame Length	11.7	ft
Direction of Maximum Spread (from north)	225	deg

BehavePlus 4.0.0 (Build 276)

Scenario 7 Irrigated Grove Area Santa Ana Expected Fire Behavior
Thu, Nov 12, 2009 at 12:10:40

14. Input Worksheet

Inputs: SURFACE

Input Variables	Units	Input Value(s)
Fuel/Vegetation, Surface/Understory		
Fuel Model		9
Fuel Moisture		
1-h Moisture	%	5
10-h Moisture	%	7
100-h Moisture	%	10
Live Herbaceous Moisture	%	60
Live Woody Moisture	%	100
Weather		
Midflame Wind Speed	mi/h	28
Wind Direction (from north)	deg	45
Terrain		
Slope Steepness	%	12
Aspect	deg	180
Notes		

15. Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	161.2	ft/min
Fireline Intensity	1048	Btu/ft/s
Flame Length	11.0	ft
Direction of Maximum Spread (from north)	225	deg

APPENDIX "D"

Non-Combustible & Ignition Resistant Building Materials For Balconies, Carports, Decks, Patio Covers and Floors

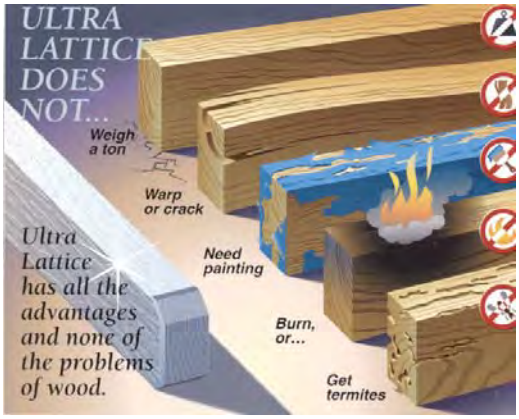
Examples of non-combustible & fire resistant building materials for balconies, carports decks, patio covers and floors are as follow:

I. **NON-COMBUSTIBLE HEAVY GAGE ALUMINUM MATERIALS** - *Metals USA Building Products Group - Ultra-Lattice*

Ultra-Lattice Stand Alone Patio Cover

Ultra-Lattice Attached Patio Cover

Ultra-Lattice Solid Patio Cover



Ultra-Lattice Vs. Wood

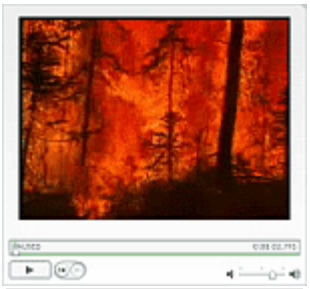
II. FRX Exterior Fire-Retardant Treated Wood

Exterior Fire Retardant Treated (FRT) Wood

FRX® fire retardant treated wood may be used in exterior applications permitted by the codes where: public safety is critical, other materials would transfer heat or allow fires to spread, sprinkler systems cannot easily be installed, corrosive atmospheres necessitate excessive maintenance of other materials, or fire protection is inadequate or not readily available. The International Building, Residential and Urban-Wildland Interface Codes and regulations permit the use of fire retardant treated wood in specific instances. See below for typical exterior uses and typical residential uses.

Typical Exterior Uses

- Balconies
- Decks



Homeowners and Residential Architects: See this 2-minute video and the diagram below.

For information on fire retardant treated wood for exterior uses, visit www.frxwood.com.

Decking (SFM Standard 12-7A-4)

III. TREX COMPANY, INC –"Trex Accents ®: Fire Defense ™ " wood and polyethylene composite deck board, nominal 5/4" thick x 5-1/2" width, nominal density of 0.036 lb/in^3.

Trex Accents®: Fire Defense™

The perfect blend of beauty and brawn.

Trex's #1 selling platform, Trex Accents®, exceeds the strict fire regulations set by the State of California and San Diego County.

- Offers superior safety performance:
  - Exceeds ASTM E84 Class B Flame Spread.
  - Exceeds 12-7A-4 Part A (underflame) and Part B (Burning Brand).
- Self-extinguishing even under extreme fire exposure.
- Approved for use by the California State Fire Marshal's Office and San Diego County. Read the California Department of Forestry and Fire Protection, Office of the State Fire Marshal WILDLAND URBAN INTERFACE (WUI)PRODUCTS Report. (PDF)

IV. SOLID "WOOD" DECKING

◊Company Name: Various Manufacturers

Product Description: Solid "Wood" decking: "Redwood", "Western Red Cedar", "Incense Cedar", "Port Orford Cedar", and "Alaska Yellow Cedar".

Sizes: Minimum nominal 2" thickness (American Softwood Lumber Standard PS 20). Lumber grades: Construction Common and better grades for Redwood, 3 Common and better grades for Cedars, and commercial decking or better grades for both Redwood and Cedars.

Special instructions: solid wood decking shall be installed over solid wood joists spacing 24" or less on center.

APPENDIX "E"
2011 Consolidated Fire Code

Fire Protection Features for All Structures. (Very High Fire Hazard Severity Zones)
The following fire construction and design standards are required for all lots:

1. All structures will be built with a Class A Roof Assembly, including a Class A roof covering, and attic or foundation ventilation louvers or ventilation openings in vertical walls shall not exceed 144 square inches per opening and shall be covered with 1/8th-inch mesh corrosion-resistant metal screening or other approved material that offers equivalent protection. Attic ventilation shall also comply with the requirements of the Uniform Building Code (U.B.C.). Ventilation louvers and openings may be incorporated as part of access assemblies.

2. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be firestopped with approved materials or have one layer of No. 72 ASTM cap sheet installed over the combustible decking.

3. When provided, exposed valley flashings shall be not less than 0.019-inch (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of No. 72 ASTM cap sheet running the full length of the valley.

4. Paper-faced insulation shall be prohibited in attics or ventilated spaces.

5. All glass or other transparent, translucent or opaque glazing materials including skylights shall be constructed multi-layered glazed panels one layer of which must be tempered glass. No skylights will be allowed on the roof assembly facing hazardous vegetation.
    - Exterior windows, window walls, glazed doors, and glazed openings within exterior doors shall be insulating-glass units with a minimum of one tempered pane, or glass block units, or have a fire resistance rating of not less than 20 minutes, when tested according to ASTM E 2010, or conform to the performance requirements of SFM 12-7A-2.

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

7. The exterior walls surface materials shall be non-combustible or an approve alternate. In all construction, exterior walls are required to be protected with 2-inch nominal solid blocking between rafters at all roof overhangs.

8. Combustible eaves, fascia's and soffits shall be enclosed. Eaves of heavy timber construction are not required to be enclosed as long as attic venting is not installed in the eaves. For the purposes of this section heavy timber construction shall consist of a minimum of 4x6 rafter ties and 2x decking.

9. No attic ventilation openings or ventilation louvers shall be permitted in soffits, in eave overhangs, between rafters at eaves, or in other overhanging areas.

10. All projections (exterior balconies, decks, patio covers, unenclosed roofs and floors, and similar architectural appendages and projections) or structures less than five feet from a building shall be of non-combustible material, one-hour fire resistive construction on the underside, heavy timber construction or pressure-treated exterior fire-retardant wood. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain same fire-resistant standards as the exterior walls of the structure.

11. Exterior doors shall be approved non-combustible construction, solid core wood and shall conform to the performance requirements of standard SFM 12-7A-1 or shall be of approved noncombustible construction, or solid core wood having stiles and rails not less than 1⅜ inches thick with interior field panel thickness no less than 1¼ inches thick, or shall have a fire-resistance rating of not less than 20 minutes when tested according to ASTM E2074.

12. Roof vents, dormer vents, gable vents, foundation ventilation openings, ventilation openings in vertical walls, or other similar ventilation openings shall be louvered and covered with 1/8-inch, noncombustible, corrosion-resistant metal mesh or other approved material that offers equivalent protection. Turbine attic vents shall be equipped to allow, one-way direction rotation only; they shall not free spin in both directions.

13. All chimney, flue or stovepipe openings will have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, 12 gauge minimum thicknesses or other material found satisfactory by the Fire Protection District, having ½-inch perforations for arresting burning carbon or sparks. It shall be installed to be visible for the purposes of inspection and maintenance.

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

15. Gutters shall be provided with the means to prevent the accumulation of leaf litter and debris that contribute to roof edge ignition.

16. All side yard fence and gate assemblies (fences, gate and gate posts) when attached to the home shall be of non-combustable material. The first five feet of fences and other items attached to a structure shall be of non-combustible material.

17. All homes shall be sprinklered. The Interior Sprinkler System shall meet National Fire Protection Standard NFPA13 *Installation of Sprinkler Systems in Residential Occupancies.*

In the event code requirements change between the approvals of this Conceptual Fire Protection Plan and building plan submittal, the more restrictive requirements shall apply.

APPENDIX "F"
Project Facility Availability Form Fire

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

F

Please type or use pen

Sherril A Schoepe Trust — 760-742-1893
Owner's Name — Phone

PO Box 1249
Owner's Mailing Address — Street

Pauma Valley CA 92061
City — State — Zip

ORG ____
ACCT ____
ACT ____
TASK ____
DATE ____ AMT $ ____
DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A
- [X] Major Subdivision (TM)
- [ ] Minor Subdivision (TPM)
- [ ] Boundary Adjustment
- [ ] Rezone (Reclassification) from ____ to ____ zone
- [X] Major Use Permit (MUP) purpose: Planned Residential Development
- [ ] Time Extension Case No. ____
- [ ] Expired Map Case No. ____
- [ ] Other ____
- [ ] Specific Plan or Specific Plan Amendment
- [ ] Certificate of Compliance ____

Assessor's Parcel Number(s) (Add extra if necessary)
111-070-12,13
111-080-7 to 10, 14 to 16 18,19

B
- [X] Residential — Total number of dwelling units 44
- [ ] Commercial — Gross floor area ____
- [ ] Industrial — Gross floor area ____
- [ ] Other — Gross floor area ____

C Total Project acreage 248 Total lots 47 Smallest proposed lot 2 ac

Thomas Bros. Page 409 Grid E6
North side of SR76 just west of Adams Drive
Project address — Street
Pauma-Pauma — 92059
Community Planning Area/Subregion — Zip

OWNER/APPLICANT AGREES TO COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT

Applicant's Signature: Eric Kallen, TRS Consultants — Date: June 7, 2012

Address: 438 Camino del Rio South #223 San Diego 92108 — Phone: 619-299-2525

(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: Yuima Municipal Water District – Fire Protection Services

Indicate the location and distance of the primary fire station that will serve the proposed project: 16971 Hwy 76, 4.75

A
- [X] 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 8.7 minutes.
- [X] 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 ____
- [ ] District will submit conditions at a later date. Project to be conditioned as previous.

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
- [X] 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 — JAMES PINE, FIRE MARSHAL — 858.455.5434 — 6/14/12
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)

APPENDIX "G"
Project Facility Availability Form Water

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

Please type or use pen

Sherril A Schoepe Trust — 760-742-1893
Owner's Name — Phone

PO Box 1249
Owner's Mailing Address — Street

Pauma Valley CA 92061
City — State — Zip

ORG _____
ACCT _____
ACT _____
TASK _____
DATE _____
AMT $ _____

W

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A.
- [x] Major Subdivision (TM)
- [ ] Minor Subdivision (TPM)
- [ ] Boundary Adjustment
- [ ] Rezone (Reclassification) from _____ to _____ zone.
- [x] Major Use Permit (MUP), purpose: Planned Residential Development
- [ ] Time Extension...Case No. _____
- [ ] Expired Map...Case No. _____
- [ ] Other _____
- [ ] Specific Plan or Specific Plan Amendment
- [ ] Certificate of Compliance: _____

B.
- [x] Residential ..... Total number of dwelling units 44
- [ ] Commercial ..... Gross floor area _____
- [ ] Industrial ..... Gross floor area _____
- [ ] Other ..... Gross floor area _____

C. [ ] Total Project acreage 248 Total number of lots 47

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

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

111-070-12,13	
111-080-7 to 10, 14 to 16 18,19	

Thomas Bros. Page 409 Grid E6

North side of SR76 just west of Adams Drive
Project address — Street

Paula-Pauma — 92059
Community Planning Area/Subregion — 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: Eric Kallen, TRS Consultants Date: June 7, 2012

Address: 438 Camino del Rio South #223 San Diego 92108 Phone: 619-299-2525

(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: Yuima Municipal Water District Service area Pauma Valley 92061

A
- [ ] Project is in the district
- [x] 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 _____. (Number of sheets)
- [ ] Project will not be served for the following reason(s): _____

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

D [ ] **How far will the pipeline(s) have to be extended to serve the project?** _____

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.

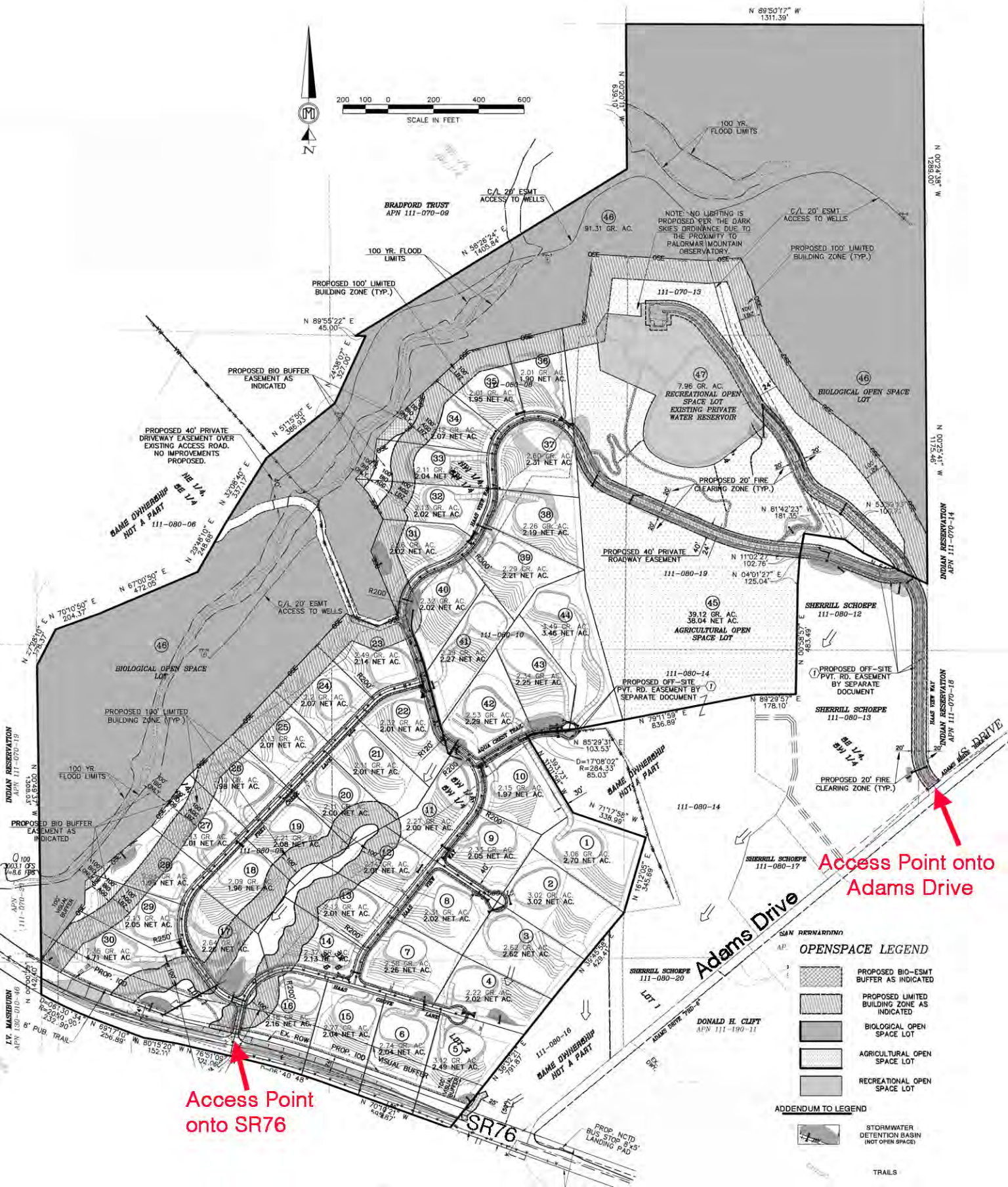
Authorized signature: Linden A. Burzell Print name Linden A. Burzell

Print title General Manager Phone (760) 742-3704 Date June 11, 2012

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

APPENDIX "H"

Shadow Run Secondary Access Exhibit


SCALE IN FEET
200 100 0 200 400 600
N
100 YR. FLOOD LIMITS
C/L 20' ESMT ACCESS TO WELLS
BRADFORD TRUST APN 111-070-09
NOTE: NO LIGHTING IS PROPOSED PER THE DARK SKIES ORDINANCE DUE TO THE PROXIMITY TO PALOMAR MOUNTAIN OBSERVATORY.
PROPOSED 100' LIMITED BUILDING ZONE (TYP.)
PROPOSED BIO BUFFER EASEMENT AS INDICATED
PROPOSED 40' PRIVATE DRIVEWAY EASEMENT OVER EXISTING ACCESS ROAD. NO IMPROVEMENTS PROPOSED.
SAME OWNERSHIP NOT A PART
111-080-06
111-070-13
BIOLOGICAL OPEN SPACE LOT
7.96 GR. AC. RECREATIONAL OPEN SPACE LOT EXISTING PRIVATE WATER RESERVOIR
PROPOSED 20' FIRE CLEARING ZONE (TYP.)
PROPOSED 40' PRIVATE ROADWAY EASEMENT
INDIAN RESERVATION APN 111-070-14
111-080-19
111-080-10
111-080-14
SHERRILL SCHOEPE 111-080-12
39.12 GR. AC. 38.04 NET AC. AGRICULTURAL OPEN SPACE LOT
PROPOSED OFF-SITE PVT. RD. EASEMENT BY SEPARATE DOCUMENT
SHERRILL SCHOEPE 111-080-13
INDIAN RESERVATION APN 111-070-18
HAAS VIEW WAY
ADAMS DRIVE
111-080-17
SHERRILL SCHOEPE 111-080-20
DONALD H. CLIFT APN 111-190-11
LOT 1
LOT 2
111-080-16
I.V. MASSEBURN APN 130-010-46
8' PUB. TRAIL
PROP. 100' VISUAL BUFFER
EX. ROW
SR76
PROP. NCTD BUS STOP & K&S LANDING PAD
Access Point onto SR76
Access Point onto Adams Drive
OPENSPACE LEGEND
PROPOSED BIO-ESMT BUFFER AS INDICATED
PROPOSED LIMITED BUILDING ZONE AS INDICATED
BIOLOGICAL OPEN SPACE LOT
AGRICULTURAL OPEN SPACE LOT
RECREATIONAL OPEN SPACE LOT
ADDENDUM TO LEGEND
STORMWATER DETENTION BASIN (NOT OPEN SPACE)
TRAILS