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County of San Diego  
Planning and Development Services  
5510 Overland Avenue  
San Diego, CA 92123

Lakeside Fire Protection District  
12116 Lakeside Avenue  
Lakeside, CA 92040

## **SUBJECT: FIRE PROTECTION PLAN – MODIFIED FORMAT LETTER REPORT**

FITCH TPM  
9009/9011 Los Coches Road  
Lakeside CA 92040  
Project Application Number PDS-2021-IC-21-018  
(Assessor Parcel Numbers 397-060-079-00  
TPM 21331

This modified format Fire Protection Plan (FPP) – Letter Report is submitted pursuant to the San Diego County Consolidated Fire Code, to address the adverse environmental effects that a proposed project may have from wildland fire and to provide mitigation of those impacts to ensure that the project does not expose people or structures to a significant risk of loss, injury or death involving wildland fires.

### **I. PROJECT DESCRIPTION**

The Project proposes dividing the existing parcel (115,361 square feet/2.71 acres) into three contiguous separate parcels, with the following configurations:

- Parcel # 1 – 38,841 square feet
- Parcel # 2 – 56,603 square feet



## **Parcel # 2**

Parcel # 2 encompasses the central portion of the existing parcel and has the following existing and proposed uses:

- Two (2) existing Type V construction garages
- Type V construction duplex dwelling/residential dwelling unit
- Type V construction shed.
- Undeveloped lands north and northeast of existing buildings
  - RPO biological open space for Los Coches Creek waterway and wetlands environment

## **Parcel # 3**

Parcel # 3 is on the south side of the existing parcel and will be established for a proposed future single-family dwelling and garage.

## **II. ENVIRONMENTAL SETTING**

### **2.1 Location:**

The proposed project site is in the unincorporated community of Lakeside, approximately twenty-one miles east of the Pacific Ocean and nineteen miles north of the United States – Mexico border. Lakeside is primarily a semi-rural and rural community with an estimated population of 55,000 people.

The Lakeside Fire Protection District is an “all risk” agency providing 24-7-365 fire protection services to an area of approximately fifty square miles and 60,000 residents. The District has four fire stations housing four Type I Structure Fire Engines, a Type II OES Engine Company, a Type III Brush Fire Engine, a medium rescue company, one water tender and two paramedic ambulances.

The Lakeside Fire Protection District is a member of the Heartland Automatic Aid Agreement and San Diego County Fire Mutual Aid Agreement. The Automatic Aid Agreement supplements Lakeside’s emergency resources from surrounding agencies on a closest engine basis. Lakeside resources responding to wild land fires in State Responsibility Areas (approximately 60% of the District) are assisted by automatic responses from CAL-FIRE.

Lakeside Fire Station # 2, located at 12216 Lakeside Avenue, is located two (2) miles from the proposed project site. The facility houses a Type I structure Engine Company staffed by three firefighters and one cross-staffed Type I Engine with a 65-foot Telesquirt aerial ladder, a patrol unit, water tender and one paramedic ambulance. Response time

to the project site is approximately four (4) minutes, under normal, non-emergency driving conditions, verified by a driving test conducted by the Consultant on December 27, 2022. Using the NFPA response time formula, with an average driving speed of 35 m.p.h., response time is 3.42 minutes.

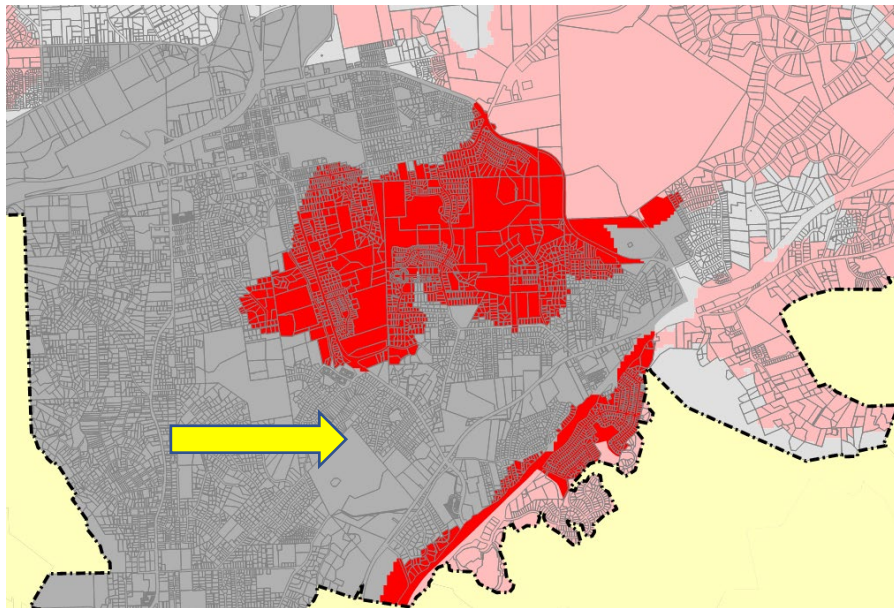


***Location of Project Site and Nearest Fire Stations***

Lakeside Fire Station # 3, located at 14008 Highway 8 Business, El Cajon, CA 92021, is located 2.4 miles proposed project site. The facility houses one Type I structure Engine Company staffed by three firefighters, a Medium Duty Rescue Company, and a paramedic ambulance. Response time to the project site is approximately four (4) minutes under normal, non-emergency driving conditions, verified by a driving test conducted by the Consultant on December 27, 2022. Using the NFPA response time formula, with an average driving speed of 35 m.p.h., response time is 3.94 minutes.

The 2023 Analysis of the CAL-FIRE FRAP Very High Fire Severity Area map for the Lakeside Fire Protection District indicates that the Project Site is on neither State Responsibility Area (SRA) or Local Responsibility Area (LRA) designated VHFSA lands.

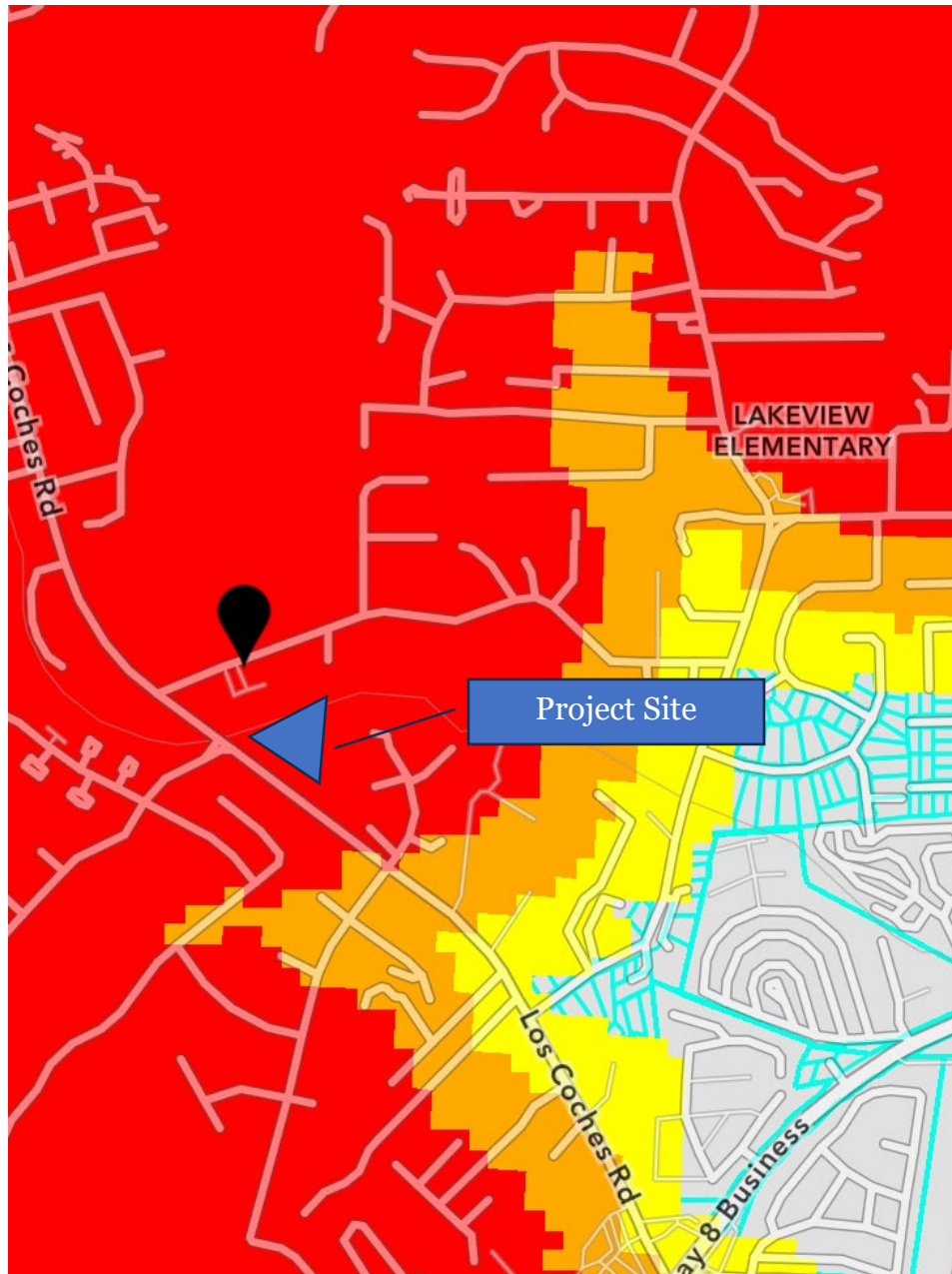
LRA fire hazard zones in the Lakeside Fire Protection District were revised in April 2024. The revision places the Project Site in LRA VHFSAs designated lands.



***2022 Lakeside FPD Fire Severity Area Map (yellow arrow – Project Site)***



***Details of Lakeside FPD Fire Severity Area at Project Site (yellow arrow)***



*2024 Lakeside FPD Fire Hazard Severity Zone Map Revision*

## **2.2 Topography:**

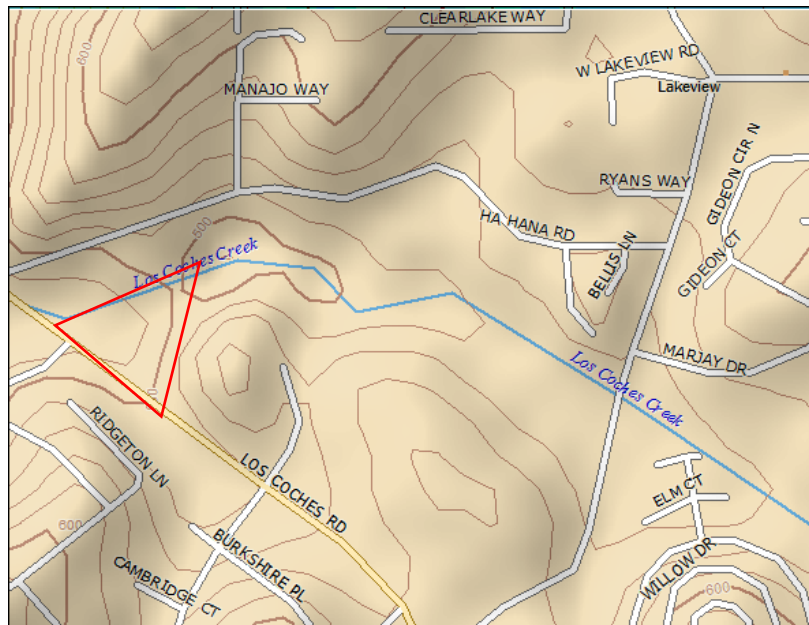
The Project Site, with its triangular shape, is positioned on a relatively flat parcel of land adjacent to the Los Coches Creek wetlands channel.

The wetlands channel has a southeast-to-northwest configuration through the property. Lands on the eastern portion of the parcel slope gradually towards the waterway.

Lands on the western half of the parcel present a steep, cliff-like wall between the waterway and the developable lands along the southern bank of the wetlands area. The height of the drop-off measures between ten (10') (eastern end) and fifteen (15') feet (western end at Los Coches Road overcrossing bridge) as the creek bed runs in a westerly direction adjacent to the developable plateau. The precipice is approximately 240 feet long, with a calculated slope of 50% (fifteen feet of rise over thirty-foot long run) at its steepest location.

There is a prominent topographical, box-shaped depression on the north side of the creek bed. This topographical feature is also north of the Project Site's northern property line. The deepest portions of the depression run parallel to both Los Coches and Ha Hanna Roads and has an approximate depth of fifteen (15') feet. The natural shrub and brush vegetative fuel bed in the depression is unmanaged.

The Project Site is immediately adjacent to a prominent dome-shaped hillside that fronts along the east side of the 9000 block of Los Coches Road. The hill rises approximately sixty (60') feet above the Los Coches Road right-of-way, over a distance of 292 feet, for an estimated slope of 20.5%.



*Topographic Map Excerpt of Project Site and Adjacent Lands*

### **2.3. Geology:**

The project site is located east of, and immediately adjacent to, Los Coches Road. A site visit indicates that there are no apparent geological factors that would constrain construction of required Fire Apparatus Access Roads, impact the design of proposed

dwelling pads, or increase wild land fire behavior after recommended fire protection measures, defensible space and proper vegetative fuel management are implemented.

## **2.4. Flammable Vegetation:**

### **2.4.1 Off-Site Flammable Vegetation**

There are three potential off-site flammable vegetation threats to the Project Site:

- The Los Coches Creek Wetlands Area to the North and Northeast
- Undeveloped land and hillside south of the Project Site, east of Los Coches Road and West of Bower Lane
- The Lakeside Linkage Open Space Preserve north of Ha Hanna Road



*Aerial View of Project Site (Yellow Arrow) & Adjacent Vegetative Fuel Beds*

#### **2.4.1.1 Los Coches Creek Wetlands**

The Los Coches Creek Wetlands begins several miles east of the Project Site in the Flynn Springs area. It travels in a southward direction and, approximately one-quarter (1/4) mile east of the intersection of Los Coches Road and Highway 8 Business, takes a ninety degree turn to the north and continues north and west to a point just east of Ha Hanna Road. At this location, the Wetlands makes a slow turn to the south, flows over a manufactured retention dam, and continues west, where it crosses beneath Los Coches Road. Immediately adjacent to Los Coches Road, the waterway bends towards the north with a south to north configuration.



***Los Coches Creek Wetlands Area – Looking Southwest Toward Project Site YELLOW Arrow)***

Vegetation adjacent to the creek bed north of the Project Site is a combination of riparian growth, trees, shrubs, and annual grasses, including arrundo (Giant Cane). The vegetation, under evaluation, corresponds to Fuel Model TU-5, Very High Load, Dry Climate Timber-Shrub.

The primary carrier of fire in the TU fuel models is forest litter in combination with herbaceous or shrub fuels. Fuel Model TU1 contains live herbaceous loading and is dynamic, meaning that the live herbaceous fuel load is allocated between live and dead as a function of herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong and depends on the relative amount of grass and shrub load in the fuel model.

Fuel Model TU-5 has heavy forest litter with a shrub or small tree understory. The Rate of Spread and Flame Lengths in this Fuel Model is moderate and there is a fine fuel load of 7.0 tons per acre.



***Anticipated Fire Behavior in Los Coches Creek Bed During Santa Ana Event***

Fuel Model TU-5, under worst-case Cedar Fire weather parameters, will have a Rate of Spread of 62.37 feet per minute, a flame length of 19.2 feet and will shower firebrands downwind for 0.8 miles (4224 feet) with 100% ignition in receptive vegetative fuel beds.

The Project Site is approximately 880 feet south of existing TU-5 fuels lining the Los Coches Creek Wetlands Area.



***Los Coches Creek Wetlands & Undeveloped Hillside West of Project Site***



*Typical Unmanaged Vegetative Fuel Bed North of Los Coches Creek Wetlands Corridor*

#### **2.4.1.2 Undeveloped Hillside, 9000 block of Los Coches Road**

The Project Site is immediately adjacent to a prominent dome-shaped hillside that fronts along the east side of the 9000 block of Los Coches Road. The hill rises approximately sixty (60') feet above Los Coches Road right-of-way over a distance of 292 feet, for an estimate slope of 20.5%.

The hillside is primarily covered with annual native and non-native grasses. The grassy fuels corresponds to Fuel Model GR-1, Short, Sparse Dry Climate Grass.



The primary carrier of fire in GR-1 is sparse grass, though small amounts of fine dead fuel may be present. The grass in GR-1 is short, either naturally or by grazing, and may be sparse or discontinuous. Predicted Rate of Spread and Flame Length are considered low, and the fine fuel load is 0.40 tons per acre.

Fuel Model GR-1, under worst-case Cedar Fire weather parameters, will have a Rate of Spread of 61.38 feet per minute, a flame length of four (4') feet and will shower firebrands downwind for 0.3 miles (1584 feet) with 100% ignition in receptive vegetative fuel beds.



*Anticipated Fire Behavior – Project Site = Blue Arrow*

Under the influence of a worst case, Santa Ana Northeast Wind Event, a fire on the Los Coches undeveloped hillside will spread to the southwest, in a general direction away from the Project site (red arrows).

Under the influence of a normal southwestern mid- to late-afternoon wind, a fire on the undeveloped Los Coches hillside will spread to the northeast, in a general direction away from the Project site. The flame front will extend into the back yards of the residences on the west side of Bower Lane. Fire behavior will moderate when the flame front spreads into the defensible space surrounding the Bower Lane residential buildings.

### **2.4.1.3 Lakeside Linkage Open Space Preserve**

The Lakeside Linkage Preserve consists of high value natural community – coastal sage scrub. This vegetation community supports several sensitive species including coastal California gnatcatcher, coastal cactus wren, and orange-throated whiptail. The Preserve functions as a corridor linkage for coastal California gnatcatcher from conserved lands

to the south of I-8 (Crestridge Conservation Bank) to conserved lands to the northeast (lands around El Capitan Reservoir).

The Linkage Open Space is approximately 1900 feet north of the Project Site and immediately adjacent to the north right-of-way shoulder of Ha Hana Road. The Preserve extends in a south to north configuration, generally following the ridgeline of the mountain that parallels the path of Los Coches Road for a distance of approximately 1.3 miles.

The vegetation on the eastern side of the Linkage Open Space, and adjacent to Ha Hana Road, can be classified as Fuel Model SH-5, Dry Climate, Heavy Load Shrub.

The primary carrier of fire in the SH type fuel models is live and dead shrub twigs and foliage in combination with dead and down shrub litter. Fuel Model SH-5 represents heavy shrub loads with a height of four to six (4-6') feet. The Rate of Spread and Flame lengths are very high.



***Anticipated Fire Behavior, Northwest and Southwest Wind Patterns***

Under the influence of a worst case, Santa Ana Northeast Wind Event, a fire on the Lakeside Linkage Preserve hillside will spread to the southwest, in a general direction

towards the Project site (red arrows). Firebrands lofted by convective heat currents and wind will be deposited inside of the Project Site (blue arrow)

Under typical late summer-early fall after wind conditions, fires in the Lakeside Linkage hillside will spread to the northeast, in a general direction away from the Project site (green arrows). Firebrands from a fire travelling in a northeasterly direction are unlikely to be deposited on the Project Site.

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## ***Findings:***

When evaluated, the anticipated fire behavior and flame front spread from off-site vegetation will travel up to, and through, other developed residential properties before reaching the project site.

Developed residential property is designated Fuel Model Non-Burnable, NB-1 Urban Developed. In all NB fuel models, there is no fuel flammable vegetation fuel load. Wildland fires will not continue spreading once the flame front encounters modified and treated natural fuels and non-combustible ground surfaces.

Fuel model NB-1 consists of land covered by urban and suburban development. To be called NB-1, the area under consideration must not support wildland fire spread. In some cases, areas mapped as NB-1 may experience structural fire losses during a wildland fire incident. Structure ignition in these cases is either caused by house-to-house exposure fires or by firebrands, neither of which is directly modeled using fire behavior fuel models.

Evaluation of the twenty-plus previously developed properties south of the Project Site reveals that they were built before the implementation of the County of San Diego Ignition Resistant Construction Standards. There is a probability that some of these buildings may ignite during a wild land fire and contribute to fire spread toward, and/or exposure to, the Project Site residences.

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### **2.4.2 On-Site Vegetation**

A Site Evaluation conducted on December 10, 2022, reveals that the entire existing parcel, including most of the riparian waterway corridor, meets California Fire Code and San Diego County Consolidated Fire Code requirements for Fuel Modification Zone 1 and 2 defensible spaces.



***Fuel Modified Riparian-Waterway Corridor, North & Northwest Side of Existing Parcel (12-10-22)***

The photograph above was taken from the Los Coches Road bridge, looking east towards the northern part of the existing parcel. The vegetation present on the south (right) side of the overcrossing is inside the subject parcel. The vegetation to the north (left) side of the waterway is off-site and adjacent to the existing parcel property line.



***Panoramic View of Subject Property – Looking Northwest Through Riparian Waterway Corridor from Eastern Portion of Parcel (12-10-22)***

The photograph above reflects typical vegetative fuel conditions on the Project Site:

- Trees on the Project Site are typically trimmed to a minimum height of six (6') to eight (8') feet above the ground to eliminate light and medium fuels from transmitting fire from ground level into the tree canopies.

- The canopies and branches of potentially decadent and diseased trees have been removed, eliminating potential fire receptive fuels from the landscape, and providing mitigations measures against wind-blown firebrand and ember shower deposition.
- Ground vegetative fuels are maintained at a height of one (1”) inch or less year-round.
- There is a minimal number of native, combustible plants remaining on the Project Site. These specimens are isolated and well separated from buildings and other plant species, preventing ready transmission of the flame front across the landscape.



The above photograph depicts typical vegetative fuel conditions along the riparian wetlands corridor that traverses the north side of the Project Site.

Prior to 2009, the entire wetlands corridor was overgrown with the non-native and invasive giant reed *Arrundo Donax* species.

In or about 2011, a multi-agency task force removed the invasive plant growth, using non-mechanical methods, to mitigate the inherent fire hazard in the streambed. The wetlands corridor was cleared to bare mineral soil and any remnants of the *Arrundo* plants, and their roots, were chemically treated.

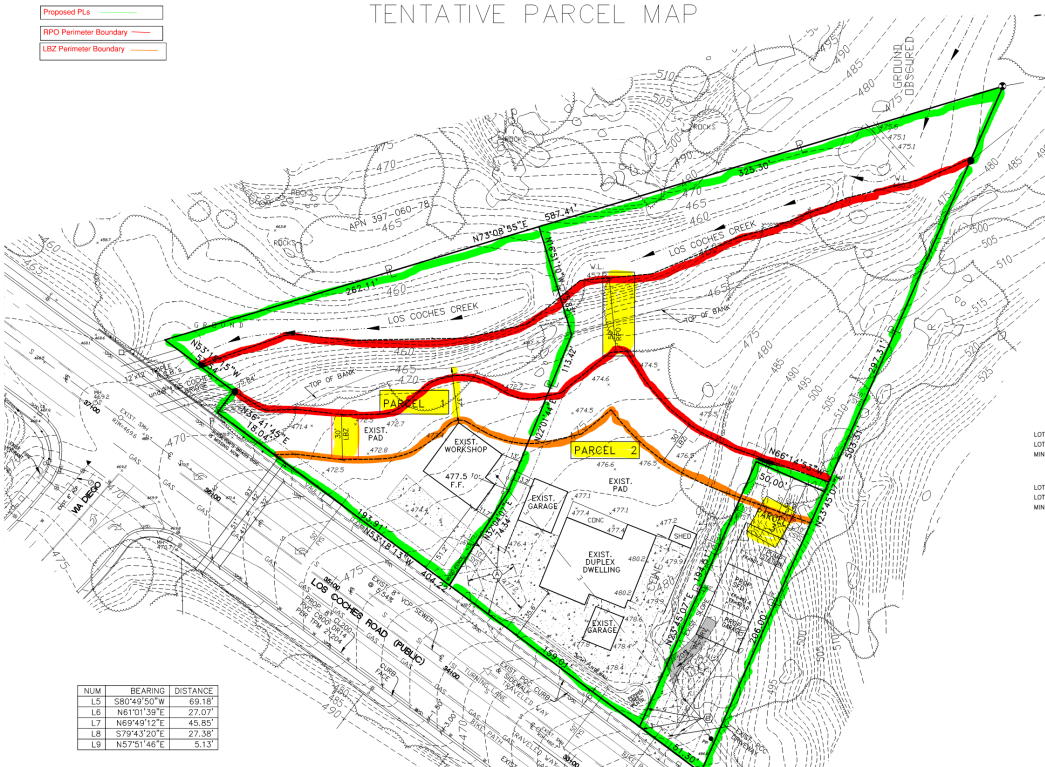
Parcel owners received abatement orders from the task force, requiring them to maintain the stream bed in the mitigated condition for a minimum of ten (10) years, with annual assistance from the mitigation team.

North of the project site, as indicated in Section 2.4.1.1, the wetlands corridor is no longer being managed. Combustible and invasive plant species are returning to the habitat.

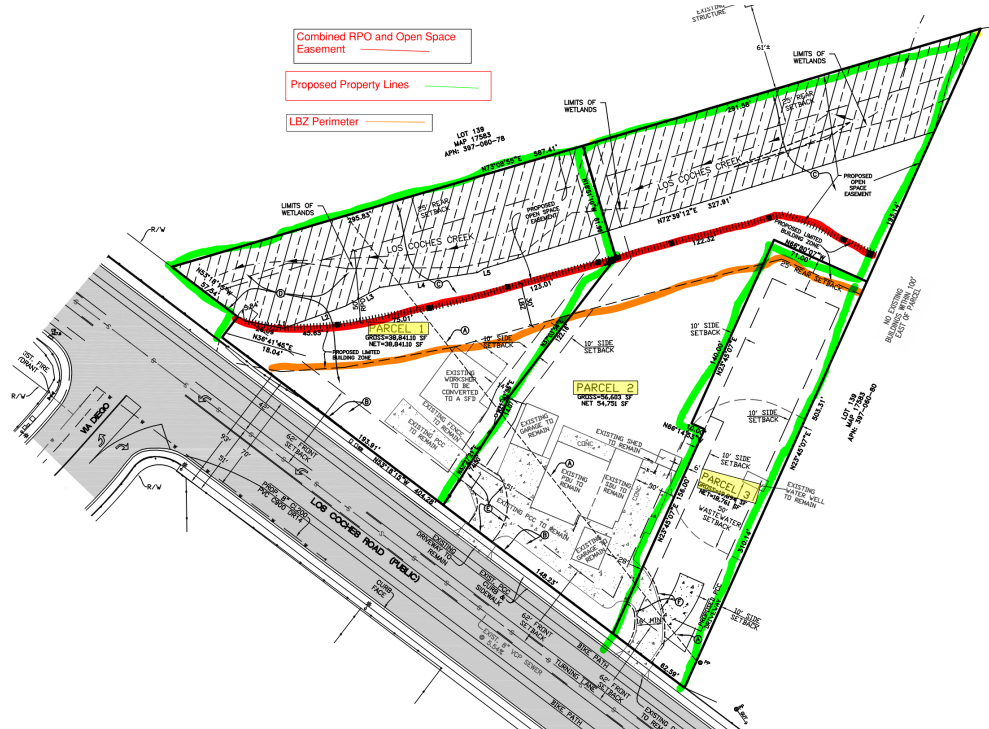
The wetlands habitat on the Project Site have been maintained as specified in the abatement order. The vegetation in the open space easement, except for individual and well-separated specimens, is maintained below the maximum six (6") inch height specified for Fuel Modification Zone 2 defensible space. Additionally, most of the vegetative matter is maintained less than one (1") inch above the ground.

The fence line in the photograph above represents the northern property line of both the Project Site and the Resource Protection Order (RPO) open space easement flanking the wetlands environment. A similar fence line is established along the southern LBZ-RPO perimeter boundary.

The combined RPO and Open Space Easements has variable width measurements ranging between fifty (50') feet and 155 feet. The actual stream bed has a width of approximately twenty (20) to twenty-five (25') feet as it courses through the Project Site. A thirty (30') foot wide Limited Building Zone is established along the southern perimeter of the RPO and Open Space Easement boundaries.



**2023 Proposed Property Lines and LBZ and RPO Perimeter Boundaries on Project Site**



**Updated Property Lines and LBZ-RPO Perimeter Boundaries, 11-9-25**

Apart from extreme drought conditions, the Los Coches Creek stream runs continuously throughout the year. The running water maintains the internal fuel moisture values of the vegetation in the wetland habitat at a minimum level of 30% or more, indicative of plants in a “live” condition above their annual extinction parameters.

### **2.4.2.1 Anticipated Fire Behavior**

Based on the initial site evaluation, the following vegetative fuel models were identified on, or adjacent to, the Project Site:

- NB-1, Non-Burnable Urban-Suburban Developed
- NB-9, Non-Burnable Bare Ground
- GR-1, Dry Climate, Short-Sparse Grass
- GR-3, Humid Climate, Light Load Grass
- TU-1, Dry Climate, Low Load Timber-Grass-Shrub Under-Story
- TU-5, Dry Climate, High Load Timber-Grass-Shrub Under-story (off-site)
- SH-2, Moderate Load, Dry Climate Shrub-Scrub-Brush (off-site)

#### ***2.4.2.1.1 Non-Burnable Fuel Models***

*NB1 (91)*

*Urban/Developed*



**Description:** Fuel model NB1 consists of land covered by urban and suburban development. To be called NB1, the area under consideration must not support wildland fire spread. In some cases, areas mapped as NB1 may experience structural fire losses during a wildland fire incident; however, structure ignition in those cases is either house-to-house or by firebrands, neither of which is directly modeled using fire behavior fuel models. If sufficient fuel vegetation surrounds structures such that wildland fire spread is possible, then choose a fuel model appropriate for the wildland vegetation rather than NB1.

**Expected fire behavior:**

No fire spread

**NB9 (99)**

**Bare Ground**



**Description:** Land devoid of enough fuel to support wildland fire spread is covered by fuel model NB9. Such areas may include gravel pits, arid deserts with little vegetation, sand dunes, rock outcroppings, beaches, and so forth.

**Expected fire behavior:**

No fire spread



***Example - Non-Burnable NB-9 Fuel Model on Project Site***

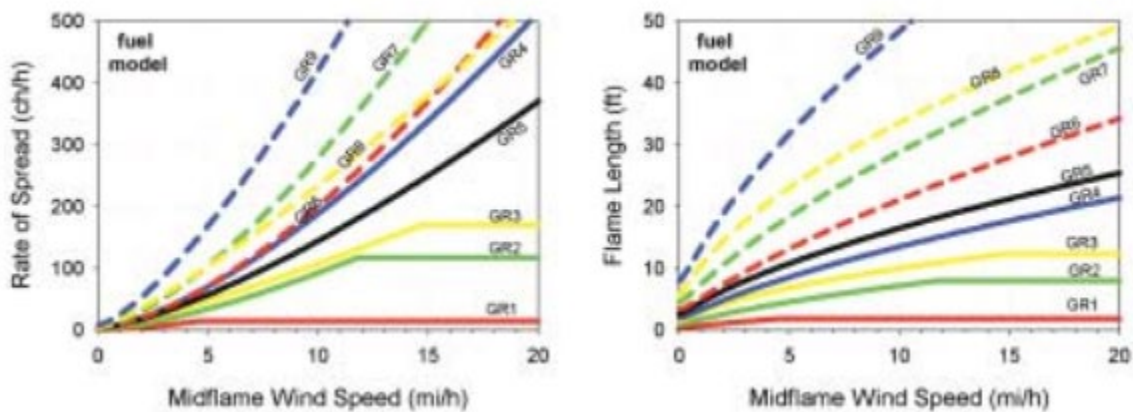
Most of the developable parcel(s) on the Project Site is/are maintained with vegetation removed and the landscape scraped to mineral soil. Any plant life that appears in the mineral soil landscape occurs after exposure to rainfall, is maintained to a height of less than one (1”) inch above the ground and, when at extinction levels, withers away or is scraped away from the soil and disposed of.

### 2.4.2.1.2 Annual Grass Type Fuel Models

#### Grass Fuel Type Models (GR)

The primary carrier of fire in the GR fuel models is grass. Grass fuels can vary from heavily grazed grass stubble or sparse natural grass to dense grass more than 6 feet tall. Fire behavior varies from moderate spread rate and low flame length in the sparse grass to extreme spread rate and flame length in the tall grass models.

All GR fuel models are dynamic, meaning that their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong.



These annual growth vegetation examples occur in wetlands corridor. The grassy fuel models are maintained a maximum height of six (6”) inches above the ground. With water running through the stream bed year-round, the internal fuel moisture levels are estimated to be in the 30% range and do not approach extinction levels.

For fuel modeling purposes, the fuel moisture parameter is set at 30% for typical year-round fire behavior analysis.

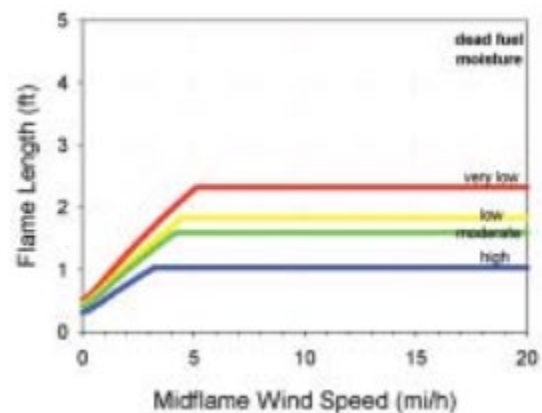
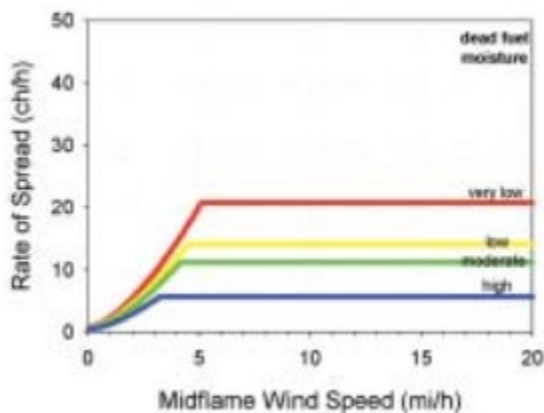
## GR1 (101)

### Short, Sparse Dry Climate Grass (Dynamic)



**Description:** The primary carrier of fire in GR1 is sparse grass, though small amounts of fine dead fuel may be present. The grass in GR1 is generally short, either naturally or by grazing, and may be sparse or discontinuous. The moisture of extinction of GR1 is indicative of a dry climate fuelbed, but GR1 may also be applied in high-extinction moisture fuelbeds because in both cases predicted spread rate and flame length are low compared to other GR models.

Fine fuel load (t/ac)	0.40
Characteristic SAV (ft-1)	2054
Packing ratio (dimensionless)	0.00143
Extinction moisture content (percent)	15





***Typical Fuel Model GR-1 Conditions on Project Site***

Fuel Model GR-1, Dry Climate Short-Sparse, Low Load Grass, was used to predict worst-case burning conditions in the wetlands environment, which poses the highest fire exposure threat to developed building sites on the Project Site.

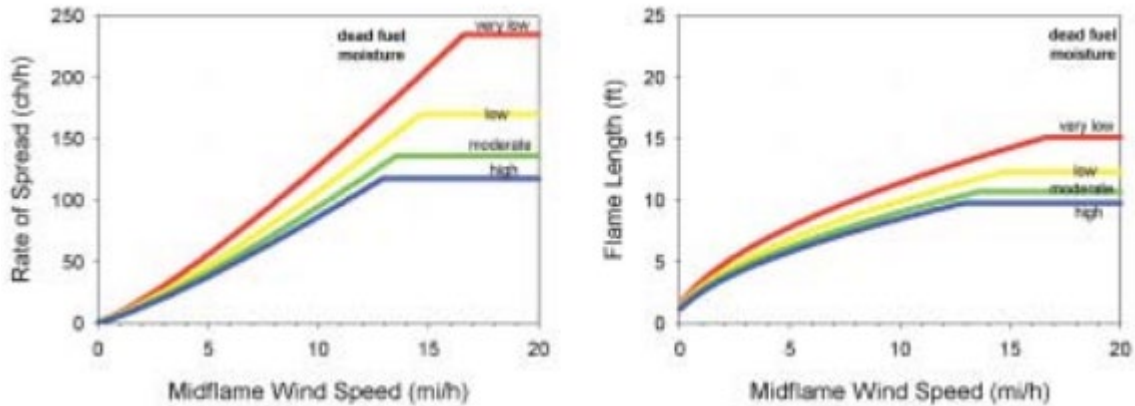
***GR3 (103)***

***Low Load, Very Coarse, Humid Climate Grass (Dynamic)***



**Description:** The primary carrier of fire in GR3 is continuous, coarse, humid-climate grass. Grass and herb fuel load is relatively light; fuelbed depth is about 2 feet. Shrubs are not present in significant quantity to affect fire behavior.

Fine fuel load (t/ac)	1.60
Characteristic SAV (ft-1)	1290
Packing ratio (dimensionless)	0.00143
Extinction moisture content (percent)	30

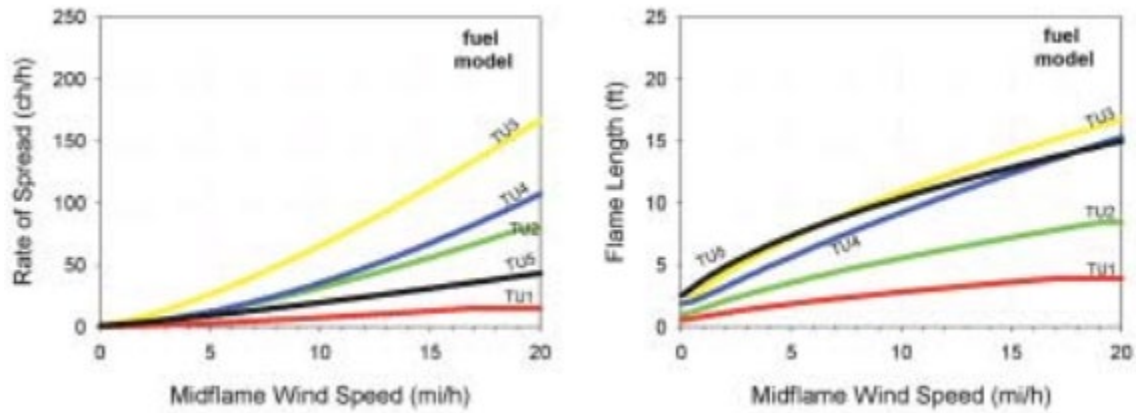


Fuel Model GR-3 was used to predict worst-case burning conditions in the wetlands environment, for annual fuels exposed to a humid environment with constantly running water beneath the Coastal Oak and Sycamore tree canopies.

### 2.4.2.1.3 Timber-Understory Fuel Models

#### Timber-Understory Fuel Type Models (TU)

The primary carrier of fire in the TU fuel models is forest litter in combination with herbaceous or shrub fuels. TU1 and TU3 contain live herbaceous load and are dynamic, meaning that their live herbaceous fuel load is allocated between live and dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong and depends on the relative amount of grass and shrub load in the fuel model.



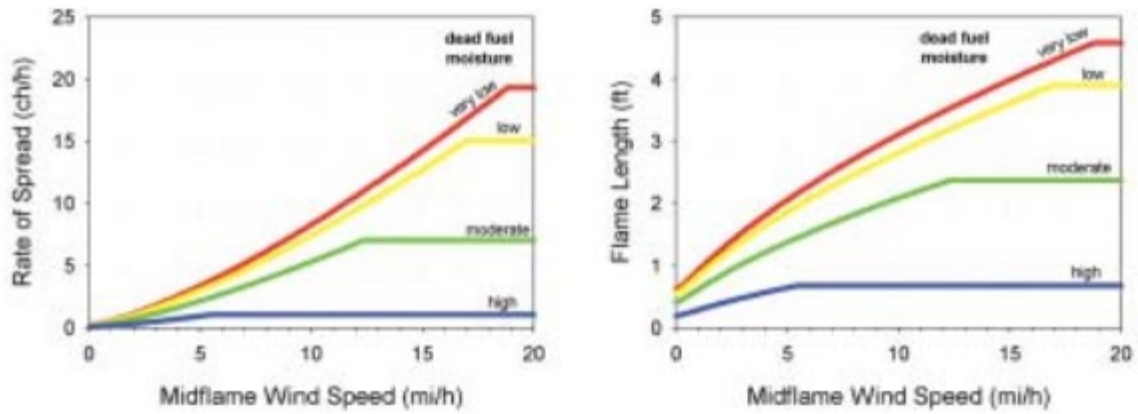
**TU1 (161)**

***Low Load Dry Climate Timber-Grass-Shrub (Dynamic)***



**Description:** The primary carrier of fire in TU1 is low load of grass and/or shrub with litter. Spread rate is low; flame length low.

Fine fuel load (t/ac)	1.3
Characteristic SAV (ft-1)	1606
Packing ratio (dimensionless)	0.00885
Extinction moisture content (percent)	20



Fuel Model TU-1 was used to predict current worst-case late summer and fall burning conditions in the wetlands environment, for annual fuels exposed to a humid environment with constantly running water beneath the Coastal Oak and Sycamore tree canopies.



***Typical On-Site Fuel Model TU-1 Conditions on Project Site***

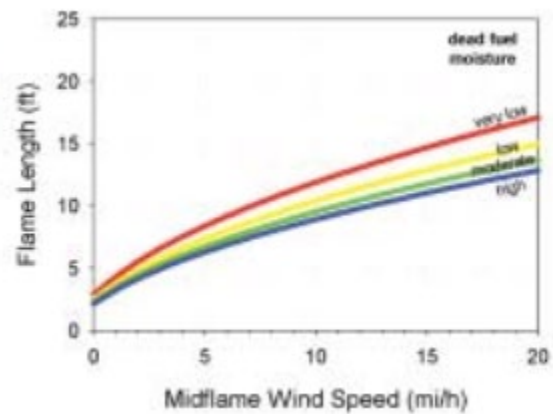
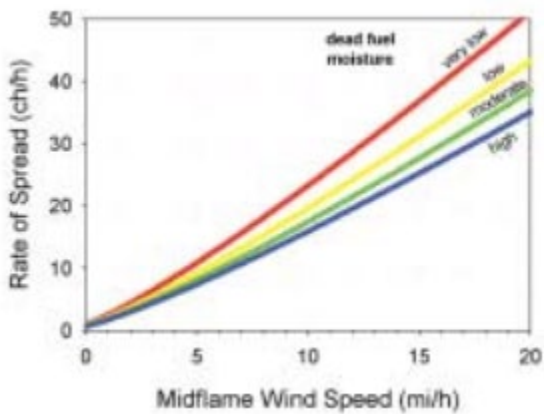
## TU5 (165)

### Very High Load, Dry Climate Timber-Shrub



**Description:** The primary carrier of fire in TU5 is heavy forest litter with a shrub or small tree understory. Spread rate is moderate; flame length moderate.

Fine fuel load (t/ac)	7.0
Characteristic SAV (ft-1)	1224
Packing ratio (dimensionless)	0.02009
Extinction moisture content (percent)	25



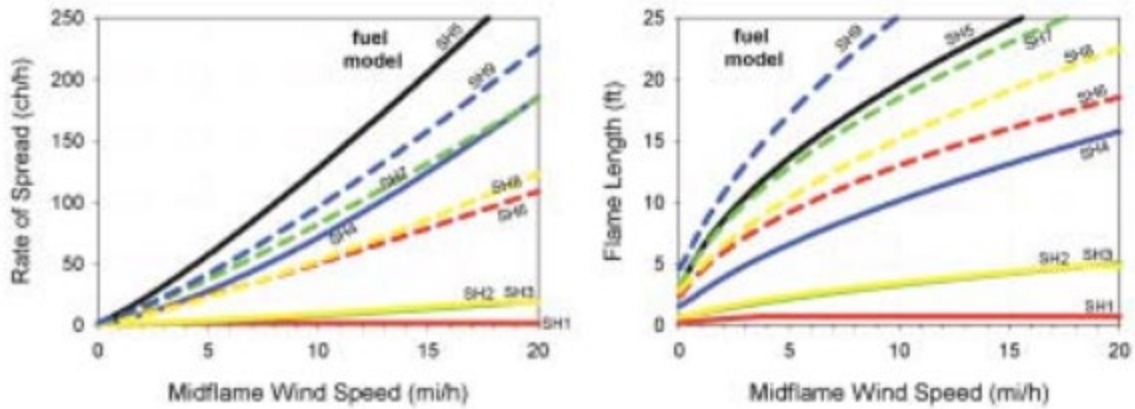


*Typical Off-Site Fuel Model TU-5 Streambed Vegetation Conditions East of Project Site*

#### **2.4.2.1.4 Shrub-Brush Fuel Model**

##### **Shrub Fuel Type Models (SH)**

The primary carrier of fire in the SH fuel models is live and dead shrub twigs and foliage in combination with dead and down shrub litter. A small amount of herbaceous fuel may be present, especially in SH1 and SH9, which are dynamic models (their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content). The effect of live herbaceous moisture content on spread rate and flame length can be strong in those dynamic SH models.



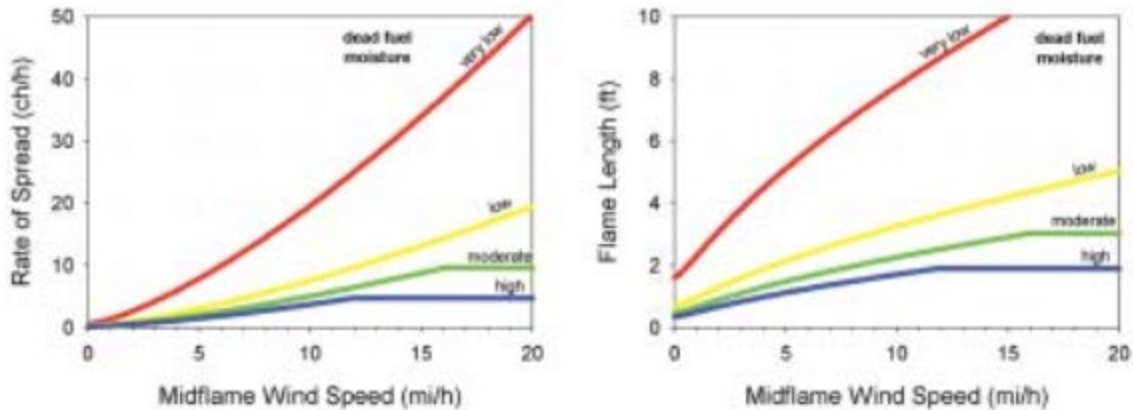
**SH2 (142)**

**Moderate Load Dry Climate Shrub**



**Description:** The primary carrier of fire in SH2 is woody shrubs and shrub litter. Moderate fuel load (higher than SH1), depth about 1 foot, no grass fuel present. Spread rate is low; flame length low.

Fine fuel load (t/ac)	5.2
Characteristic SAV (ft-1)	1672
Packing ratio (dimensionless)	0.01198
Extinction moisture content (percent)	15



## **2.4.2.2 Fire Modeling, On Site Vegetation**

### ***2.4.2.2.1 Summary Narrative***

Anticipated Fire Behavior was analyzed after visiting the Project Site and identifying the fuel model types. Terrain and topographical inputs were determined by site visits and making comparisons with two- and three-dimensional maps.

Weather inputs parameters were derived from:

- Interior Zone Worst Case Weather and Burning Conditions table supplied by the County of San Diego Guidelines for Fire Protection Plans
- Typical Late Summer weather parameters for Project Site and adjacent community
- 2003 Cedar Fire weather and fuel parameters, which have been established as worst-case fire behavior conditions in San Diego County.

Two fuel moisture parameters were used:

- Typical fuel moisture derived from continuous exposure to running stream water in the wetlands environment.
- Worst-case fuel moistures present during northeast Santa Ana wind event and extended drought conditions.

### **BEHAVE Fire Modeling**

The above data inputs were analyzed by the BEHAVE-Plus 5.0.5 Wildland Fire Modeling program to determine potential wildfire behavior at the Project Site.

The BEHAVE-Plus Fire Behavior Prediction and Fuel Modeling System is a computer-based systematic method of predicting wild land fire behavior. It was developed by the U.S. Forest Service at the Intermountain Forest Fire Laboratory, Missoula, Montana, and is used by wild land fire experts and scientists nationwide.

BEHAVE-Plus is designed to predict fire spread and describes fire behavior only at the flame front of a fire.

The primary parameter of the BEHAVE fire behavior calculations are dead fuels less than one-quarter (1/4”) inch in diameter that readily carry fire across the landscape. Fuels larger than three (3) inches in diameter are not included in the BEHAVE calculations. 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.

### **Use of Fire Model Inputs – Caveat**

The BEHAVE-Plus Fire Behavior Model is a tool used by fire authorities to estimate the behavior of fire moving towards a structure under certain assumptions. The Fire Behavior Model is an estimate of fire behavior and is not designed to replace the experience of the local Fire Authority, who is familiar with local wildfire conditions.

The Behave-Plus fire model is not the only recognized and available fire-modeling program on the open market. BEHAVE is used in this Report because, nationwide, it is the most widely used program by fire consultants. Further, the County of San Diego requires its use.

### **FIREMAP Modeling**

A second fire modeling program, FIREMAP, was used to validate BEHAVE-Plus modeling outputs.

FIREMAP was developed to perform data-driven predictive modeling and analysis of fires that have high potential for rapid spread. It enables “what-if” analysis of fire scenarios during pre-incident planning analysis and during real-time fire forecasting. The program is programmed with information about previous fires, past and current weather conditions and information on vegetation and landscapes from a variety of GIS and other sources of information.

Data and modeling sources include:

- FARSITE fire modeling
- Historical fire perimeters – CAL-FIRE FRAP Program and USGS GeoMAC

- Fuels – USGS LANDFIRE Program

### **2.4.2.3 Fire Behavior Threat Analysis**

Evaluation of anticipated fire behavior on the Project site used historical data, analysis of significant wind events and identifying the different fuel models present in the area.

The Project site is in a broad rectangular-shaped valley.

The natural annual light fuels and shrub-brush vegetation on the developed Project Site has been removed; the landscape is maintained in Fuel Modification Zone 1 and 2 defensible space conditions. The developed site corresponds to two fuel models – Non-Burnable NF-1 Urban-Suburban Development and Non-Burnable NB-9, bare mineral soil.

The native vegetation inside the Open Space Easement is type-converted from typical wetlands-riparian fuels to a combination of various dry and humid climate annual grasses, maintained to a height less than one-foot (1') above the ground. The current wetlands vegetation can be classified as GR-1, dry climate short and sparse grasses, and GR- 3, humid climate, light load grasses.

Off site, adjacent properties are covered by vegetation typical of Fuel Models SH-2 shrub vegetation and TU-5 woodlands with grass and shrub understory.

The fire modeling performed for this Plan focuses on the typical fire exposures created by the light annual fuels in the waterway corridor and the off-site, unmanaged vegetative fuel beds.

Analysis of the potential and foreseeable fire exposure threats to the Project Site are based on typical late summer and worst-case northeast Santa Ana wind event conditions.

For typical summer weather conditions, the application of 30% minimum fuel moisture content, above the extinction parameter of the vegetation, is used. For Santa Ana wind event fire conditions, the 2003 Cedar Fire worst-case fuel moisture parameters are applied, with all fuels at or below their extinction levels.

### **Typical Late Summer Weather Conditions**

Fire behavior modeled by BEHAVE is associated with the following burning conditions:

- 1) Rate of Spread, characterized by distances in chains-per-hour and feet-per minute
- 2) Flame length, the depth of the flame front moving across the landscape
- 3) Safe separation distance from the flame front and building walls; and

4) Fire brand/ember spotting distance from the main body of the fire and the likelihood of ignition in downwind susceptible fuels.

### **Fuel Models GR-1, GR-3 and TU-1, Typical Summer Conditions**

With fuel moisture at 30%, these fuel models will **not** support fires spreading across the landscape and no flame lengths will be produced.

### **All Fuel Models, Santa Ana Wind Event Conditions**

#### **Fuel Model GR-1**

The fuel moisture content for annual grass vegetation under Cedar Fire weather parameters is 1%. The fire in these fuels will have a rate of spread of forty-seven feet per minute, flame lengths of 3.6 feet and a spotting distance of 530 feet, with 100% ignitions in susceptible downwind vegetation. The safe separation distance is fourteen (14') feet.

#### **Fuel Model GR-3**

The fuel moisture content for annual grass vegetation under Cedar Fire weather parameters is 1%. The fire in these fuels will have a rate of spread of 192 feet per minute, flame lengths of 4.4 feet and a spotting distance of 2112 feet, with 100% ignitions in susceptible downwind vegetation. The safe separation distance is fifty-six (56') feet.

#### **Fuel Model TU-1**

Fires in this fuel model will have a rate of spread of fifteen (15') feet per minute, flame lengths of fourteen feet and a spotting distance of 1514 feet, with 100% ignitions in susceptible downwind vegetation. The safe separation distance is eighteen (18') feet.

#### **Fuel Model SH-2**

Fires in this fuel model will have a rate of spread of 506 feet per minute, flame lengths of 12.4 feet and a spotting distance of 1056 feet, with 100% ignitions in susceptible downwind vegetation. The safe separation distance is fifty (50') feet.

#### **Fuel Model TU-5**

Fires in this fuel model will have a rate of spread of sixty-three (63') feet per minute, flame lengths of 12.4 feet and a spotting distance of 4224 feet, with 100% ignitions in susceptible downwind vegetation. The safe separation distance is sixty-two (62') feet.

The table below summarizes Worst-Case fire behavior conditions for the various fuel models:

<b>Fuel Model</b>	<b>Rate of Spread</b>	<b>Flame Length</b>	<b>Spotting</b>	<b>Safe Separation</b>
GR-1	47 ft/minute	3.6 feet	0.1 mile/100%	14 feet
GR-3	192 ft/min	14 feet	0.4 mile/100%	56 feet
TU-1	15.1 ft/min.	4.4 feet	0.2 mile/100%	18 feet
TU-5	40 to 63 ft/minute	15 to 19 feet	0.8 miles/100%	62 feet
SH-2	16 feet/minute	7.3 feet	0.2 miles/100%	29 feet

Riparian and wetlands woody plant communities are comprised of shrub lands and hard wood woodlands and forests. In general, willows species of trees dominate most of the shrub lands; other shrub types are rare. Other trees within these areas are cottonwood, sycamores, and oaks.

The extent of riparian plant communities has been reduced from pre-settlement times in California due to agricultural development and urbanization. Non-native invasive plants have altered historical plant community composition and stand structure. Flammable non-natives include salt cedar and giant reed (Arrundo), which increase fire rate of spread factors and burning intensity.

Most wetlands habitat fires are human caused. These fires occur during the summer and fall but burning seasons can extend from spring to late fall. Fires usually occur during the annual “fire season” and have a limited extent with varying intensities and burning type (low-high; surface; mixed; crown). It is safe to assume that wetlands environments will burn readily during extended periods of prolonged drought.

Most riparian vegetation is fire resilient; flooding is often a more important driver of succession than fire. Adaptations of vegetation to flooding produces thick bark, sprouting and masting that enable the plants to recover quickly from fire effects.

Non-native and invasive plant species easily invade wetlands communities. Many of California’s riparian communities have undergone significant changes in species composition because of non-native invasive plants. Giant reed (arrundo) and salt cedar are the most prevalent invasive non-native plants affecting California riparian environments. Both are implicated in the increasing fire frequency and intensity in some riparian zones. Giant reed and salt cedar increase the amount and continuity of vegetation fuels in the environment, which alters fire behavior, producing more severe and intense fires.

## **Arrundo Reinfestation of Fuel Modified Wetlands Corridor**

If the biological open space easement around the wetlands corridor is *not* maintained in its current fuel modified condition, there is a *high* probability that the landscape will type-convert and return to its previous level of Arrundo infestation. Arrundo is an aggressive perennial grass that grows in clumps, with heights up to six meters. The roots are extensive and densely matted.

Arrundo is one of the fastest growing land plants in the world. It forms massive thickets of vegetation that can cover several acres, virtually eliminating all other plant species along with the high biodiversity, structural diversity, and wildlife habitat of riparian systems. Stem density increases as it nears the water's edge and stands are self-regenerating. Arrundo chokes riverbanks and stream channels, crowds out native plants, interferes with flood control, increases fire potential, and reduces wildlife habitat.

The California Invasive Plant Council (CAL-IPC) identifies Arrundo as a High Mitigation species. Each invasive plant species is evaluated by CAL-IPC based on thirteen specific criteria. In addition to the criteria, a combination of other factors may indicate that a species has a particular and significant potential for invading new ecosystems that triggers an Alert designation.

High Rating species have ***severe*** ecological impacts on physical processes, plant and animal communities and vegetation structure. Their reproductive biology and other attributes are conducive to moderate and high rates of dispersal and establishment. Most of the High Rating species are widely distributed ecologically. ***A High Rating indicates a prioritized need for removal and control of the species.***

Flame lengths from a worst-case, reinfested Arrundo habitat fire in the drainage are modeled at 15.5 feet long.

Fire behavior inside the wetlands habitat will be divided between two elements:

Ground fuels

Aerial fuels

Ground-level vegetation was evaluated and classified as Fuel Model TU-5, Very High Load, Dry Climate Timber-Shrub. Unmanaged ground fuels typically extend vertically from ground level and into tree canopies. This fire behavior occurs because there are no vertical or horizontal barriers or separations between the ground and aerial fuels.

The ROP buffer zone has a width of fifty (50') feet and is enhanced by an additional thirty (30') foot-wide Limited Building Zone (LBZ) along its southern perimeter.

Under reinfestation conditions, burning Arrundo flame lengths can lap over both the northern and southern edges of the drainage.

The southern flame front may extend fifty-two (52') feet past the width of the wetlands ROP buffer and extend into the LBZ perimeter. However, unlike unmanaged vegetation in the creek drainage, the landscape within the LBZ perimeter will be subject to defensible space fuel modification practices. Flame fronts entering the fuel modified LBZ perimeter will diminish once it encounters the reduced vegetative fuel loading. Under these circumstances, the anticipated flame length of the flame front crossing into the LBZ is approximately twelve (12') feet, indicating that fire extending across the landscape will not pass completely through this defensible space.

If, on the other hand, the current wetlands buffer fuel modifications continue in perpetuity, flame lengths will immediately diminish when a flame front from an off-site fire extends into the Project site and encounters the fuel modified landscape.

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***See Section 3.7.2 for specific fuel management practices for Arrundo and other wetlands habitat vegetation.***

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## **Fire Map Modeling Outputs**

Two fire weather conditions were analyzed by the FIREMAP modeling program:

- Worst-case Santa Ana-Northeast Wind Event fires
- Typical late summer afternoon fires

The screenshot displays the FIREMAP modeling program interface with the following parameters and controls:

- Wind speed: 25 mph (slider from 0 to 40)
- Temperature: 97 F (slider from 0 to 110)
- Wind Direction: 55 (circular gauge)
- Relative Humidity: 7 % (slider from 0 to 100)
- Burn Time: 3 hour(s) (slider from 1 to 6)

Buttons: Santa Ana, Forecast, Nearest Station, Choose Station, Edit Weather

Time: Now, 2022-12-27 09:02, Wind speed: Average, Gust

Weather: Santa Ana.

PIG: 60 % Calculated PIG

Buttons: Paste, Fuel Moisture, Advanced, Run, Cancel

### **SANTA ANA -NORTHEAST WIND EVENT FIRE PARAMETERS**

Wind speed  mph      Temperature  F      Wind Direction

Relative Humidity  %      Burn Time  hour(s)

**Santa Ana**   **Forecast**   **Nearest Station**   **Choose Station**   **Edit Weather**

Time: **Now**   **2022-12-27 09:53**   Wind speed: **Average**   **Gust**

Weather: manually updated.

PIG:  % Calculated PIG

**Paste**   **Fuel Moisture**   **Advanced**   **Run**   **Cancel**

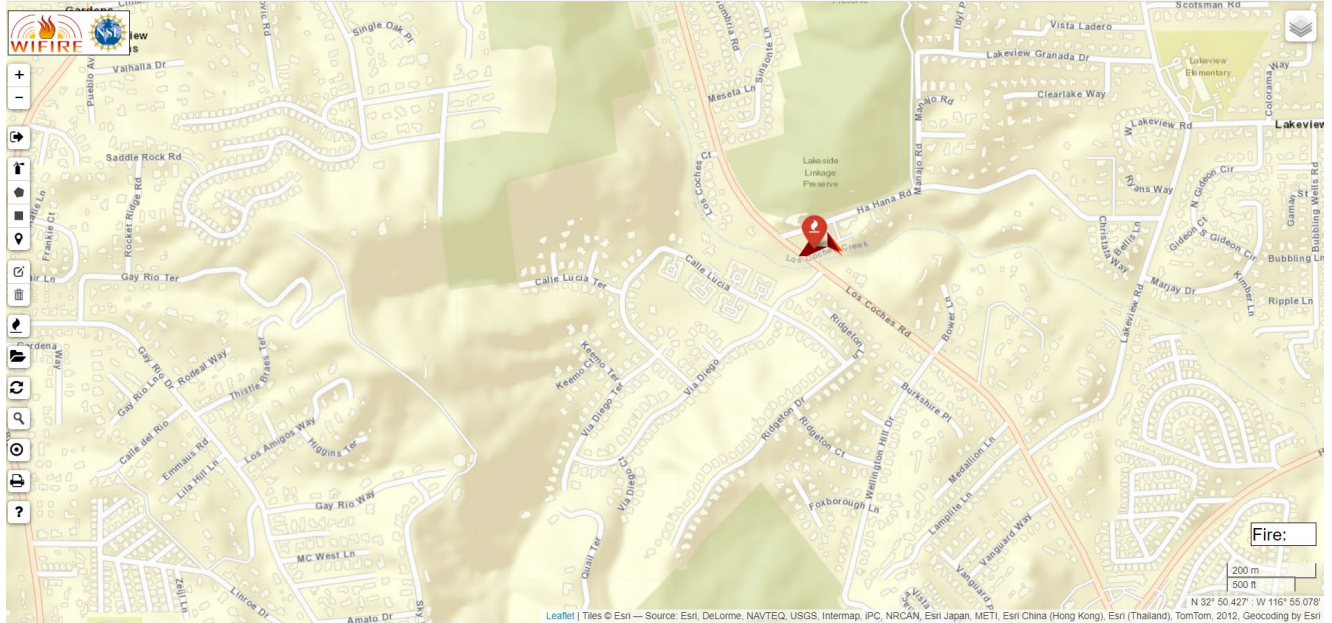
**SUMMER FIRE WEATHER PARAMETERS**

For standardized comparison of the different fire behavior scenarios, burn time duration was selected as three (3) hours after ignition. Before the current modeling program update, burn times were limited to a maximum of three hours. The current model burn time parameter has been extended to six (6) hours.

**Discussion:** FIREMAP is *not* programmed to analyze fire suppression activities and their impact on flame front progression across the landscape.

**SCENARIO 1 – OFF-SITE FIRE IN SH-2 DRY CLIMATE MEDIUM LOAD SHRUB – 3-HOUR BURN TIME – SANTA ANA**

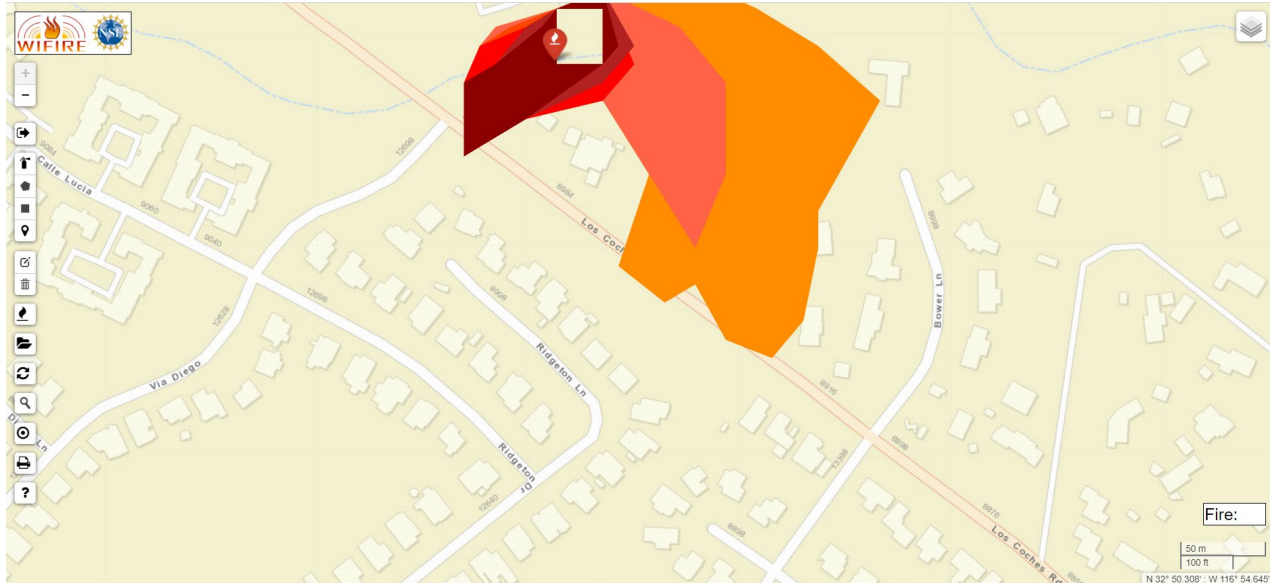
This scenario models fire behavior occurring in the unmanaged, three (3') to four (4') foot tall brush that borders the Project Site's northern property line and the fuel modified Los Coches Creek waterway corridor.



Modeling fires originating in the unmanaged vegetation fuel bed north of the Project Site indicates fuel exhaustion in the first hour of burning, without flame front progression across the waterway corridor or exposure to existing and proposed buildings on future Parcels 1 and 2.

**SCENARIO 2- ON-SITE FIRE – TU-1 DRY CLIMATE, LOW LOAD TIMBER UNDERSTORY**  
**3-HOUR BURN TIME – SANTA ANA**  
**MODELED IMPACTS AT 30 TO 45 MINUTES AFTER IGNITION**

This scenario models fire behavior occurring in riparian-waterway habitat vegetation with fuel moisture levels less than extinction parameters. The point of origin is near the northeast corner of the Project Site and adjacent to reestablished, unmanaged wetlands habitat vegetation.



Fire modeling indicates that a flame front spreading in a southwest direction has the potential of exposing the existing workshop/future ADU building approximately thirty (30) to forty-five (45) minutes after ignition.

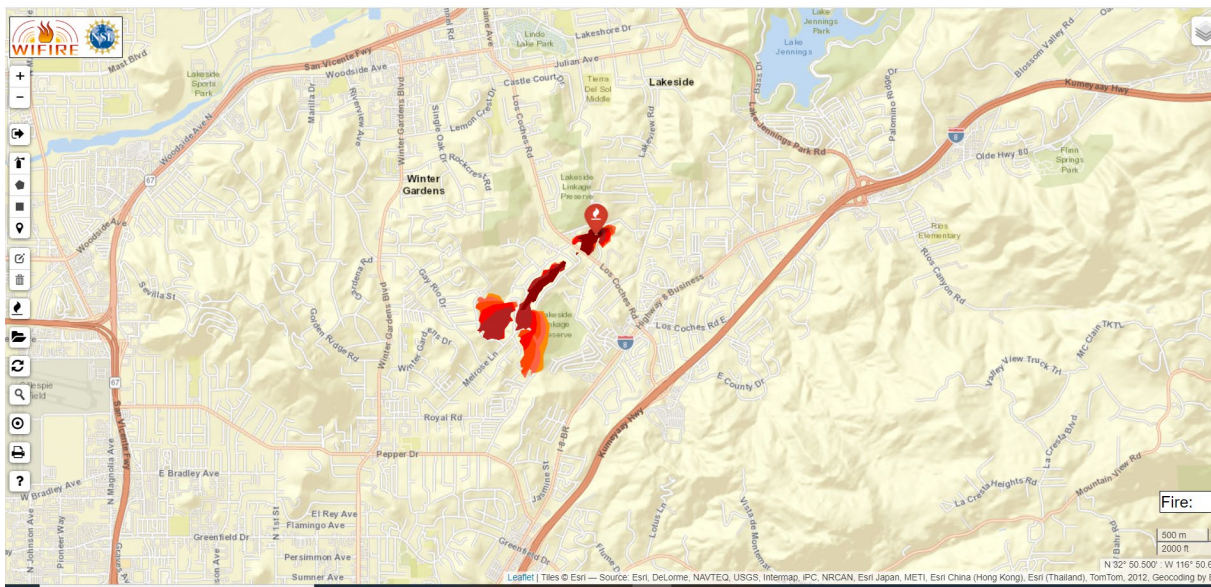
**Discussion:**

1. Based on the information developed during the site visit and analysis of fuels and defensible space present on the Project site, FIREMAP programming evaluates vegetative ground cover based on non-mitigated fuel beds and fuel loading.
2. Fire behavior in the waterway vegetation exhibits moderate rates of spread following the northeast wind topographical alignment to the southwest. The rate of spread is consistent with the presence of unmanaged TU-1 and TU-5 on the landscape.
3. The southern plateau above the waterway corridor has been fuel modified, consistent with Fuel Model NB-1 Non-Burnable Urban-Suburban criteria, with most vegetation removed to bare mineral soil. The defensible space provided on the southern plateau complies with Fuel Modification Zone 2 criteria.
4. Conversion to Fuel Model NB-1 and FMZ-2 standards is indicative that flame fronts spreading the landscape will cease forward movement when the cleared-to-bare-soil boundary is crossed.
5. Fire modeling for this scenario indicates that the flame front moving through light annual fuels northeast of the existing buildings on the Project Site will follow the long-established fuel modification zone boundaries, diverting fire behavior away and around the structures into unmanaged vegetative fuel beds.
6. As previously discussed, FIREMAP does not analyze, or project output related to fire department operations.
  - There is limited access to the lands northeast of the Project site where the scenario fire originates.

- With the initial flame front running towards the existing and proposed buildings, fire department suppression units will enter the Project Site and establish an anchor point for firefighting operations and provide structural protection operations for the exposed buildings.
- The Fuel Model NB-1 and FMZ-2 defensible space around the existing buildings provides firefighters with a safe operational area, including an effective heat separation distance from the flame front progressing to the southwest in the waterway corridor.

**SCENARIO 3 – OFF-SITE FIRE TU-5 HEVY LOAD DRY CLIMATE TIMBER UNDERSTORY – 3 HOUR BURN – SANTA ANA**

This scenario models fire behavior occurring in heavy fuel load riparian-waterway habitat vegetation with fuel moisture levels less than extinction parameters. The point of origin is approximately four hundred feet east of the northeast corner of the Project Site in a reestablished, unmanaged wetlands habitat vegetation.

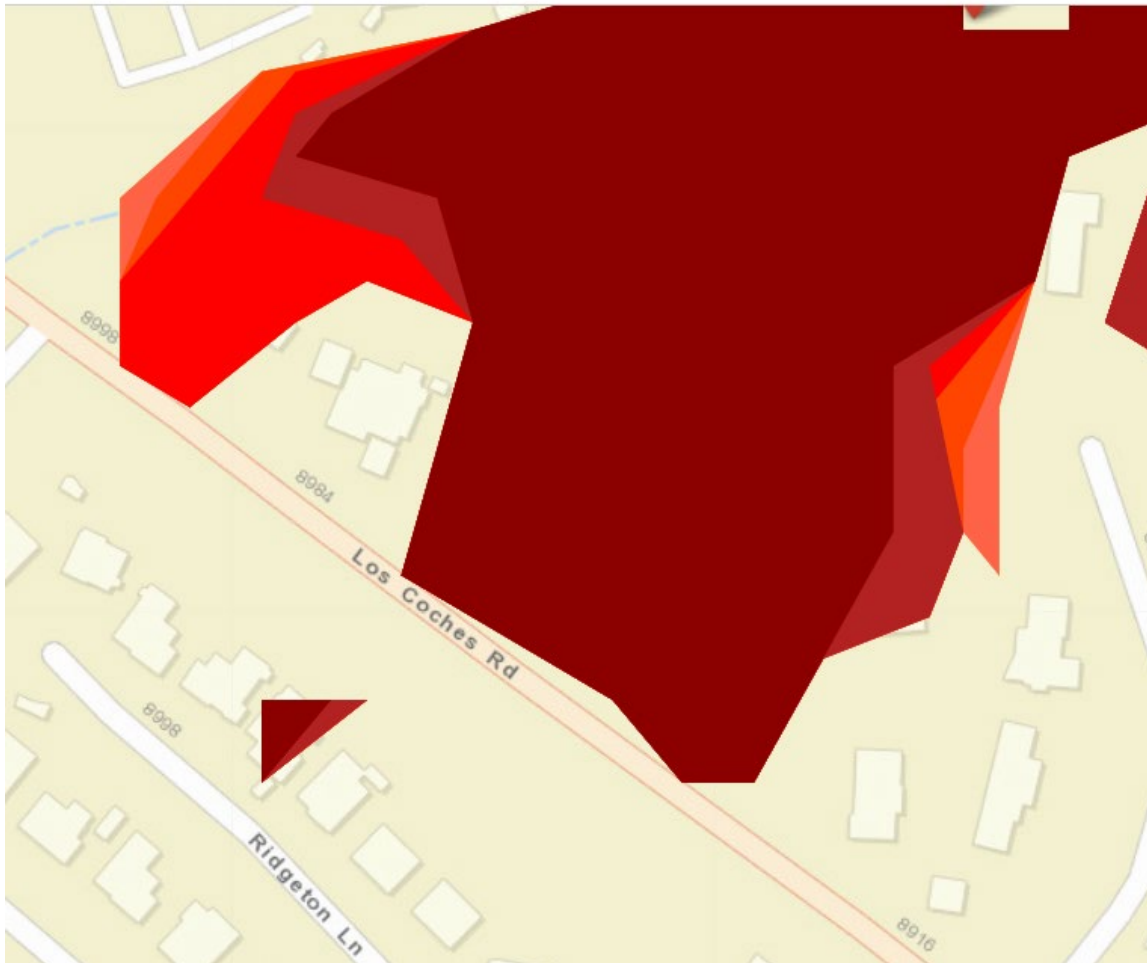


This fire modeling scenario represents the most extreme, worst-case fire moving across the landscape identified in the multiple modeling runs that were performed.

This scenario presents complex firefighting issues:

- The modeling outputs confirm the BEHAVE predictions of fire brand and ember shower deposits in downwind receptive vegetation that results in additional fires requiring fire suppression operations.
- Within the first hour of ignition, two additional downwind fires will occur from fire brand and ember shower deposits.

- The three individual branches of the fire will have rapid or extreme rates of spread.
- Once firebrands are deposited west of the Los Coches Road right-of-way corridor, two additional flame fronts moving across the landscape, in different directions, will develop.



***MODELED FIRE IMPACTS ON EXISTING WORKSHOP-ADU 60 MINUTES  
AFTER IGNITION***

The fire behavior exhibited at the Project Site corresponds to the results of Fire Modeling Scenario # 2. Discussion points from Fire Scenario # 2 also apply to the fire conditions identified in this modeling analysis.

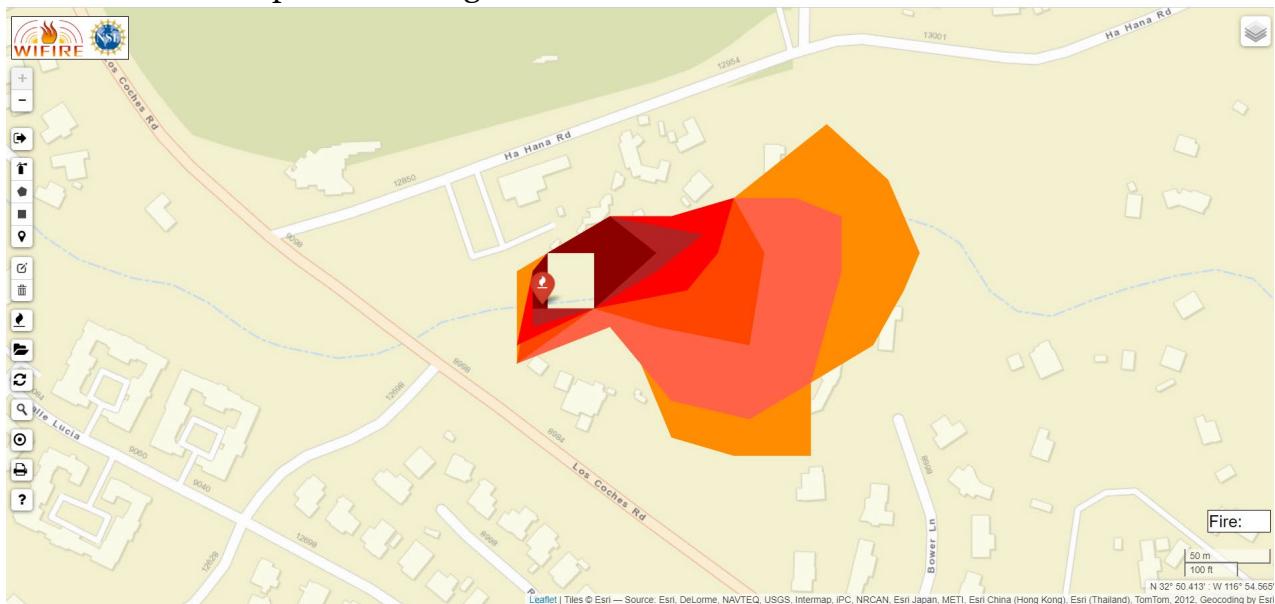
## **SCENARIO 4 – TYPICAL SUMMER AFTERNOON FIRE** **TU-1 DRY CLIMATE LOW LOAD TIMBER UNDERSTORY**

This scenario models fire behavior occurring in fuel modified riparian-waterway vegetation with fuel moisture levels above extinction parameters. The point of origin is near the center of the Los Coches Creek waterway corridor traversing Project Site. The flame front and fire behavior are influenced by typical late afternoon summer southwest winds, with rate of spread oriented in a southwest to northeast direction.

As indicated below, this fire will move away from the Project Site and its existing and proposed buildings. As indicated in Fire Scenarios 2 and 3, the isolated access to the waterway corridor requires the fire department to enter the Project Site to establish an anchor point of firefighting and initial structural protection operations.

The existing workshop/proposed ADU building is potentially exposed to fire effects from the heel of the fire, where a secondary flame front is progressing across the landscape against the predominant wind. The estimated arrival time for the back-burning heel flame front ranges between ninety (90) and 120 minutes without any fire department suppression action.

As with previous Scenarios, FIREMAP does **not** take into consideration fire department interventions or fuel modified defensible space that removes available fuel between the fuel bed and the exposed buildings.



**NOTE: MODELED FIRE IMPACT ON WORKSHOP-ADU IS 90 TO 120**  
**MINUTES AFTER IGNITION**

The Fuel Model NB-1 and FMZ-2 defensible space around the existing buildings provides firefighters with a safe operational area, including an effective heat separation distance from the flame front progressing to the northeast in the waterway corridor.

Conversion to Fuel Model NB-1 and FMZ-2 standards is indicative that flame fronts spreading the landscape will cease forward movement when the cleared-to-bare-soil boundary is crossed.

**2. 5. Climate:**

Like most of Southern California, San Diego County and the project site has a Mediterranean Climate typified by warm to hot dry summers and mild to cool winters. Summer temperatures range between the mid-nineties and low one hundred during the summer and fall months, with occasionally extraordinarily hot, dry spells similar to desert conditions occurring.

Rainfall averages nine to fifteen inches at the elevations where the project site is located.

Santa Ana winds are one of the most notable weather conditions in Southern California and San Diego County. Typically, these dry winds occur during the late summer and fall months (September through November) but may happen at any time during the year. With combined adiabatic (compression) heating (for every one thousand feet of elevation decline, temperature increases five degrees) and wind velocities exceeding forty miles per hour, Santa Ana winds severely exacerbate wildfires, especially during drought conditions.

The U.S. Forest Service Weather Information Management System provides information about weather patterns in San Diego County. Daily afternoon weather observations in San Diego County were analyzed for forty-four years (1961-2005) at selected fire stations.

San Diego County is divided into five climate zones between the coast and desert. Weather data between April and December are used to represent the annual fire season in San Diego County, with the most severe fire weather conditions in September and October.

The following table was derived by the analysis of San Diego County’s Interior Climate Zone where the project is located.

**Worst Case Weather and Burning Conditions, Interior Zone**

<b>Period</b>	<b>Temperature</b>	<b>Humidity</b>	<b>Wind Speed</b>	<b>Burning Index</b>
Summer	90-109	5-9%	18 mph	153
Santa Ana	90-109	5-9%	24 mph	168
Peak	90-109	5-9%	56 mph	-

### **III. PROJECT EXPOSURE TO WILDLAND FIRE MITIGATIONS**

#### **3.1 Emergency Services**

The Lakeside Fire Protection District is an “all risk” career agency providing 24-7-365 fire protection services to an area of approximately fifty square miles and 60,000 residents.

In 2017, the Department was evaluated by the Insurance Services Office and received a Fire Suppression rating of “2/2Y” on a “1 to 10” scale, with “1” being the most effective fire services and “10” the least effective. Class 2-Y indicates buildings outside of recognized response time zones, located more than five (5) miles from the closest fire station or having sub-standard water supply capabilities.

##### **3.1.1 – Fire Response Dispatch Patterns**

The Project Site is on land designated by the CAL-FIRE Fire and Resource Assessment Program as a Local Responsibility Area Very High Fire Severity Area. Local fire resources have primary responsibility for suppressing wildfire incidents.

##### **3.1.1 Heartland Fire Communications Authority – Lakeside FPD Response Patterns**

Lakeside is a member of the Heartland Automatic Aid Agreement and San Diego County Fire Mutual Aid Agreement. The Automatic Aid Agreement supplements Lakeside’s emergency resources from surrounding agencies on a closest engine-basis. Lakeside resources responding to wild land fires in State Responsibility Areas (approximately 60% of the District) are assisted by automatic responses from CAL-FIRE.

##### **3.1.1.1 Structure Fire Alarms**

A typical First-Alarm Structure Fire assignment for a fire in the Lakeside Fire District includes three engines, one automatic aid Truck company, one paramedic unit and one Duty Chief.

Second and Third Alarm assignments will double the First Alarm response for a Second Alarm and triple the First Alarm response for a Third Alarm.

##### **3.1.1.2 Vegetation Fire Responses**

Heartland Fire Communications Authority has three (3) vegetation fire response patterns:

- Low Wildland

- Medium Wildland
- High Wildland

A typical mid-summer afternoon vegetation fire response is dispatched at the Medium Wildland Response Pattern:

- Three (3) Type I Structure Engines
- Two (2) Type III Brush Engines
- One (1) medic unit
- One (1) Water Tender
- One (1) Battalion/Duty Chief

This vegetation fire response level reflects a standard Heartland Zone Medium Wildland Dispatch response. Resource levels may be increased with a concurrent CAL-FIRE fire apparatus and equipment response to incidents.

### **2.1.3.2 CAL-FIRE Vegetation Fire Mutual Aid Responses**

Low Wildland – Two (2) Type III engines, one (1) Battalion Chief

Medium Wildland – Four (4) Type III engines, one (1) BC, one (1) bulldozer, two (2) hand crews, two (2) helicopters, one (1) air attack, two (2) air tankers

High Wildland – six (6) Type III engines

## **3.2 Water Supply:**

Fire hydrants shall be located along fire access roadways as determined by the Fire Marshal to meet operational needs, at intersections, at cul-de-sacs, and at intervals pursuant to the County and Consolidated Fire Code. Required fire flow in the water main is 2500 gallons per minute.

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***Findings:*** *The project site is within the Service Area of the Lakeside Water District.*

***Finding:*** *There is an existing first hydrant installed approximately 305 feet northwest of the Project Site on the west side of the Los Cochés Road right-of-way corridor, at its intersection with Via Diego. . This hydrant is a residential appliance with one 2-1/2” and one 4” discharge ports.*



*Residential Hydrant 305 feet northwest of Project Site (12-12-22)*

### **3.3. Fire Access Roads**

#### **Los Coches Road**

Los Coches Road is a public paved street with a south-to-north configuration. It begins at Interstate 8 and traverses the community to its downtown area, where it terminates at Maine Avenue.

##### **3.3.1 Width:**

Los Coches Road is currently a two-lane public street (designed as a four-lane street) and has an improved curb-to-curb paved width of sixty-four (64) feet.

The *existing* private driveway accessing the Project Site has an initial width of sixteen (16') feet. The existing driveway will serve Parcels 1 and 2.

The future driveway accessing proposed Parcel # 3 will have an improved paved width of sixteen (16') feet.

---

***Finding:*** *The existing driveway has a paved concrete driving surface and will serve two parcels.*

***Finding:*** *The proposed future driveway serving Parcel 3 will have the following configuration when completed:*

- *A minimum improved paved width of sixteen (16') feet*
- *Provide a minimum 75,000 lb. weight bearing capacity, capable of withstanding the imposed weight of fire apparatus.*

**Finding:** The proposed driveways conform/will conform with San Diego County Consolidated Fire Code, as adopted by the Lakeside Fire Protection District, requirements for fire apparatus access road specifications.

---

### **3.3.2 Maximum Road Length**

For parcels zoned under one (1) acre, the maximum length of a dead-end access road is eight hundred feet.

---

**Finding:** The length of the primary (existing) Project access road is approximately seventy-five feet long from its intersection with Los Coches Road and the west wall of the existing dwelling. The length of the driveway complies with the maximum dead-end road length standard.

**Finding:** The anticipated length of the access road for Parcel 1 after the proposed lot split approximately 136 feet long from its intersection with the driveway for Parcel 2. The driveway intersection has dimensions and weight bearing capacity to serve as a fire department turnaround. The combined length of the driveway complies with the maximum dead-end road length standard.

**Finding:** The length of the secondary (future proposed) driveway serving Parcel # 3 will be determined in future development planning functions.

---

### **3.3.3 Vertical Clearance:**

A minimum vertical clearance of thirteen feet 6 inches must be maintained for the entire required width of fire access roads.

---

**Finding:** There are no existing trees over the existing primary driveway. Any proposed future trees planted along existing and proposed private-access roads (driveways) will require in-perpetuity trimming and limbing to provide the required Vertical Clearances along the fire apparatus access road right-of-way.

---

### **3.3.4 Grade:**

**Los Coches Road** – the gradient for Los Coches Road at the Project Site is 3.9 %.

**Project Access Road** – the gradient for this private road is relatively flat and level.

**NOTE:** Grades greater than 15% are not permitted without mitigation; grades greater than 20% are prohibited.

### **3.3.5 Surface:**

All fire apparatus access roads and public streets serving the Project Site will have an approved paved all-weather driving surface.

---

**Findings:** *The existing driveways are paved with concrete and in good condition, showing minimal signs of distress.*

### **Mitigations:**

*1. The Project shall provide a paved private driveway meeting all County of San Diego paving, width and weight bearing capabilities for any proposed future residential dwellings on all sub-divided parcels.*

*2. The road surface of the future driveways shall have all-weather travel capability with either a concrete or asphaltic concrete (asphalt/macadam) paved surface.*

---

### **3.3.6 Evacuation Routes from Project Site:**

Residents of the proposed project site have several evacuation options in the event of wildfires or other emergencies.

#### **3.3.6.1 Southern Route**

Residents of the Project Site will exit the project site from the access driveway intersection with Los Coches Road, where two directions of travel are provided.

Turning south (left) on Los Coches Road, residents can travel to the intersection of either Highway 8 Business or Interstate 8, where two additional directions of travel are provided. It is recommended that the evacuation route at either intersection be in a western direction towards the City of El Cajon, La Mesa and San Diego.



***Southern Evacuation Route, Looking South on Los Coches Road from Area of Project Site***

### **3.3.6.2 Northern Route**

Turning north (right) on Los Coches Road, residents will travel approximately one mile to the downtown community core area of Lakeside.



*Northern Evacuation Route on Los Coches Road (YELLOW arrow – Project Site)*

### **3.3.6.3 Designated Evacuation and Fire Safety Sites**

The following locations have been designated or previously used for Evacuation and Fire Safety Sites:

**Lakeside Community Center** - 9841 Vine Street, cross street Lakeshore Drive

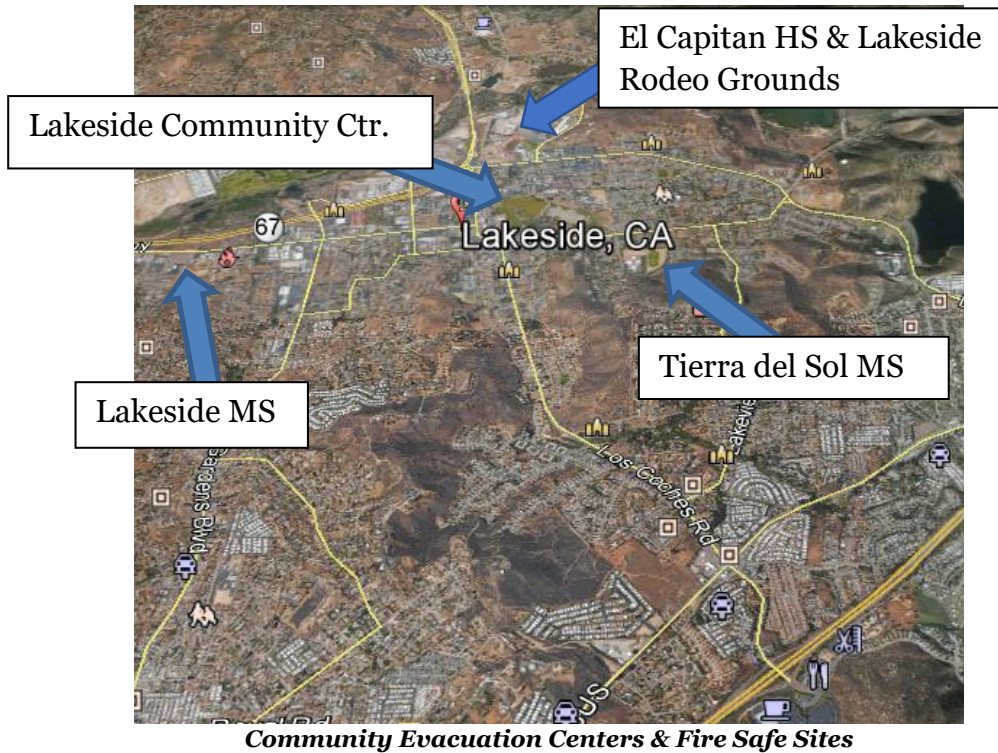
**Tierra del Sol Middle School** – 9611 Petite Lane, cross-street Julian Avenue

**NOTE:** *This site can be impacted by vegetation fires within the Lakeside Linkage Preserve and may not be available*

**El Capitan High School** – 10410 Ashwood Street, cross-street Maplevue Street

**Lakeside Rodeo Grounds** – 12584 Maplevue Street (adjacent to El Capitan High School), cross-street Vine Street

**Lakeside Middle School** – 11811 Woodside Avenue, cross-street Riverview Avenue



### **3.4. Setback from Property Lines:**

The minimum Fire Setback from any property line in designated High Fire Hazard Areas is thirty (30') feet.

Exceptions may be allowed for parcels smaller than one acre, upon review and approval from the Fire Authority Having Jurisdiction.

Top of Slope Setbacks for single story residences shall be a minimum of fifteen (15') feet with a maximum building height of twelve (12') feet. Two-story residences shall have a minimum Slope Setback of thirty (30') feet.

***Finding:*** *The existing one-story shop building/proposed future ADU has a minimum twenty-five-foot setback from the wetlands top-of-slope edge along its northern wall. The existing shop building/ADU complies with the San Diego County Consolidated Fire Code prescriptive requirements, as adopted and amended by the Lakeside Fire Protection District, for slope setback.*

***Finding:*** *The existing duplex residential building has a minimum 100-foot setback from the wetlands top-of-slope edge. The building complies with the San Diego County Consolidated Fire Code prescriptive requirements, as adopted and amended by the Lakeside Fire Protection District, for slope setback.*

***Finding:*** *The proposed single-family dwelling on Parcel 3 will be planned and developed at an undetermined time in the future. Setback distances from property lines will be determined when future development begins.*

---

### **3.5. Building Construction:**

All new structures and buildings shall comply with the Wildland-Urban-Interface ignition-resistive construction requirements specified in Chapter 7-A of the County of San Diego and California Building Codes.

***Finding:*** *The existing shop building/future ADU dwelling on Lot # 1 was permitted, approved, and built to the applicable California and County of San Diego Ignition Resistant Building Construction Standards in effect when constructed.*





***Detail of Ignition Resistant Construction Features-  
Hardy Board Cementitious Wall Siding; Dual-pane Windows; Enclosed Eaves***

***Finding:*** The existing duplex residential building and associated outbuildings on Parcel # 2 were not built to Ignition Resistant Construction Standards (not required in applicable Codes).

***Mitigation:*** The existing buildings may maintain their current construction features until such time that future improvements, room additions, or other new construction permits are requested for those particular and specific individual buildings. As a Condition of future permit approval, the existing structure(s) should make reasonable modifications that will bring it into compliance with current Ignition Resistant Construction Standards.

***Finding and Mitigations:*** The proposed future buildings on Parcel # 3 have not been constructed. All new structures and buildings shall comply with the Wildland-Urban-Interface ignition-resistive construction requirements specified in Chapter 7-A of the County of San Diego and California Building Codes.

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### **3.5.1 Residential Solar Systems**

The County of San Diego routinely requires new land development to provide a minimum of 10% of the roof surface area with permanently installed residential solar panel systems.

The following provides basic information about the impact of solar panel system installations and how they potentially impact Fire Department operations and safety.

### **3.5.1.1 System Identification Markings**

PV systems must be provided with identification marking systems. Marking provides emergency responders with appropriate warning and guidance about working around and isolating the solar electric system. Materials used for marking the system components must be weather resistant.

Locations or equipment to be identified:

- Main Service Disconnect
- Direct Current Conduit
- Raceways
- Enclosures
- Cable Assemblies
- Junction Boxes

Marking should be placed on all interior and exterior DC conduit, raceways, enclosures, and cable assemblies, every ten feet, at turns and above and/or below penetrations and all DC combiner and junction boxes.

### **3.5.1.2 Access, Pathways and Smoke Ventilation**

Access and spacing requirements should be observed to:

- Ensure access to the roof.
- Provide pathways to specific areas of the roof.
- Provide for smoke ventilation opportunities area.
- Provide emergency egress from the roof.

Roof access points are defined as areas:

- where ladders are not placed over window or door openings
- located at strong points of building construction.
- locations where there are no conflicts with overhead obstructions.

#### **Access/Pathways**

- a. Residential Buildings with hip roof layouts:

Modules should be located in a manner that provides one (1) three-foot (3') wide clear access pathway from the eave to the ridge on each roof slope where modules are located. The access pathway should be located at a structurally strong location on the building.

b. Residential Buildings with a single ridge:

Modules should be located in a manner that provides two (2) three-foot (3') wide access pathways from the eave to the ridge on each roof slope where modules are located.

c. Hips and Valleys:

Modules should be located no closer than one and one half (1.5) feet to a hip or a valley if modules are to be placed on both sides of a hip or valley.

If the modules are to be located on only one side of a hip or valley that is of equal length, then the modules may be placed directly adjacent to the hip or valley.

### **Smoke Ventilation**

The modules should be located no higher than three feet (3') below the ridge.

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## **3.6. Fire Protection Systems:**

All new habitable residential buildings, structures and attached garages shall have National Fire Protection Association Standard 13-D compliant automatic residential fire sprinklers installed per the San Diego County Code or San Diego County Consolidated Fire Code standards and requirements.

---

***Finding:*** *The existing shop building/proposed future ADU residence on Parcel # 1 has NFPA 13-D compliant automatic residential fire sprinklers installed.*

***Finding:*** *The existing duplex residential buildings on Parcel # 2 does not have residential sprinklers installed. Installation of residential fire sprinklers were not required when the building was originally constructed. Unless future major alterations are proposed, these buildings may continue existing as built without residential sprinklers under current prescriptive language of the California Fire and Residential Codes. until a tenant improvement or room addition permit is requested.*

***Finding and Mitigations:*** *The proposed future buildings on Parcel # 3 have not been built. As a Condition of building permit approval, the future buildings should install Code compliant NFPA 13-D automatic residential fire sprinkler installation requirements.*

### **3.7. Defensible Space:**

In general, the applicable California, San Diego County and local fire codes and ordinance regulating the imposition of defensible perimeters around buildings requires a minimum 100-foot Fuel Management Zone will be established and maintained around all buildings and structures with a footprint exceeding 250 square feet. These prescriptive regulations also include clauses indicating that no off-site clearing is required or authorized.

#### **3.7.1 California Fire Code Section 4907**

Section 4907 provides baseline and primary prescriptive requirements for defensible space around buildings on both State and Local Responsibility Areas.

Defensible space for buildings on High and Very High Fire Severity Areas on LRA lands are regulated by the following documents:

- Government Code sections 51175 through 51189 *and*
- Any local ordinance enacted by the Fire Authority having jurisdiction.

#### **3.7.2 California Government Code Section 51175-51189**

Section 51182 establishes the minimum acceptable defensible space prescriptive requirements for all political sub-divisions in California.

Section 51182 requires that anyone who owns, leases, controls, operates or maintains an occupied dwelling or structure in, on or adjacent to a mountainous area, forest-covered land, brush-covered land, grass-covered land, or lands covered with any flammable materials in a designated High or Very High Fire Severity Area shall provide defensible space and fuel modification practices at all times.

The prescriptive requirements for defensible space under Government Code section 51182 mandate the following minimum mitigations:

- One hundred feet of defensible space must be maintained on each side of buildings.
- Defensible space shall not extend beyond the property lines of the parcel.
- The amount of defensible space *shall* be determined according to the flammability of individual buildings.
- The amount of defensible space *shall* be determined by the type of vegetation present around the building.
- Vegetative fuels shall be maintained in a condition so that a wildfire burning under *average* weather conditions will be *unlikely* to ignite the building.
- These provisions do not apply to single, well-maintained, and pruned vegetation in condition that will not rapidly transmit fire from nearby vegetation to the building or from the building to the vegetative fuel bed.

- Fuel management intensity within the one hundred' perimeter around the building *can* vary, with the most intense mitigations provided in the first thirty (30') feet around the exterior walls of the building.
- Remove that portion of a tree that extends within ten feet of the outlet of a chimney or stovepipe.
- Maintain a tree, shrubs, or other plant adjacent to or overhanging a building free of dead or dying wood.
- Maintain the roof of a structure free of leaves, needles, or other vegetative materials.

While Government Code mandates the minimum mitigations noted in Section 51182, the following section (51183) *allows* a local agency to exempt certain buildings *and* modify the fuel modification practices instituted for that particular property:

*51183 (a) The local agency may exempt from the standards set forth in Section 51182 structures with exteriors constructed entirely of nonflammable materials or conditioned upon the contents and composition of the structure and may vary the requirements respecting the management of fuels surrounding the structures in those cases.*

### **3.7.3 San Diego County Consolidated Fire Code**

The County of San Diego, and participating independent fire protection districts, have adopted and amended the California Fire Code. Amendments to base line prescriptive regulations in the California Fire Code may be more restrictive, consistent with clearly identified local conditions and compliance with established statutory guidelines.

The following amendments impacting Defensible Space and fuel modification practices have been added and published in the latest edition (2020) of the San Diego County Consolidated Fire Code, also adopted by the Lakeside Fire Protection District.

#### **3.7.3.1 Section 4907.1 – General Fire Setbacks**

This amendment establishes prescriptive language indicating that buildings intended for human occupancy must be setback from parcel property lines or open space *easement* perimeter boundaries a distance of thirty (30') feet.

Three exceptions are attached to this section:

- The setback regulation does *not* apply to *existing and duly permitted* buildings.
- The setback regulation *may* be waived, or adjusted accordingly, if the wildfire hazards present on the project site/property are not significant.
- The setback regulation *may* be waived, or adjusted accordingly, if terrain, parcel size, or other constraints make establishing required setbacks infeasible.

### 3.7.3.2 Section 4907.1.2 – 100-foot Setbacks

This amendment provides regulatory provisions that require 100-foot fire setbacks from the perimeter boundaries of national forest lands, open space preserves, and state parks.

**Finding:** *The Project Site includes an open space easement within its boundaries.*

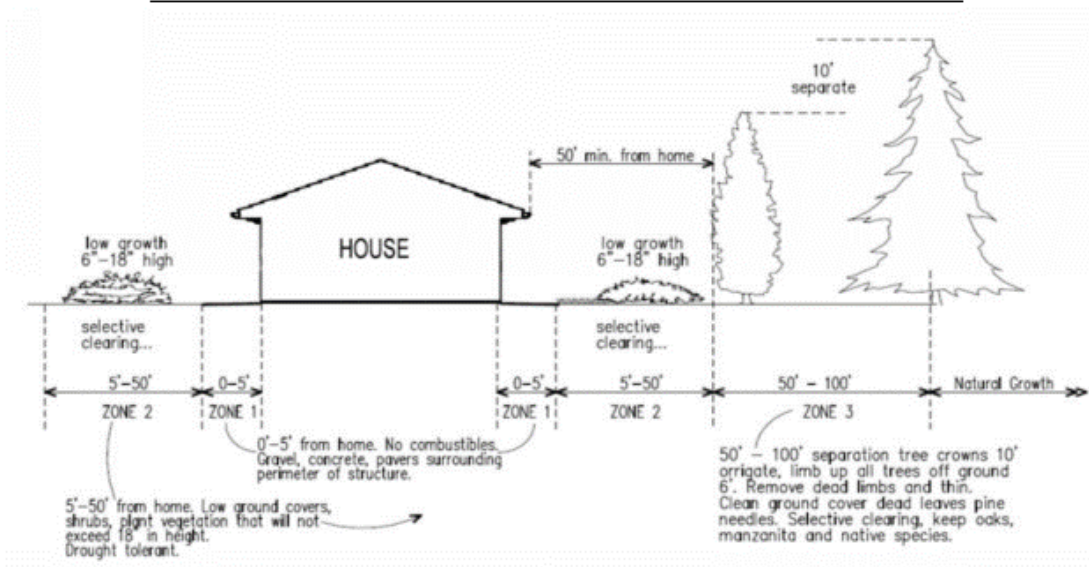
**Finding:** *The 100-foot setback for Open Space Preserves does not apply to the Project Site.*

**Finding:** *Open Space Easement setback requirements are established by Section 4907.1*

### 3.7.3.3 – 4907.2 Fuel Modification Zones

This amendment establishes a requirement for providing fuel modification zones around all buildings designed for human habitation or sheltering farm animals.

**FIGURE 4907.2**  
**MEASUREMENTS OF FUEL MODIFICATION DISTANCE**



As amended, the following fuel modification standards are established:

- For buildings greater than one hundred feet from property lines, the responsible party shall provide defensible space with a minimum width of 100 feet:
  - The first fifty (50') of defensible space around a building shall be cleared of all combustible vegetation; vegetation will be replaced with fire resistant plants from an approved plant list.

- The second fifty (50') feet of defensible space (51 to 100 feet from exterior building walls) shall have 50% of the vegetative fuel bed removed; all dead and dying materials removed; and 50% of the remaining vegetative material in plant canopies removed.
  - For buildings less than one hundred feet from a property line, the responsible party shall provide required defensible space mitigations *to the extent possible*
    - Defensible space is to be provided according to the appropriate zone width or to the property line, whichever is closer.
  - Biological Open Space Easements – new buildings cannot be built if the required defensible space depth will encroach into the protected lands.
  - Limited Building Zones – the Limited Building Zone perimeter is intended to prevent building fires from extending from the structure into the vegetative fuel beds surrounding the building under consideration.
    - According to the San Diego County *Guidelines for Determining Significance, Wildland Fire and Fire Protection* manual, a LBZ providing a protective buffer for protected biological lands **may be combined with a standard Fuel Modification Zone defensible space** for the building under consideration (Section 1.2, page 3).
- 

### **3.6.3.3.1 Defensible Space, Existing Parcel**

The existing single parcel, as developed and currently maintained, provides the following minimum defensible space depths with Fuel Modification Zone 1 and 2 mitigations:

#### **Existing Workshop/Proposed ADU:**

- Northwest corner of building to north property line, ninety\* angle - 108 feet
- Northwest corner to north property line, thirty\* angle – 141 feet
- Southwest corner to Los Coches Road shoulder – 51 feet

#### **Existing Garage:**

- Northeast Corner to “triangle” property line point, N/E side of parcel – 403 feet
- North wall to north P/L, ninety\* angle – 162 feet
- Southwest corner to Los Coches Road shoulder – 70 feet
- Southwest corner to Los Coches Road center line – 107 feet

#### **Existing Duplex Dwelling**

- East wall to “triangle” P/L point, N/E side of parcel – 383 feet
- South wall to off-site unmanaged hillside – 96 feet
- West wall to Los Coches Road shoulder – 46 feet
- West Wall to Los Coches Road center line – 77 feet
- Northwest corner to north PL, ninety\* angle – 192 feet

***Finding:*** As currently developed and maintained, and without considering potential constraints on fuel modifications in the Los Coches Creek wetlands biological Open Space easement, the existing parcel provides effective and Code compliant defensible space that mitigates the threat of rapid or sustained fire front propagation across the landscape.

### **3.6.3.3.2 Defensible Space, Proposed Parcels, Post Lot Split Approval**

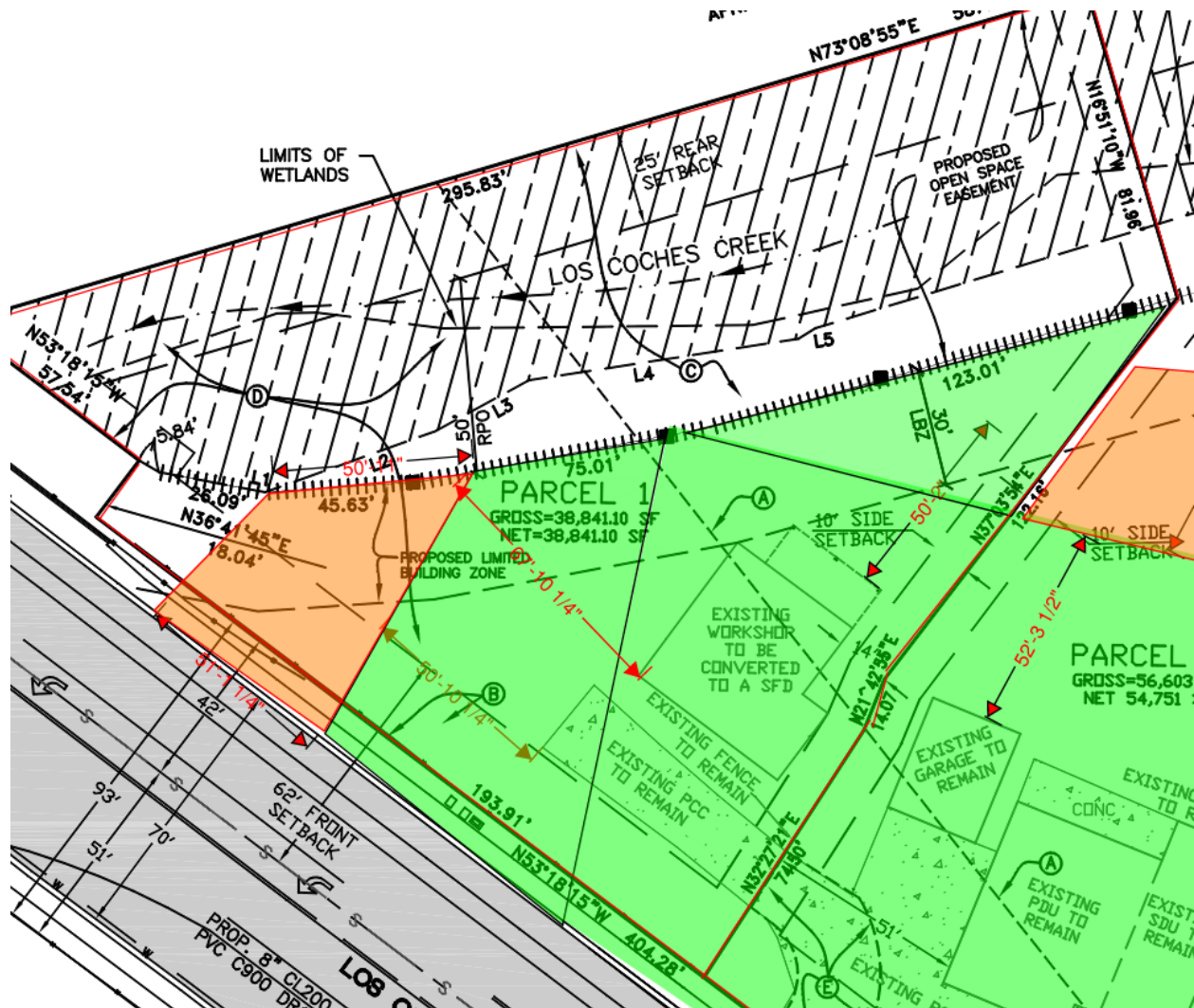
#### **Parcel 1**

Parcel 1 is located on the west side of the existing parcel and abuts the Los Coches Road right-of-way corridor and the Los Coches Creek wetlands.

The existing workshop on Parcel 1 will remain, with the intent of converting it from a Group U occupancy to a Group R ADU residential occupancy.

The established fuel modification zones will be maintained with the following modifications:

- The FMZ-1 perimeter will have the following configuration:
  - South side of the Parcel – will extend from the Los Coches Road right-of-way corridor to the southeast corner of the RPO-Open Space Easement boundary line.
  - From the southeast corner of Parcel 1, extend in a westerly direction along the RPO-Open Space Easement Perimeter boundary to a point approximately sixty-seven (67') feet north of the northwest corner of the existing workshop.
  - The northern perimeter will continue on the north-to-west line and return to the Los Coches Road right-of-way corridor
- The FMZ-2 perimeter will have the following configuration:
  - The south perimeter of FMZ-2 will begin at the Los Coches Road right-of-way corridor and extend in a south to northeast direction to the FMZ-1 western boundary.
  - The west perimeter line will extend in a south-to-north configuration for a distance of fifty (50') feet.
  - At the northwest corner of FMZ-2, the perimeter line will extend in a west-to-east aspect to the southern perimeter line of the RPO-Open Space Easement boundary.

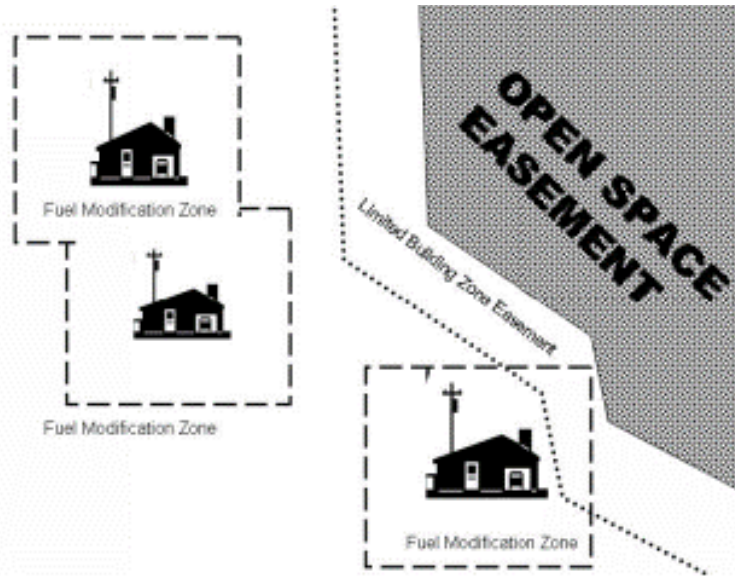


**Parcel 1 2025 Proposed Defensible Space**

The lands north and west of the existing workshop/ADU building and proposed SFD, which follows the edge of the open space easement, have been designated as a Limited Building Zone (LBZ), with a minimum depth of thirty (30') feet.

A Limited Building Zone provides a landscape barrier between a designated Biological Open Space Easements or Preserves. Generally, there are no building encroachments inside of LBZ perimeters.

Unlike fuel modification defensible spaces, which prevent fires spreading across the landscape from reaching and igniting exposed buildings, the prescriptive intent of a LBZ is to mitigate and prevent fires originating in buildings from spreading to the sensitive or protected vegetation in an Open Space habitat. However, the County of San Diego has determined that, *and allows*, required defensible space perimeters to share designated LBZ perimeters.



The northern LBZ perimeter abutting the biological open space easement has the following features:

- A prominent and substantial wire and post fence line, in a west to east configuration, runs along the LBZ and RPO open space easement boundaries, on both sides of the waterway.
- The fence line was erected as a means of clearly identifying the perimeter of the dedicated open space habitat.
- The fence lines were erected with the intent of controlling pedestrian access into open space lands.
- There is a prominent shear topographical drop-off from the Parcel 1 plateau into the wetlands habitat.
- The near vertical hillside has a height ranging between ten (10') and fifteen (15') feet at the edge of the Parcel 1 plateau.
- Minimal plant life is present on the exposed mineral soil surface of the topographical drop-off.
- Most of the LBZ perimeter adjacent to the existing workshop/proposed ADU building has been established as required FMZ 1 and 2 defensible space and is cleared to mineral soil.
- The height of any light fuels vegetation remaining in the LBZ perimeter is maintained between one-half and one inch above the ground surface.
- Trees along the LBZ perimeter have been trimmed up, removing ladder fuels that readily transmit fire from the ground into the tree canopies.
- The defensible space perimeter is well-maintained and will limit or stop flame front movement across the Parcel 1 plateau space.

## **Parcel 1 Topographical Drop-Off Discussion**

It has been suggested that a concrete-masonry unit (CMU) block wall, for use as a flame and heat deflection barrier, be placed between the existing and proposed buildings. The use of CMU block heat-flame deflection walls will be briefly discussed here.

Several jurisdictions in California (i.e., San Diego City, City of Encinitas, Riverside County, San Bernardino County, and L.A. County) allow using concrete block walls for radiant and convective heat protection when fuel modification zones are not possible because of site constraints.

In these cases, the walls are placed between the building and vegetation as an alternate means of compliance mitigation tool to protect Project buildings from unusual fire exposure problems when other mitigations are inadequate.

These walls are either solid block walls or tempered glass view panels incorporated into block walls, as shown below. When installed, tempered glass view walls function as fire resistive rated panels.

Concrete Masonry Unit block walls are a non-combustible construction material which have excellent fire resistive properties.

The fire resistive characteristics of concrete block walls are well established by testing and are a function of the types of aggregates used to manufacture the blocks and their thickness. CMU blocks are manufactured with a blend of aggregate types; this condition is discussed by the ICC and the International Building Code by referencing Standard TMS-216.

### **FIRE RESISTIVE RATING OF 60% GRAVEL 40% PUMICE AGGREGATE BLEND CMU WALLS**

Nominal Block Width (in.)	Block Cell Treatment	
	Partial Fill Cells	Solid Fill Cells (1)
4	1 hour	1 hour
6	1 hour	4 hours (2)
8	2 hours	4 hours
10	3 hours	4 hours
12	4 hours (2)	4 hours

(1) – Cells can be filled with grout, loose fill insulation, or aggregate meeting ASTM C-33 or C-331 requirements

(2) – If the aggregate blend is changed to 70-30 to produce a denser architectural unit, the fire rating is decreased to three hours.

At minimum, concrete block walls used to protect structures from radiant and convective heat and direct flame contact have a one-hour fire resistive rating.

When the flame front moving across the landscape encounters the non-combustible wall, a drastic reduction of fuel carrying fire over the ground occurs. The sudden lack of available fuel causes an immediate reduction in rate of spread and heat production; active and aggressive fire progression stops, and the heat release will be deflected and expended into the atmosphere.

These walls are extremely effective when used at the top of slopes where light and moderate fuels are present. The extreme fire behavior produced by high winds also bends the flame front over, so it travels more parallel to the ground. The stronger the wind velocity, the more the flame angle will be and the more effective the radiant/convective heat wall becomes.

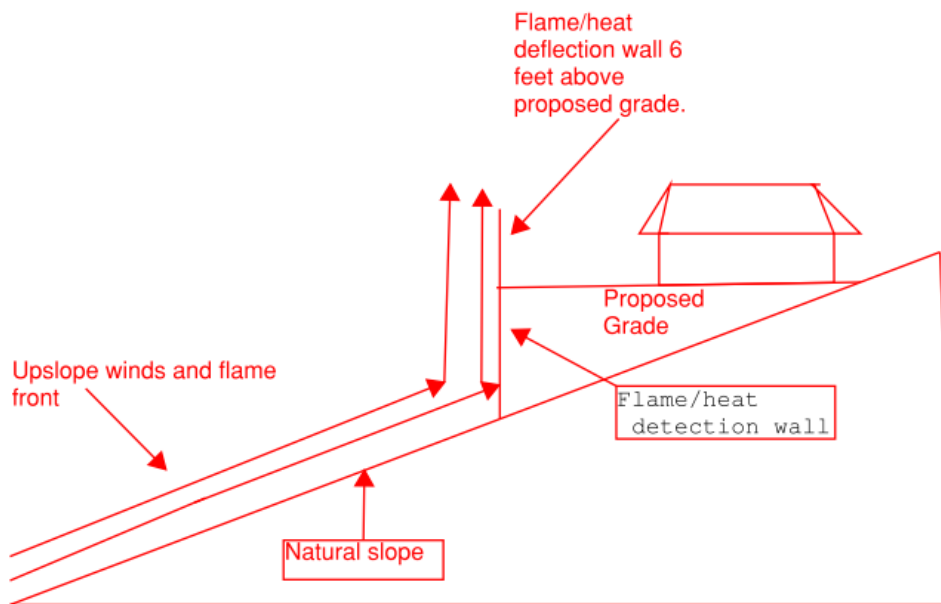
There are no inherent differences in size, exposure fire resistiveness or configuration in the physical construction of a CMU block wall used as a flame/heat deflection wall or for a site and soil retaining wall.

The retaining walls, and the land and slopes on the Project Site, are subjected to hours-long solar radiation heating. Upper slope and vertical surfaces will receive more radiant heating than areas at the base of the slope, thus increasing the ground and fuel temperatures in the upper regions. The differential in temperatures between upper and lower levels of slopes induces a convective upslope wind pattern, with the atmosphere naturally seeking equilibrium between disparate air pressures.

Flame fronts influenced by normal (afternoon southwest wind) wind patterns and Santa Ana wind events (northeast winds) will move across the slope until encountering the retaining walls. Updrafts from slope convective heating, and a drastic reduction in available fuels, will create a vertical wall of air and wind pressure at the retaining walls that will interrupt normal cross-slope wind influence on fire spread. The upslope winds will tend to push the fire back on itself at the edge of the retaining walls. Up- and cross-slope winds and the flame front will follow a travel path of least resistance and subsequently move back and away from the vertical walls and into other vegetative fuels adjacent to the Project site.



***Illustrative Example of Upslope Winds on Cross-Slope Burning Patterns***



***Side View Profile Showing Influence of Proposed Flame-Heat Deflection Walls on Up-slope Wind and Fire Behavior***

NFPA 1144 recommends the use of non-combustible walls and barriers for deflecting radiant heat and windblown embers if defensible space has less than a thirty (30') foot width around exposed buildings. Thus, non-combustible walls are used when conditions do not provide sufficient space between buildings and undisturbed native vegetation or slopes.

San Diego County FAHJs have allowed the use of Heat/Flame Deflection CMU block walls as mitigation for *unusual* fire behavior conditions or Project site constraints that do not allow compliance with the prescriptive depth of defensible space.

These FAHJs include the City of San Diego, City of Encinitas, and San Miguel Fire Protection District.

### **Use of the Topographic Drop-off as a Performance-Based Alternative for a CMU Block Heat-Flame Deflection Wall**

Typically, a CMU block retaining/heat-flame deflection wall acts as a substitute for an area of defensible space between the building and the unmanaged off-site vegetative fuel beds.

A CMU flame-heat deflection wall diverts radiant and convective heat energy produced by burning vegetation away from the exposed single family residential buildings and into the atmosphere, where it is dispersed and rapidly cools.

The shear topographical wall at the north side of the Project Site plateau has heights ranging between ten and fifteen feet above the fuel beds posing a fire threat to the existing and proposed buildings on Parcels 1 and 2. The shear wall does not support growth of vegetation and is essentially devoid of plant life for its length along the edge of Parcels 1 and 2. The lands between the topographical drop-off and the existing and proposed buildings complies with FMZ 1 and 2 defensible space requirements, with the area cleared to bare mineral soil.

Analysis of fire behavior (***see discussion points on following pages of this Section***) indicates the following:

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- Vegetation burning below the plateau will not produce flame heights that will rise above or overlap the edge of the drop-off.
- Vegetation burning below the plateau will not produce sufficient heat to readily ignite buildings erected on the plateau above the Open Space Easement. The burning vegetation, given its fuel modification mitigations, will not produce flames lengths, rates of spread or sufficient heat to readily ignite that will rise above or overlap the edge of the drop-off.

- Existing and future buildings have sufficient setbacks and separation to prevent the likelihood of ignition from radiant and convective heat exposure or from direct flame contact from fuels burning below the plateau and the vertical separation provided for by the topographical drop-off feature.
- 

**Finding:** *The combination of analyzed and calculated fire behavior characteristics and the non-vegetated surface of the topographical drop-off will effectively mitigate the effects of fires burning below the development plateau and prevent the ignition of buildings situated above, and setback from, the vegetation in the open space easement.*

**Finding:** *The shear wall of the topographical drop-off produces the same physical diversion of radiant and convective heat energy vertically into the atmosphere for dispersion and cooling as the installation of a CMU block wall flame and heat deflection wall will.*

**Finding:** *The characteristics and fire protection benefits provided by the shear wall of the topographic drop-off provides a performance-based design alternative means and methods of compliance equivalent to those provided by a CMU block flame-heat deflection/retaining wall.*

**Finding:** *Outside the City of San Diego, CMU block flame-heat deflection walls are not prescriptively required but are a recommended and alternate means of providing wildfire protection mitigations for parcels and buildings with physical, topographic, and other constraints.*

**Finding:** *Therefore, unless reasonably required by the Lakeside Fire Protection District, and to prevent unnecessary impacts on the biological open space easement lands, it is recommended that a CMU block flame and heat deflection wall should not be required to be installed on the proposed parcels.*

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About ten years ago, the RPO biological open space easement was cleared of highly combustible vegetative fuel. The open space lands have been maintained in a pruned and thinned condition, consistent with FMZ 2 and 3 defensible space, following the requirements of a San Diego County Arrundo mitigation task force directive.

The RPO wetlands biological open space easement defensible space has the following features:

- Trees within the RPO easement have been limbed up to remove ladder fuels that readily transmit fire from the ground into tree crowns.
- The height of any light fuel vegetation in the LBZ perimeter is maintained between one-half and one inch above the ground surface.

- There are numerous individual and widely dispersed wetlands habitat plants along the stream bed corridor.
- Except for extreme drought conditions, water constantly flows through the stream bed corridor, providing sufficient moisture to keep plant fuel moisture above their extinction level, and preventing or limiting ignition from external flame sources.
- The depth of the RPO defensible space is up to 108 feet from exposed buildings on the existing parcel.
  - Because the property owner has annually maintained the defensible space in the stream bed corridor, under a government issued directive, continued maintenance of the defensible space is permitted under the prescriptive language of the San Diego County-Wildlife Agency Fire Protection Memorandum of Understanding.

BEHAVE fire modeling indicates that the vegetation on the LBZ and RPO biological open space easement lands will not ignite, burn, or produce flame fronts that will carry across the landscape when fuel moistures are maintained above the individual plant species' extinction levels.

BEHAVE fire modeling indicates that vegetation at or below fuel moistures consistent with extinction levels will, on the other hand, may ignite and carry fire across the landscape, particularly under worst-case fire weather and behavior conditions:

<b>Fuel Model</b>	<b>Rate of Spread</b>	<b>Flame Length</b>	<b>Spotting</b>	<b>Safe Separation</b>
GR-1	47 ft/minute	3.6 feet	0.1 mile/100%	14 feet
GR-3	192 ft/min	14 feet	0.4 mile/100%	56 feet
TU-1	15.1 ft/min.	4.4 feet	0.2 mile/100%	18 feet
TU-5	40 to 63 ft/minute	15 to 19 feet	0.8 miles/100%	62 feet
SH-2	16 feet/minute	7.3 feet	0.2 miles/100%	29 feet

Fuel models GR-1, TU-1 and SH-2 are typically found in and along the wetlands corridor.

For GR-1, TU-1 and SH-2 fuel models, the safe separation distance for buildings exposed to a resulting flame front in the vegetation ranges from fourteen (14') to twenty-nine (29') feet.

For GR-1, TU-1 and SH-2 vegetation, the flame length on the fuel types are as follows:

- GR-1 – 3.6 feet
- TU-1 – 4.4 feet

- SH-2 – 7.3 feet

Previous editions of the San Diego County Consolidated Fire Code had prescriptive defensible space mitigations allowing the doubling of flame lengths as a parameter for establishing effective fuel modification zones when site constraints do not allow providing a fully compliant width.

From a performance-based alternate means of compliance perspective, based on this prescriptive allowance, a building separation of 7.2 to 14.6 from the edge of a combustible vegetation fuel bed, using FMZ 1 and 2 defensible space standards, provides an effective barrier against direct flame contact with the exterior walls of a building on the proposed parcels.

The flame height for the various fuels on both on- and off-site can be determined using the formula:  $L = 0.23 (Q) - 1,02 (d)$ , where:

- L = flame height above the ground
- Q = heat release rate in kilowatts
- d = fire diameter (10 meters, 33 feet)

Vegetation with fuel moisture levels above species extinction points do not ignite and burn. For purposes of determining flame height of the mixed fuels on the project site, worst-case Santa Ana/northeast wind event vegetation, weather and burning characteristics were applied for analysis and calculation.

Fuel Model	HRRUPA*, BTU/sf	HRUPPA – kW/sf	Flame Height
GR-1	114	120	8.6 feet
GR-3	551	581	7.3 feet
TU-1	59	62	9 feet
TU-5	421	444	7.5 feet

\*HRRUPA – Heat Release Rate Unit Per Area

The height of the sheer embankment on the south side of Los Cochés Creek wetlands habitat ranges between ten (10’) and sixteen (16’) feet tall.

The maximum flame height for *unmanaged* fuels burning inside the biological space under worst case Santa Ana/northeast wind event fires is estimated at a maximum of nine (9’) feet.

The calculated flame height dimensions, therefore, indicate that fires burning in *unmanaged* vegetation at the bottom of the hillside are unlikely to lap over the lowest point of the Parcel 1 plateau to expose receptive fuels to radiant and convective heat energy or direct flame contact from a fire front.

Fuel models GR-3 and TU-5 located off-site and east of the Project Site have returned to an unmanaged and overgrown state. The separation distance between the eastern

property line of proposed Parcel 1 to the northeast corner of the existing parcel/parcel 2 is approximately 325 feet.

***Building Radiant Heat Exposure to Biological Open Space Easement Vegetation Fires***

Unmanaged Fuel Model TU-1 wetlands vegetation will produce a heat release rate of 62 kW/square feet of biomass.

Using the formula:

$$q = X_r Q / 4 \pi R_o^2 \text{ where:}$$

q = Incident radiation on a wall surface (heat flux, kW/m<sup>2</sup>)

X<sub>r</sub> = radiation fraction (0.1 to 0.6)

R<sub>o</sub><sup>2</sup> = distance from target wall surface

The amount of radiant heat energy striking the surface, and leading to ignition, can be determined.

The heat flux for a separation distance of thirty’ (9.144 meters) from TU-5 Vegetation is determined as:

$$q = X_r Q / 4 \pi R_o^2$$

$$q = 0.5 (62) / 4 (3.14) (7.62 \text{ meters})^2$$

$$q = 0.5 (3365) / (12.56) (58.0644)$$

$$q = 31 / 158$$

$$q = 0.19 \text{ kW/m}^2$$

Referring to *Fire Dynamics* Figure 2-5 *Damage Caused by Radiation* below, a fire crossing into the Project Site from the adjacent properties, and fires originating on the Project Site, will **not** produce sufficient radiant heat to cause significant damage to proposed and new dwellings.

<b>Damage Description</b>	<b>Heat Flux – kW/m<sup>2</sup></b>
Skin burns	4.7 to 5.0
Pain threshold	1.5
Pain in one minute	2.1

Plastic melts	12.0
Cable insulation degrades	18.0 to 20.0
<b><i>Piloted ignition occurs:</i></b>	
<b>Wood</b>	<b>14.6</b>
<b>Painted Wood</b>	<b>16.7</b>
<b>Wood spontaneously ignites</b>	<b>33.5</b>

***Finding:*** *The radiant heat energy released by the Fuel Model TU-1 vegetation in the Biological Open Space Easement does **not** produce sufficient heat flux to ignite any exposed wooden walls or wooden construction features of the buildings bordering the Biological Open Space Easement.*

### ***Biological Open Space Vegetation Exposure to Building Fire Effects***

To evaluate the effectiveness of preventing a building fire spreading to unmanaged vegetation in the Biological Open Space Easement from proposed Project buildings, two fire scenarios were evaluated.

#### **Interior Room and Contents Fire, Sofa**

This scenario has a fire involving a sofa placed in a room with an open window facing the Open Space Easement. The fire scenario limits the heat release rate to 2-MW.

The estimated flame length of a 2-MW sofa fire can be estimated using the formula:

$$L = 0.23 (Q^{2/5}) - 1.02 (D)$$

Where:

L = flame length (m)

Q = heat release rate, kW

D = diameter of the fire (meters)

For the fire scenario, a fire diameter of four (4m) meters was used.

$$L = 0.23 (Q^{2/5}) - 1.02 (D)$$

$$L = 0.23 (2000^{2/5}) - 1.02 (4)$$

$$L = 0.23 (20.91279104) - (4.08)$$

$$L = 4.809941942 - 4.08$$

$$L = 2.3948226444 \text{ feet} / 0.729941942 \text{ meters}$$

**Conclusion:** *Flames extending out of windows facing the Biological Open Space have an estimated flame height and length of approximately 2.4 feet and will **not** extend into the protected vegetation.*

### **Interior Room and Contents Fire, Full Involvement**

This scenario incorporates a fire involving a fully involved bedroom, with a window facing the Open Space Easement. This fire scenario has a heat release rate of 5-MW from all its contents.

The estimated flame length of a 5 MW bedroom fire can be estimated using the same formula as above:

$$L = 0.23 (Q^{2/5}) - 1.02 (D)$$

$$L = 0.23 (5000^{2/5}) - 1.02 (4m)$$

$$L = 0.23 (30.17088168) - 4.08$$

$$L = 6.939302787 - 4.08$$

$$L = 9.3809146555 \text{ feet} / 2.859302787 \text{ meters}$$

**Conclusion:** *Flames extending out of windows facing the Biological Open Space have an estimated flame height and length of approximately 9.4 feet and will not extend to the protected vegetation.*

**Finding:** *Fires originating in buildings adjacent to the Biological Open Space Easement will not readily transmit fire to the protected vegetation in the Biological Open Space lands*

### **Discussion:**

The purpose of each building's defensible space is two-fold:

- To prevent building fires from extending from the structure into unmanaged vegetation in the dissolved Biological Open Space Easement.
- To prevent fires from unmanaged fuels in the Open Space Easement from spreading to buildings

**Finding:** *If a building fire extends from the building and its contents into unmanaged vegetation, there has been an abject failure of the required fire-resistant building construction and fire protection systems installed in that structure:*

1. *All new residential buildings are required to install NFPA 13-D automatic residential sprinkler systems.*
2. *Residential fire sprinkler systems are designed to provide life safety mitigations for the building occupants, giving sufficient time to escape from the building before flashover occurs.*
3. *Residential fire sprinkler systems are designed for a minimum operation time of ten (10) minutes after activation.*
4. *For fire protection purposes, most Fire Protection Engineers, following scientific calculations, NFPA standards, reference books, and smoke control system literature, consider fires controlled when a fire sprinkler system activates. With fire sprinkler activation, Heat Release Rate from the combustion process moderates and stops and does not extend to unburned fuels in the fire environment.*
5. *California Building Code Chapter 7-A, to which all new residential structures must comply, indicates that exterior walls shall be of one of the following materials:*
  - *Non-combustible materials*
  - *Ignition resistant materials*
  - *Wall assemblies with the capability of resisting a minimum of 10-minute direct flame contact exposure.*
6. *California Building Code Chapter 7-A indicates that all windows facing a wildfire exposure must have one or more of the following characteristics:*
  - *Have multiple layers of glazing, with a minimum of layer of tempered glass.*
  - *Glass block units*
  - *Have a FR rating of 20 minutes.*

**Finding:** *California Building Code Table 602, Fire Resistance Rating Requirements for Exterior Walls Based on Fire Separation Distance, indicates that a Type V-B wood frame residential building, with a separation distance of ten (10') to thirty (30') feet from a fire source is not required to have a fire resistance rating for its exterior walls.*

**Conclusion:** *The built-in Ignition Resistant Construction standards mandated by California Building Code Chapter 7-A provide sufficient protection from radiant, convection and direct flame contact heat exposures and will prevent direct ignition from exterior exposure to wildfires.*

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## **FINDINGS AND RECOMMENDED MITIGATIONS FOR PARCEL 1**

### **Findings**

The following Findings have been identified:

1. The entire existing, non-divided Parcel has previously established, long-term Code compliant defensible space practices implemented over its entire landscape, including areas inside the existing and proposed biological open space easement.
2. The defensible space provided on the existing parcel is consistent with FMZ-1 prescriptive requirements:
3. FMZ-1 and FMZ-2 defensible space inside the biological open space easement was established, and has been consistently maintained, for approximately ten (10) years, following an Arrundo infestation mitigation order.
4. Defensible space in the water way has dramatically reduced the fuel load of combustible vegetation in the creek bed.
5. There is a constant flow of water in the wetlands corridor, keeping fuel moisture content of plant life above extinction levels.
6. Fire modeling indicates that plant life with fuel moisture content above extinction level will not ignite, burn, or carry fire across the landscape.
7. Fire modeling indicates that plant life at extinction levels will burn with the following characteristics:
  - Flame lengths of 3.6 to 7.3 feet
  - Flame heights of 7.3 to 9 feet tall
  - Rate of Spread between 15 and 47 feet/minute.
  - Safe Separation Distances of 14 and 18 feet
8. The height of the drop-off between the developed parcel and the biological open space ranges between ten (10') and sixteen (16') feet.
  - a. Calculated flame heights are 7.3 to 9 feet tall.
  - b. Calculated flame lengths are 3.6 to 7.3 feet long.
  - c. Calculated flame heights will not crest or overlap the upper ledge of the drop-off.
  - d. The sheer, cleared-to-bare mineral soil wall of the drop-off will function as a flame/heat deflection wall. This feature will redirect radiant and convective heat energy and active flames directly upward into the atmosphere instead of laterally across the landscape toward exposed existing and proposed buildings.
9. Worst-case scenario fire modeling indicates that a safe separation distance of 14 to 18 feet of defensible space will be sufficient to prevent ignition of existing and proposed buildings from a flame front originating in the wetlands open space easement.

- The existing workshop/proposed ADU building has a minimum separation distance of thirty (30') feet from the combustible vegetation that might be present in the creek bed corridor.
  - The thirty-foot separation distance represents a 166 to 215% increase in distance required to protect buildings from ignition sources.
10. As a performance-based alternative for constrained parcels and roadside modification zones, previous editions of the San Diego Consolidated Fire Code, by prescriptive language, allowed providing defensible spaced based on doubling of the modeled flame lengths for the vegetation fuel models present on the landscape.
- Modeling of the vegetation in the stream bed corridor have projected flame lengths of 3.6 to 7.3 feet.
  - Doubling of projected flame lengths indicates that defensible space at the top of the topographical drop-off/LBZ perimeter will provide effective mitigation with fuel modification zones as narrow as 7.2 to 14.6 feet.
  - The landscape on the plateau south of the creek bed has been cleared to bare mineral soil, with minimum depths of twenty-five (25') to thirty (30') feet, meeting FMZ-2 mitigation criteria.
  - Using a performance-based separation distance of 14.6 feet, the existing FMZ on the plateau provides 205% of the defensible space required to provide mitigation using the doubling of flame length criteria.
  - The performance-based FMZ depth provided for the existing and future buildings on the Parcel 1 plateau do not take in account the additional FMZ-2 and FMZ-3 defensible space provided by the Arrundo mitigation task force and maintained by the property owner.
11. Fire modeling indicates that the existing workshop/proposed ADU building could potentially be impacted by a flame front moving across the landscape, under worse-case Santa Ana-northeast wind event conditions, in times ranging from 30 to 120 minutes after ignition of the fire.
- The modeling only recognizes ground cover fuels consistent with those fuels typical of the area in an *unmanaged* fire load condition.
  - Fire models do not recognize fuel modified landscapes or defensible space mitigations that protect exposed buildings and structures.
  - Fire models do not recognize the impacts of direct firefighting interventions on the flame front or structure protection operations.
12. The fire model outputs do, however, indicate the effectiveness of existing defensible space perimeters around the primary buildings on the parcel.
- The fire front moving through unmanaged fuels along the edges of the building pad envelopes diverts around and away from buildings, following the fuel modification zone boundaries.
13. The fire model outputs, fire model separation distances and performance-based flame length-based defensible space parameters indicate that the existing and

proposed building will have satisfactory mitigations that limit flame front progression and inhibit heat exposures with minimum widths of fourteen to eighteen feet.

14. The existing workshop/proposed ADU building is constructed with Code compliant ignition resistant construction materials and roof assembly materials.
15. The existing one-story workshop/proposed ADU building complies with the San Diego County Consolidated Fire Code slope setback prescriptive requirements (fifteen feet), with a setback of approximately twenty-five feet.
16. There are no trees overhanging the existing workshop/proposed ADU building; the building-to-tree canopy drip line separation is approximately twenty-feet.
17. When analyzed synergistically, fire behavior characteristics and defensible space protections, as expressed in Findings 1-16, indicate that the existing and proposed buildings on the Project site will be, or are, well-protected and the potential fire exposure hazards significantly mitigated.
18. The prescriptive exception in County Fire Code Section 4907.1.1 indicates that the thirty-foot LBZ perimeter dimension need not be applied if there are no significant fire hazards present on the Project Site.
19. The prescriptive language of Section 4907.1 of the County Fire Code indicates that the thirty-foot LBZ perimeter dimension does *not* apply for existing and permitted buildings that are located within thirty feet of the parcel's property line.
  - a. On or about 2010, LBZ perimeter boundary lines were interpreted to be equivalent to property lines by the County Fire Marshal's Office during a planning appeal.
  - b. The existing workshop/proposed ADU building was erected under a San Diego County Department of Development Planning Services building permit.
  - c. The LBZ perimeter was not in existence, or proposed, when the workshop/proposed ADU building was permitted and built.
  - d. The proposed LBZ perimeter is a new Project Condition for the lot split project and is based on imposition of new open space easements on proposed Parcels 1 and 2.

***Finding:*** *Under these conditions, the Limited Building Zone restrictions do not apply to the existing Workshop/proposed ADU building.*

### **Recommendations for Defensible Space Mitigations**

1. The fuel modification zones established on the Project Site provide three levels of calculated defensible space that mitigates against the threat of fire spreading across the landscape and igniting the existing and proposed future buildings.
2. The fuel modification zones established on the Project Site provide three levels of calculated defensible space that mitigates against the threat of fire spreading from burning buildings across the landscape and igniting the vegetation in the biological open space easement.

3. The perimeter of the LBZ separating the existing and proposed buildings from the existing and proposed extension of the biological open space easement bordering the Los Coches Creek waterway should be conditioned to require continued compliance with FMZ-2 level defensible space.
4. The land within the existing and proposed extension of the Open Space Easement around the Los Coches Creek waterway were previously cleared and are currently maintained as a combination of FMZ-1 and FMZ-2 defensible space. Given that the Fire Protection MOU allows lands previously cleared and maintained as fuel modification zones to remain in place, the Project should be conditioned accordingly to allow in perpetuity defensible space within the mitigated waterway perimeter.
5. Parcels 1 and 2 will combine FMZ-1 defensible space along their shared property lines.

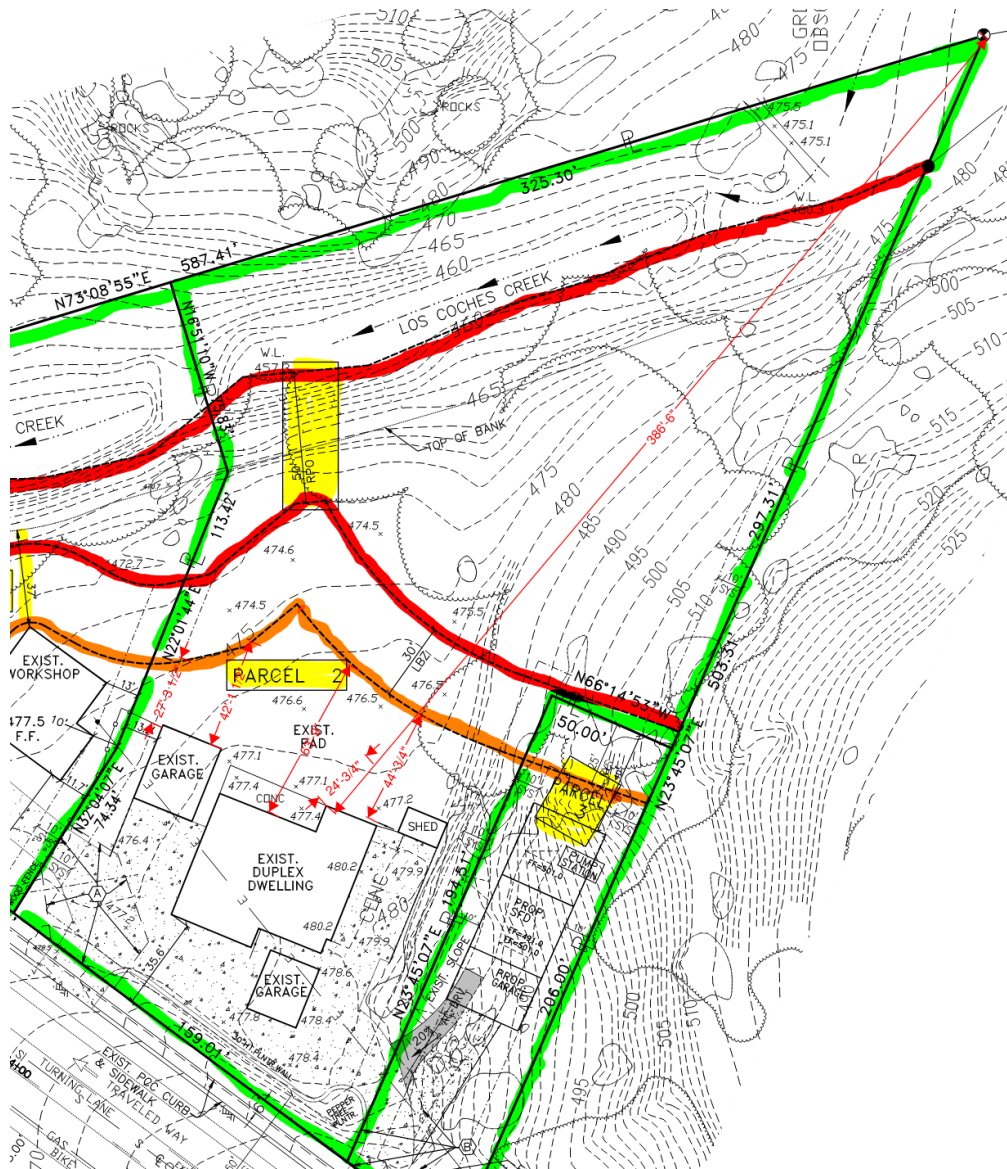
## **Parcel 2**

Parcel 2 will be located at the center of the existing parcel. The south and east portions of Parcel 2 abut the Los Coches Road right-of-way corridor. The north and northeast portions of Parcel 2 abut the Los Coches Creek wetlands corridor.

As proposed, Parcel 2 provides the following defensible space dimensions:

- Existing garage to western Open Space Easement boundary – eighty (80') feet
- Existing garage to eastern Open Space Easement boundary – 134 feet
- Center of Existing Duplex Residential to western LBZ boundary – 103 feet
- Center of Duplex to eastern LBZ boundary – 141 feet
- Northeast corner of duplex to northeast corner of Parcel 2 – 386 feet

All north and northeastern lands on proposed Parcel 2 have been cleared and comply with Fuel Modification Zone 1 and 2 defensible space standards. Natural native and invasive vegetation has been removed across the entire lot. The site analysis indicates that Parcel 2 is cleared to bare mineral soil; regrowth of light annual grasses occurs but dies off due to lack of watering before being scraped to bare mineral soil.



**2022 Original Configuration of Parcel 2**

When the original defensible space for Parcel 2 is compared to Parcel 1, the landscape on Parcel # 2 provides compliant defensible space over its entire area, including the lands in the proposed biological open space easement for the Los Coches Creek water way.

The defensible space provided on the existing parcel is consistent with the following defensible space prescriptive requirements:

- FMZ-1 and FMZ-2 defensible space implementation inside the existing and proposed biological open space easement for the Los Coches Creek waterway was established, and consistently maintained since, ten (10) years ago under an Arrundo infestation mitigation order.

- Defensible space in the Los Coches Creek water way has dramatically reduced the fuel/fire load of combustible vegetation that can readily transmit fire to exposed buildings adjacent to the creek bed.
- There is a constant flow of water in the wetlands corridor, keeping the fuel moisture content of plant life above its extinction levels.
- Fire modeling indicates that plant life with fuel moisture content above extinction level will not ignite, burn, or carry fire across the landscape.

The FMZ-1 defensible space established on the east and northeast sides of the existing buildings on the Project Site provides cleared-to-bare-mineral soil Fuel Model NB-1, Non-Burnable Urban-Suburban Developed lands with a maximum depth of 379 feet.

As originally configured, FMZ-1 and FMZ-2 defensible space established on the north side of the existing buildings on Parcel # 2 provides 140 feet of width at the buildable pads and is approximately two hundred feet wide north of the existing buildings. The landscape of Parcel 2 has been fuel modified, with all vegetation cleared-to-bare-mineral soil Fuel Model NB-9, Non-Burnable Bare Earth lands.

Fire modeling indicates that plant life at extinction level fuel moisture content will burn, with the following characteristics:

- Flame lengths with depths of 3.6 to 7.3 feet
- Flame heights of 7.3 to 9 feet tall
- Rate of Spread parameters between 15 and 47 feet/minute
- Safe Separation Distance ranging between 14 and 18 feet.

## **Discussion:**

1. The proposed LBZ for the new Los Coches Creek Biological Easement Space easement has a minimum width of thirty (30') feet.
2. The existing buildings on proposed Parcel # 2 have a minimum separation distance between the east wall of the building and the western perimeter boundary of the LBZ of twenty-nine (29') feet.
3. The fuel modification zones currently established on the Project Site provide three (3) levels of calculated defensible space that mitigates against the threat of fire spreading across the landscape and igniting the existing and proposed future buildings.
4. The fuel modification zones established on the Project Site provide three levels of calculated defensible space that mitigates against the threat of fire spreading from burning buildings across the landscape and igniting the vegetation in the biological open space easement.
5. FIREMAP modeling indicates that the proposed eastern LBZ perimeter for the new biological open space effectively, and consistently (over multiple analysis runs), diverts flame fronts progressing across the landscape away from, and around, the existing buildings on the Project Site, with no intrusion of fire into the developed building envelopes.

6. Based on BEHAVE and FIREMAP modeling, the minimum twenty-nine (29') foot wide fuel modification zone between the existing and proposed buildings and the open space easement provides sufficient performance-based design criteria for acceptable defensible space on Parcel # 2.

The perimeter of the LBZ separating the existing and proposed buildings from the biological open space easement should be conditioned to require continued compliance with FMZ-2 level defensible space.

### **Recommendations for Defensible Space Mitigations**

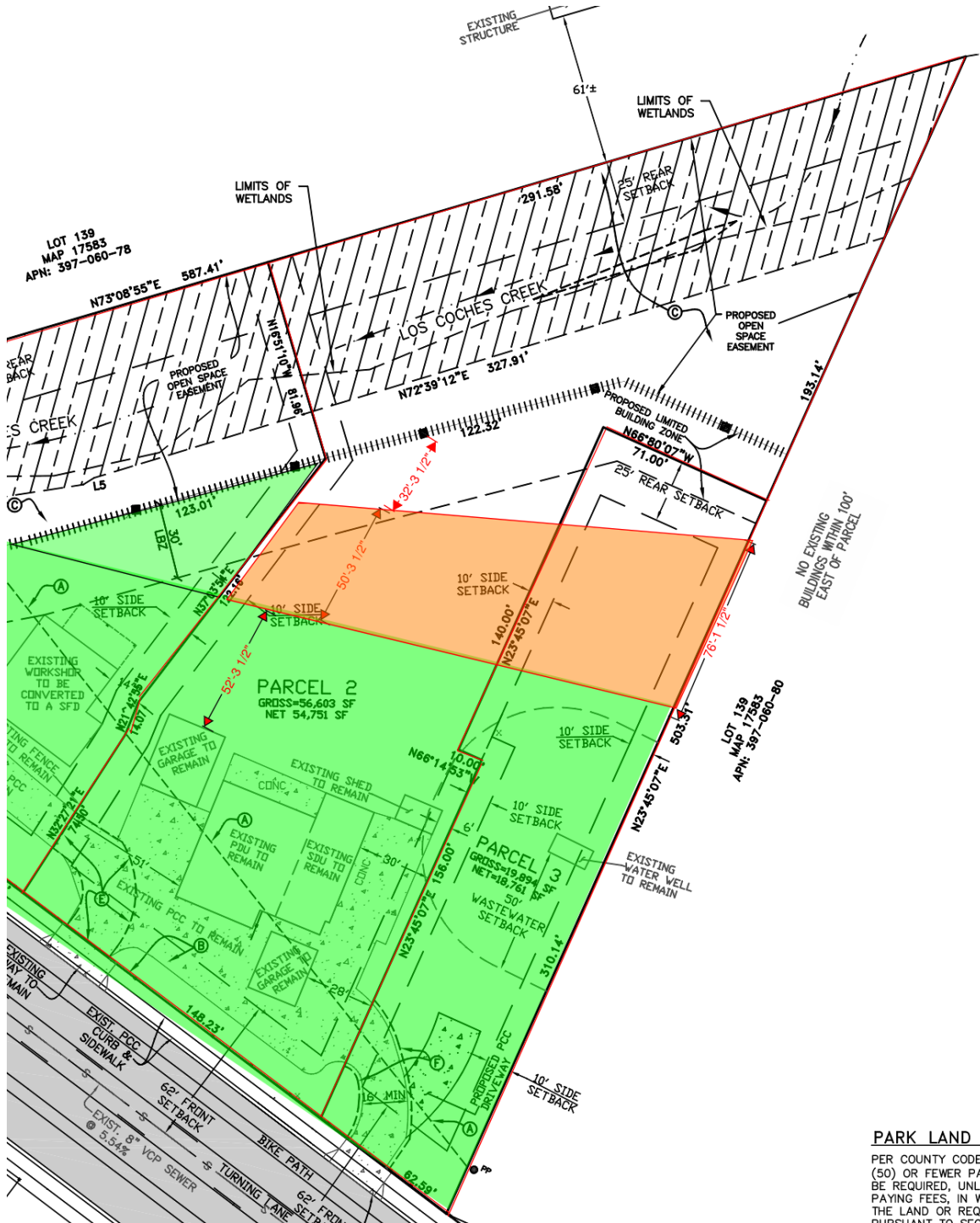
The lands inside the Open Space Easement were previously cleared and are currently maintained as a combination of FMZ-1 and FMZ-2 defensible space. Given that the Fire Protection MOU allows lands previously cleared and maintained as fuel modification zones to remain in place, the Project should be conditioned accordingly to allow in perpetuity defensible space within the mitigated waterway.

1. The fuel modification zones established on the Project Site provide compliant defensible space that mitigates against the threat of fire spreading across the landscape and igniting the existing and proposed future buildings.
2. The fuel modification zones established on Parcel 2 provide compliant defensible space that mitigates against the threat of fire spreading from burning buildings across the landscape and igniting the vegetation in the biological open space easement.
3. The perimeter of the LBZ separating the existing and proposed buildings from the biological open space easement should be conditioned to require continued compliance with FMZ-2 level defensible space.
4. The land inside the Open Space Easement were previously cleared and are currently maintained as a combination of FMZ-2 and FMZ-3 defensible space. Given that the Fire Protection MOU allows lands previously cleared and maintained as fuel modification zones to remain in place, the Project should be conditioned accordingly to allow in perpetuity defensible space in the mitigated biological open space to maintain the existing level of wildfire protection.

The 2025 fuel modification zone adjustments include the following configurations, which ensure building and RPO protected vegetation from the threat of fire spread from either direction:

- The western FMZ-1 perimeter line will run parallel to the Los Coches Road right-of-way corridor in a south-to-north configuration between Parcel 2's south and north property lines.
- The northern FMZ-1 perimeter line will run parallel to Parcel 1's southern property line for a distance of approximately 140 feet.
- The eastern FMZ-1 perimeter line will be provided in a north-to-south direction, approximately fifty (50') feet east of the existing buildings on Parcel 2. The FMZ perimeter will extend to the Parcel 3 property line.

- Parcels 2 and 3 with share combined FMZ-1 defensible space along their shared property line(s).





### **3.7. Vegetation Management:**

Many vegetation communities, including wetland habitats, depend on a regular cycle of burning for maintaining the optimal species balance, seed viability and reproduction.

The natural fire cycle is affected by human activities by either increasing fire activity over decreased time spans or decreasing fire activity by fire prevention and protection requirements.

However, fire management for human safety must continue in a manner compatible with biological resource preservation mandates. As a result, and because of the proximity of the adjacent residential and commercial developments, closeness of suburban population, and the history of extreme and erratic fire behavior in San Diego County as a whole, neither CAL-FIRE nor the Lakeside Fire Protection District will allow planned controlled burning of vegetation on or adjacent to Project Site lands for biological maintenance and enhancement purposes. This policy is likely to continue well into the future.

#### **3.7.1 General Vegetation Management Guidelines**

Brush and vegetation management to reduce fuel for the protection of urban and rural land uses may be implemented when new or existing development occurs adjacent to dedicated biological and other open space lands.

The Government Code regulating High and Very High Fire Severity Areas allows vacant, undeveloped lands to remain in an unmanaged condition *until* certain forms of development or the erection of buildings occurs on or adjacent to protected lands.

Management of fuel modification zones depends upon where the defensible space is located on the landscape:

- Private property owners are responsible for providing fuel modification zones their own individual properties; and
- *If* required, the Open Space Easements *may* provide and manage property boundary line defensible space when adjacent to private property with development and/or established buildings

#### **3.7.2 Vegetation Management for Biological Resources**

This section describes essential vegetation management practices for biological resources, without introducing management principles involving controlled burning across the landscape.

##### **3.7.2.1 Vegetation Management Goals**

Vegetation management goals develop strategies consistent with governmental regulations. Vegetation management objectives are, therefore, focused on environmental resource preservation and enhancing the existing native habitats.

The Vegetation Management Goals for the Open Space Easement lands include:

- Ensuring viability and sustainability of the native eco-system and its natural processes.
- Protecting the existing biological resources from disturbance and incompatible activities
- Management of invasive, non-native species
- Developing fuel reduction methods consistent with ensuring fire protection mitigations for the residential buildings adjacent to the Open Space Easement lands.

To achieve these vegetation management goals, the following objectives should be developed to achieve resource protection and public and firefighter safety:

- Maximize native vegetation community quality.
- Identify and remove invasive non-native plants.
- Provide effective methods for removing and controlling invasive non-native plants.
- Minimize adverse impacts to sensitive and high value habitats.
- Utilize approved fuel and plant reduction programs for habitat preservation, enhancement, and restoration.
- Provide site fire behavior information to local fire agencies, primarily the Lakeside Fire Protection District and CAL-FIRE, for inclusion in wildfire pre-response plans.
- Minimize the likelihood of catastrophic fires originating in the Open Space Easement
- Identify Wildland-Urban Interface (WUI) areas.
- Develop WUI area fuel management goals to prevent wildfire from impacting these areas and to protect the Project Site from fires originating on adjacent, unmanaged WUI lands.

### **3.7.2.1.1 Non-Native Plant Species Removal and Control**

Native and, particularly, naturalized invasive plant species may dominate the vegetation communities in the open space habitat.

Invasive non-native plant species have significant impacts on native plant associations, ecosystem processes, and biodiversity.

Non-native plants have few controls on their population sizes and tend to thrive under human-caused conditions. These species exhibit aggressive growth and spread across the landscape, outcompeting, and harming sensitive species. In addition, non-native and invasive species can, and often do, alter nature fire regimes by increasing and intensifying wildfires. Therefore, special management measures are needed for their removal and control.

### **3.7.2.1.2 Specific Removal Methods**

The selection of an appropriate removal method depends on several variables, including:

- Time of year
- Nesting seasons
- Severity of invasive infestations
- Proximity to sensitive plants and wildlife
- Amount of intermixing between invasive species and sensitive habitat
- Access to invasive species site

- Proximity to water ways and surface waters

## **Manual Removal**

Manual removal of vegetation can be accomplished by hand pulling, grubbing, hoeing, and use of small fuel powered tools. Manual removal is a low-impact method of controlling invasive plant species in a native vegetation habitat.

Manual removal is best used for eliminating small amounts of annual weeds in isolated locations where complete removal of the plant's root system is possible.

Manual removal is recommended over the use of herbicides where sensitive species will be impacted by application and potential overspray patterns from discharged herbicides.

Plant materials removed by manual methods should not be left on Project Site lands and are required to be disposed of off-site at an appropriate location.

## **Mechanical Removal**

Mechanical removal may be required to remove larger plants and trees from the Project Site.

Cutting above ground plant materials can be accomplished by chain or handsaws. The dropped materials should be chipped and removed from Project Site lands, with disposal at an appropriate off-site location.

Herbicides may be applied to stumps or root systems left in place, following the manufacturer's recommendations. Stumps remaining on site after cutting and herbicide application should not be removed or have grinding operations applied; they should be allowed to decompose in place.

Large-scale mechanical methods (i.e., use of masticators, bulldozers or tractor-drawn tillers or soil rippers) is **not** recommended for removal of invasive species on Project Site lands. Use of large-scale mechanical remove machines may cause unnecessary and irreparable damage to sensitive habitats and can lead to unintentional contamination of waterways and standing bodies of water.

In addition, these machines incorporate substantial steel blades or teeth as an operating function. This poses a distinct wildfire ignition source, despite best preventative efforts and caution, when the steel accidentally contacts rocks, boulders, and other hardened surfaces, releasing high energy and high temperature sparks into receptive vegetation fuel beds.

## **Herbicides**

Herbicide applications may be used as a separate mitigation means or in combination with other removal methods.

Herbicides are recommended after removal of invasive tree species or perennial species having regenerative capabilities when removal of all root fragments is not possible. Herbicide application should be limited to localized direct application to specific plants

instead of generalized over-spraying of an area.

A wide range of herbicides is available for use. Any use of herbicides on Project Site lands to control invasive plant species should be under the observation of a biologist and performed by a State licensed herbicide technician.

### **Cut and Daub Methods**

This treatment is recommended for larger invasive plants to prevent re-growth and to kill the portion of the plant remaining above ground after manual or mechanical removal measures have taken place.

The cut and daub method incorporates cutting invasive plant stalks above ground with an immediate and direct application of an appropriate herbicide to the freshly cut stump.

Similar cut and daub techniques include:

- Drill and fill method – holes are drilled into tree trunks, followed by injection of herbicides into the holes.
- Glove method – a herbicide-soaked glove is applied directly to freshly cut stumps or to plant foliage.

Regardless of the method use, immediate application of the appropriate herbicide to the plant is critical to ensure that the herbicide is absorbed into the plant tissues.

### **3.7.3 Management of Fuel Modification Zones and Defensible Space**

#### ***Mitigations to be Provided:***

1. All Lots will provide Fuel Modification Zone One and Two defensible space, as currently established, and provided for multiple years, on the proposed parcels.
2. All native and non-native natural vegetation shall be removed from these lots.
3. Removed vegetation shall be replaced with San Diego County approved fire- or drought-resistant vegetation or irrigated landscaping.
4. Landscaping and defensible space areas shall be maintained in perpetuity by the owner/occupant of each residence or individual parcel.

Fuel Modification Zones 1 and 2 comprise the Building Ignition Resistance Zone (FMZ-1) defensible space (five feet of non-combustible space from the exterior walls of all buildings) plus an additional lateral width equaling a minimum width of fifty feet (FMZ-2) from the exterior walls of the protected building. Fuel Modification Zone 1 and 2 also includes the level building pad.

If 100 feet of defensible space is not obtainable around every building, the owners of individual parcels are responsible for fuel modification zone perimeters for fifty (50') feet around any flat building pads and on natural slopes or manufactured slopes around the buildings with irrigated or fire resistant landscaping.

If fifty feet of defensible space is not available because of project constraints, individual parcel owners will provide FMZ 1 and 2 configured defensible space on the lands surrounding the buildings, or to the property line, whichever is closer, to the extent possible and provide additional fire protection mitigations, as determined by the Lakeside Fire Protection District and San Diego County Department of Development Planning Services.

Fire-resistant landscaping must be permanently irrigated and always maintained. Plants with high moisture content levels are less likely to burn. Thick succulent or leathery leaf plant species are the most fire resistant' plants; paper-thin leaves and small twiggy branches are the least fire resistant.

Plants in this defensible space zone will not include any pryophytes, which have high oil and resin content. This includes coastal sage and other scrub and chaparral species and eucalyptus, cedar, and juniper tree species.

Proposed trees must be planted and maintained so that when they reach maturity the distal ends of their dripline branches are at least ten feet away from any structure.

**Regular maintenance and continued irrigation are especially important in Zone 1 and 2.**

The irrigated landscaping in FMZ-2 consists of native and non-native fire resistant and maintained plantings less than 18-inches high. This Zone may also contain fire resistant specimen size trees or single well-spaced ornamental shrubs taller than 18-inches, intermixed with ground covers.

Although all plants will burn under extreme fire conditions, research has shown that some types of plants, including many natives, are more fire resistant than others.

The County of San Diego Recommended Plant List includes examples of low fuel volume, non-oily, non-resinous plants commonly referred to as "fire resistant". This term comes with the caveat that these plants must be annually pruned, all dead or dying vegetative materials removed, with all grasses or other plant material removed from beneath the circumference of their canopies.

The Recommended Plant List includes native species that are not considered undesirable from either a biological or wildfire risk management perspective if they are properly maintained by June 1st of each year.

Single specimens of native and non-native vegetation species may be allowed in defensible space area, at the discretion of the FAHJ, if they do not present a hazard of

spreading wildfire flame fronts to buildings on the Project Site or exposing them to significant amounts of radiant and convective heat energy.

Defensible space can be accomplished in ways other than plant modifications.

Providing non-combustible ground surfaces or ground covers, like the following materials, will slow fire spread across the landscape and change the intensity of fire behavior:

- Paved and unpaved parking lots
- Paving bricks
- Gravel pathways
- Rock borders
- Rock gardens
- Dry streambeds
- Water features, swimming pools

These and other features made from non-combustible materials can contribute to a structure’s defensible space.

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The existing Memorandum of Understanding (MOU) between the San Diego County Fire Agencies and State and Federal Wildlife Agencies authorizes incidental take(s) for specific federally listed endangered and threatened species. Take is also authorized for species listed as threatened, endangered or candidates as indicated in Chapter 1.5 of Division 3 of the California Fish and Game Code. The Take Authorization is limited to the specific activities delineated in the MOU.

The individual parcel owners must provide fire management activities for the protection of sensitive natural resources, as stipulated in applicable State and Local codes and ordinances. These activities include brush clearing, fire clearing, weed abatement to reduce the risks and threats caused by wildfires to habitable buildings and structures.

Vegetation management activities shall follow, to the extent possible, the Best Management Practices provided in the Table below:

**Fire Safety Vegetation Best Fuel Management Practices**

<b>Fuel Management in Areas with Natural Woody Vegetation (around homes and commercial buildings)</b>	<ul style="list-style-type: none"> <li>• Remove or thin natural vegetation using hand tools and hand-held power tools.</li> <li>• Do not use motorized vehicles for clearing.</li> <li>• Limit fuel management to the limits established by the Wildlife-Fire Agencies MOU (one hundred feet of dwellings and commercial buildings and within 30 feet of driveways.</li> <li>• Leave shrub roots intact to prevent soil erosion.</li> <li>• Do not remove single specimen trees (i.e., oaks) unless they present a fire danger to a building.</li> <li>• Dispose of cut vegetation by removing it from the site or leaving it in place (chipped or crushed) as mulch or composting.</li> <li>• Do not dispose of cut vegetation in stream courses – decaying</li> </ul>
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	<ul style="list-style-type: none"> <li>vegetation can contaminate water quality and create fire hazards.</li> <li>• Avoid fuel management activities during bird breeding season(s) in coastal sage scrub vegetation (February 15<sup>th</sup> – August 20<sup>th</sup>)</li> </ul>
<b>Fuel Management in Areas with non-woody vegetation (around homes and commercial buildings)</b>	<ul style="list-style-type: none"> <li>• Remove or thin grassy areas in ways that minimize soil and root disturbance (mowing, raking, cutting)</li> <li>• Use heavy equipment only when necessary – when the FAHJ requires disking of an area.</li> <li>• Limit fuel management to the limits established by the Wildlife-Fire Agencies MOU (one hundred feet of dwellings and commercial buildings and within thirty feet of driveways.</li> <li>• Leave shrub roots intact to prevent soil erosion.</li> <li>• Do not remove single specimen trees (i.e., oaks) unless they present a fire danger to a building.</li> <li>• Dispose of cut vegetation by removing it from the site or leaving it in place (chipped or crushed) as mulch or composting.</li> <li>• Do not dispose of cut vegetation in stream courses – decaying vegetation can contaminate water quality and create fire hazards.</li> <li>• Avoid fuel management activities during bird breeding season(s) (February 15<sup>th</sup> – August 20<sup>th</sup>)</li> </ul>
<b>Fuel Management along roads and trails</b>	<ul style="list-style-type: none"> <li>• Avoid fuel management activities during bird breeding season(s) (February 15<sup>th</sup> – August 20<sup>th</sup>)</li> <li>• Leave roots intact to prevent soil erosion.</li> <li>• Dispose of cut vegetation by removing it from the site or leaving it in place (chipped or crushed) as mulch or composting.</li> <li>• Do not dispose of cut vegetation in stream courses – decaying vegetation can contaminate water quality and create fire hazards.</li> <li>• Use of heavy machinery is allowed in these areas to maintain low growth of vegetation within 10 to 30 feet of roadways. This also serves to protect natural areas from roadside ignition sources.</li> <li>• Trimming or removal of trees is allowed to maintain roadway safety (i.e., emergency vehicle access; elimination of falling hazards; eliminating barriers to traffic visibility)</li> </ul>
<b>Fuel Management Around Streams and Other Wetlands</b>	<ul style="list-style-type: none"> <li>• Within wetlands areas, avoid vegetation management activities. These are sensitive habitat areas for wildlife and water quality.</li> <li>• Remove only woody materials that are dead and only if the materials present a fire hazard to dwellings. Use hand tools (including power hand tools – chainsaws and weed whips).</li> <li>• Do not use motorized vehicles for clearing.</li> <li>• Avoid fuel management activities during bird breeding season(s) in coastal sage scrub vegetation (February 15<sup>th</sup> – August 20<sup>th</sup>)</li> <li>• Avoid fuel management activities during raptor breeding season(s) (January 1<sup>st</sup> through September 15<sup>th</sup>)</li> <li>• Do not remove live vegetation within stream courses or other wetlands without first consulting the County Department of Planning and Development Services.</li> <li>• If a landowner suspects the occurrence of rare, threatened, or endangered species on their property in areas subject to fuel modification, Calif. Department of Fish and Game and US Fish and Wildlife Service prior to performing fuel modification activities.</li> </ul>

### **3.7.3.1 Recommendations for Open Space Encroachment Defensible Space**

In accordance with the combined provisions allowed in the California Fire Code, California Government Code, San Diego County MOU and San Diego County Consolidated Fire Code, the following Alternate Means of Compliance for Open Space Encroachment Defensible Space is recommended to ensure the safety of the existing and proposed parcels.

1. Under MOU provisions, provide reasonable defensible space mitigations in the Open Space Easement immediately adjacent to the established and proposed residences in a manner that vegetative features are retained as much as is feasible for protection of life and property inside the Project Development Site.
  2. As much as practical and reasonable, institute those fuel mitigation measures required by the California Fire and Government Codes that prevent unnecessary disturbances to the vegetation in the Open Space Easement.
  3. Provide vegetation management mitigations that protect the sensitive habitat and biological easement spaces from the encroachment of external exposure to heat and flames resulting from building fires outside of the Open Space Easement limits.
  4. As permitted, limited, and supervised, fuel management may be conducted inside of the fifty (50') foot perimeter of the Open Space Area perimeter.
  5. Following industry wide standard vegetation management practices, annual grasses growing in the Open Space and adjacent to buildings shall not be required to be removed where necessary to prevent soil erosion and slope stabilization.
  6. The clearing or trimming of native vegetation to protect existing *and proposed* buildings in potentially dangerous fire areas is allowed *if* the clearing or trimming is the minimum necessary to comply with applicable Fire Codes or orders of fire safety officials on any Steep Slope Lands.
  7. Annual grasses in the Open Space Easement and adjacent to buildings may be maintained at a canopy height not to exceed six (6") inches above the ground. Maintenance of the maximum fuel canopy height shall be an in-perpetuity Condition.
- 

Prescribed Defensible Space (fuel management zones) will be maintained by the property owners at least annually or more often, as needed. Landscaping and vegetation will be from an approved fire-resistant plant list provided by the County of San Diego, Department of Development Planning Services.

The following requirements apply to this project:

- a. Each property owner shall be responsible for all irrigation and landscaping of Fuel Modification Zones within their property boundaries. Fuel Modification Zones and Defensible Space shall be limited to the area within established property lines and shall not extend off-site of established parcels.
- b. The Lakeside Fire Protection District will hold each parcel owner accountable for enforcement of all wildfire protection issues discussed in this Fire Protection Plan.
- c. Each property owner shall not allow dumping of trash or disposal of yard trimmings in Fuel Modification Zones and Defensible Space areas.
- d. The Lakeside Fire Protection District, or its designated representative(s), shall decide any disputes related to individual lot landscaping or fuel treatments involving an interpretation of this Fire Protection Plan. Decisions made by the Fire Protection District shall be final and binding on property owners.
- e. If modifications to the Parcel Map occur, any part and/or all of the Fire Protection Plan may be revised at the discretion of the Lakeside Fire Protection District.
- f. Debris and trimmings produced by thinning and pruning will be removed from the site.
- g. The annual completion of all designated Fuel Modification Treatments will occur before June 15<sup>th</sup>.
- h. All individual landscaping plans, including additional structures, will comply with the Fire Protection Plan.
- i. Trees and plants will be planted in accordance with the “County of San Diego Approved Plants for Defensible Space in Fire Prone Areas List” or as approved by the Lakeside Fire Protection District.
- j. Boundaries for Fuel Management Zones should be clearly and permanently marked.

Prescribed Defensible Space (fuel management zones) will be maintained by the property owners at least annually or more often, as needed. Landscaping and vegetation in Defensible Space areas will be from an approved fire-resistant planting materials list provided by the County of San Diego, Department of Development Planning Services.

## **IV. CONCLUSIONS & JUSTIFICATIONS**

### **4.1 Significant Impacts Mitigated by Fire Protection Plan Requirements**

Due to the severity of impacts from the improper management of wild land areas, the existing laws are stringent and regulate all aspects of wild land fire including building standards, fuel modification, water availability/flow, and access.

#### **4.1.1 Emergency Services**

The Project Site is served by the Lakeside Fire Protection District.

The Fire District is an all-hazard fire protection agency that provides services year-round. The fire protection services provided by the District meet or exceed the requirements to reduce the Significant Impact of providing adequate emergency services.

The Project is zoned as VR-4.3 property, Village Residential, 4.3 dwelling units per acre. Maximum fire travel time for Single- and Two-Family Dwellings is five (5) minutes.

LAND USE CATEGORY	MAXIMUM TRAVEL TIME	LAND USE CATEGORY DEFINED
Town	5 minutes	Single-family residential lots of less than two acres, or more intensive uses such as multi-family residential. Includes all industrial development and all commercial development except neighborhood commercial
Estate	10 minutes	Single-family residential lots from two to four acres in size. Includes neighborhood commercial development.
Rural	20 minutes	Large lot single-family residential and agricultural development. Lot sizes of greater than four acres.

**Finding:** The standard First Alarm Structure response provided by the Lakeside Fire Protection District is commensurate to dispatch levels and personnel assignments for other career Fire Departments in San Diego County.

**Finding:** A minimum of twelve firefighters respond with a Command-and-Control officer to all incidents. This fire assignment provides one engine company for interior fire attack operations, one engine company for RIC (Rapid Intervention Crew for firefighters in distress rescue operations), one engine company to support interior fire

attack operations and one company to provide ventilation, search and rescue functions, forcible entry, and utility securement tasks.

**Finding:** The Lakeside Fire Protection District First Alarm assignments provide an effective initial attack firefighting force.

**Finding:** *The project meets or exceeds the requirements of reducing Significant Impact in this category.*

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#### **4.1.2 Access and Evacuation**

The primary road providing emergency access and egress meets and exceeds the minimum Fire Code width, paving and slope requirements. There are no actual or potential bottlenecks or other constraints on the project site and the primary access roadway.

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**Finding:** *When met, the Fire Protection Plan provisions for Access and Evacuation will meet or exceed the reduction of Significant Impacts in this category.*

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#### **4.1.3 – Water Supply**

**Finding:** The existing water supply system for the Project Site meets the minimum 2500 gpm fire flow requirement for new developments.

#### **4.1.4 – Ignition Resistant Construction**

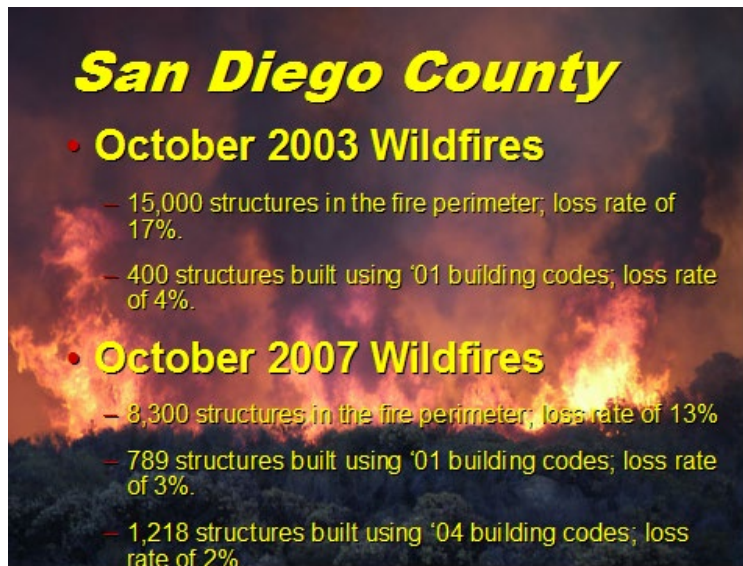
All new buildings and structures erected on the project site will be required to meet the County of San Diego Building Code Chapter 7-A requirements for Wildland Urban Interface Areas and Chapter 7-A requirements of the California Building Code.

The Chapter 7-A prescriptive language requires the installation of automatic fire sprinkler systems compliant with NFPA Pamphlet 13-D *Installation of Automatic Fire Sprinklers in One- and Two-Family Dwellings* standards.

Roof composition is an important factor in structural survivability. Research indicates that typical single-family dwellings with non-combustible roofs and thirty-three (33) to sixty-six feet of fuel clearance have a 95% chance of survival (Howard, et.al., 1973).

Additional research in Santa Barbara County revealed that houses with a non-combustible roof and thirty-three to sixty feet of vegetation clearance had an 86%

chance of survival (Foote, 1994). The proposed single-family dwellings in the project will be required to have Class A non-combustible roof decks or assemblies.



The above Power Point slide, from a presentation given by the San Diego County DPLU Fire Marshal’s Office, indicates a 96 to 98% survivability rate for buildings erected under “Enhanced Fire Resistant Construction” (Chapter 7A Ignition Resistant Construction) requirements during actual, extreme fire behavior conditions in similar and more hazardous vegetation types than found on the project site.

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**Finding:** The building standards proposed by this Fire Protection Plan will provide a reasonable degree of ignition resistant buildings at the project site and reduce the Significant Impact caused by less resistive construction standards.

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#### **4.1.5 Defensible Space and Fuel Modifications**

Ideally, establishing Code compliant defensible space and fuel modification zones around buildings removes or modifies the existing highly flammable natural vegetation, creating an entirely different fuel model most resembling Urban Development (NB-1).

Fuel Model NB-1 includes lands covered with suburban development that will not support wildfire spread but may experience structural fire losses during vegetation fire incidents. Structural ignitions usually occur from building-to-building exposures or from firebrands, neither of which are modeled by current Fuel Model parameters.

Fire behavior, under these mitigations strategies, is expected to significantly diminish when a wildfire encroaches upon the Fuel Modification Zones at property lines exposed to off-site unmanaged vegetative fuels.

Vegetation management beyond a structure's immediate vicinity has little effect on house ignitions unless a minimal break of continuous surface fuels is maintained around the perimeter of the house. For this reason, home site protection includes eliminating continuous ground fuels that lead from wild land fuel beds to the house. This can be accomplished with rock landscaping, cement sidewalk, green grass or by removing dried vegetation and tree needles (Jack Cohen, USFS).

In 1997, Cohen conducted full-scale experiments that revealed that a typical Type V-B combustible wooden wall thirty-three meters (one hundred feet) from a crown fire in forty-three foot (13 meter) tall Black Spruce trees would **not** ignite and sustain open flame combustion from radiant heat fire exposures.

These experimental fires produced flame heights of twenty meters or 65.616 feet.

By evaluation and formulaic calculations, twenty-meter-long flame heights are produced by a 100-megawatt fire.

The *wooden* walls placed ten meters (33 feet) from the fire front only ignited when actually touched by flames. There was evidence of charring, which ceased immediately after the flame front burnt out.

***Finding:*** *These full-scale fire tests are the basis for the 100-foot-wide Fuel Modification Zones mandated by the County of San Diego and State of California.*

The off-site Coastal Sage shrub environment will produce a 3.5502631035-megawatt fire, depending on the local environment. This heat release rate is approximately 3% of the energy produced by Cohen's full-scale test fires.

The BEHAVE Fire Modeling calculation for the Project Site indicates that a wildfire moving through the off-site Fuel Model SH-2 Dry Climate Moderate Load Shrub (chaparral/brush/shrub) will produce a Fire Line Intensity of 1629 BTU/foot/second. This value can be applied to determine ignition times for residential construction materials by using various formulas and tables.

For example, using the formula:

$$t_{ig} = \pi kpc (T_{ig} - T_o) / 2q_e \quad (\text{National Fire Academy } \textit{Fire Dynamics} \text{ pg. 5-3})$$

where:

$t_{ig}$  = time to ignition, seconds  
 $kpc$  = thermal inertia of material  
 $T_{ig}$  = temperature of ignition source  
 $T_o$  = surface temperature of exposed material  
 $q_e$  = incident heat flux to the material

The ignition time of solid materials can be estimated.

The BEHAVE Fire Modeling Calculation indicates that worst-case Fuel Model SH-5, Dry Climate Heavy Load shrub fuels in San Diego County, under worst case 2003 Cedar Fire Event burning conditions, produce 2868 BTUs, equivalent to 840.324 watts or **.840324 kilowatts**. Fuel Model SH-5 represents the potential fire characteristics of the vegetative fuel bed on the north side of the Los Coches Creek waterway corridor, as left in an unmanaged condition for multiple years into the future.

For a worst case scenario using these variables, a gypsum-based one-hour fire resistive or non-combustible stucco plaster wall (as required by Chapter 7A of the County and California Building Codes) with a surface temperature of 100 degrees (solar exposure), having a  $kpc$  of  $5.8 \times 10^5 q_e$  (*Fire Dynamics*, pg. 2-15), exposed to radiative heat from a 1400 degree flame front thirty feet (30') away producing 2868 BTUs, the **theoretical** ignition time (using CBC Chapter 7-A required fire resistive materials) would be 211 minutes or **3.53 hours**.

---

**Finding:** Using the above Time-to-Ignition equation, exposure to a fire involving a reestablished Fuel Model TU-5 Dry Climate Heavy Load Timber Understory habitat in the Biological Open Space Easement, with a heat release rate producing 3365 BTUs, will produce structural ignition in **564 minutes or 9.5 hours**.

**Finding:** Anecdotal information from the Fire Service indicates that a flame front, under “fire storm conditions” exposes a building to maximum extreme convective and radiant heat and potential direct flame contact for a maximum time lasting between ten and thirty minutes.

**Finding:** Cohen’s Northwest Territory full-scale burn experiments indicated that actual maximum flame front exposure to radiant and convective heat to the exterior wooden walls of a residential building was a maximum length of two minutes.

**Finding:** Cohen’s Northwest Territory full-scale burn experiments indicated that actual maximum flame front exposure to radiant and convective heat needed to ignite the exterior wooden walls was in the fifteen (15) to twenty (20) minute range.

The BEHAVE Fire Modeling Calculation indicates that Fuel Model SH-5 shrub fuels under worst case 2003 Cedar Fire Event burning conditions produce 2868 BTUs, equivalent to 840.324 watts or **.840324 kilowatts**.

Referring to *Fire Dynamics* Figure 2-5 *Damage Caused by Radiation* below, the calculated fire crossing into the Project Site from the adjacent properties, with the potential ignition of landscaped lawns, will not produce sufficient radiant heat to cause significant damage of proposed new single-family dwellings.

<b>Damage Description</b>	<b>Heat Flux – kW/m<sup>2</sup></b>
Skin burns	4.7 to 5.0
Pain threshold	1.5
Pain in one minute	2.1
Plastic melts	12.0
Cable insulation degrades	18.0 to 20.0
<b><i>Piloted ignition occurs:</i></b>	
<b>Wood</b>	<b>14.6</b>
<b>Painted Wood</b>	<b>16.7</b>
<b>Wood spontaneously ignites</b>	<b>33.5</b>

<b>Type of Heat Exposure</b>	<b>Heat Flux Value</b>
Flame Radiation	0-200 kW/m <sup>2</sup>
Flame Convection	10-20 kW/m <sup>2</sup>
Hot Gas Convection	0-10 kW/m <sup>2</sup>
Hot Gas Radiation	0-150 kW/m <sup>2</sup>

*Table 4.1.5 Heat Flux Direct Contact Values, NFA Fire Dynamics*

While Fuel Model SH-5 (Coastal Sage shrub) vegetation produces relatively long flame lengths (41.1 feet) and higher burning intensities (and 2235 BTU/sq.ft.), fire behavior

will change when the flame front transitions into the irrigated grass fuel beds in the FMZ-2 defensible space area planted around the existing and proposed buildings on the Project Site.

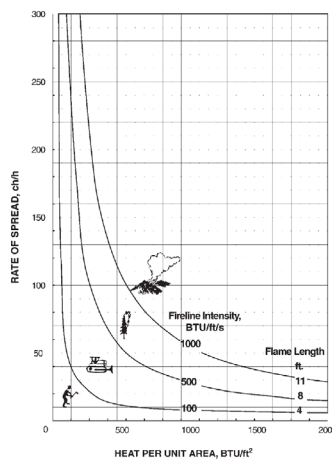
The BEHAVE Fire Modeling calculation for the Project Site indicate that a wildfire moving through Fuel Model GR-4 native and invasive species annual grasses will produce a Fire Line Intensity 641 BTU/foot/second.

BEHAVE fire modeling for Fuel Model GR-1 irrigated lawns with a 30% fuel moisture level will not ignite or produce a flame front that will spread across the landscape.

Other sources indicate that irrigated lawns, existing and as proposed as part of the defensible space guidelines for the project, will have a fuel moisture content up to 120%.

Fuel moisture contents of 120% result in green, non-cured vegetation, with all herbaceous materials remaining in the “live” fuel categories. As a result, grassy fuels with high fuel moisture will produce flame lengths of one (1’) or less and have a rate of spread of approximately five (5) chains (330 feet) per hour when exposed to a 20 m.p.h. mid-flame wind.

The fire behavior characteristics of irrigated grass fuels is well within the capabilities of fire suppression forces using non-mechanized firefighting tools to control fires in this vegetation type. The change of burning characteristics and intensity as fire moves across the grassy fuels will provide more opportunities for responding resources to take defensive suppression action at the established Fuel Modification Zones around the proposed buildings on the Project Site (see the Fire Behavior Characteristics Chart below).



***Finding:*** *When met, the Fire Protection Plan provisions for Fuel Modification Zones and Defensible Space will meet or exceed the reduction of Significant Impacts in this category.*

## **CONCLUSIONS:**

The Fire and Building standards and mitigations proposed by this Fire Protection Plan will provide a reasonable degree of ignition resistant buildings at the project site and reduce the Significant Impact caused by less resistive construction standards.

This fire protection plan demonstrates compliance with the applicable regulations. It will ensure adequate compliance with codes/regulations and significance standards, including required fuel modifications and construction resistive materials. In addition, it can be incorporated by reference into the project's Final Conditions of Approval and enforced through each proposed structure's Certificate of Occupancy Conditions.

## **DISCLAIMERS**

The Fire Protection Plan is a third-party neutral assessment of the actual or potential fire and life safety conditions present at the 9011 Los Coches Road site premises. The Consultant is neither biased towards the perspective of the Fire Authority Having Jurisdiction, the project development Design Team or the property owner.

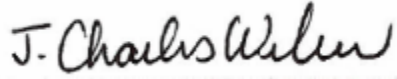
The Consultant is ethically bound and professionally mandated to report on becoming aware of any hazardous conditions that threatens the present or future safety, health, and welfare of the public and so advise my clients. If such knowledge of hazardous conditions is not properly acted upon, the Consultant is further obligated to notify the appropriate public authority.

The Consultant must perform his professional duties in a manner that considers environmental consequences.

The Consultant shall be honest in presenting data, estimates, professional opinions, and conclusions.

The Consultant will act in a professional manner for each client and shall not disclose confidential information concerning the business affairs or technical processes of any present or former client without consent.

**Signatures**



J. Charles Weber, CFPS/Consultant 11-9-25

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Prepared By (Signature)

---

Date Printed Name Title

Dan Fitch, property owner

---

Property Owner (Signature)

---

Date Printed Name

## **V. REFERENCES & APPENDIXES**

### **National Wildfire Coordinating Group Publications:**

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

*BEHAVE PLUS: Fire Modeling System* Version 5.0.3 April 5, 2010. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Rocky Mountain Research Station – Fire Sciences Lab, Missoula, Montana, and Collin D. Bevins, System for Environmental Management, PO Box 8868, Missoula, Montana, 59807. Web site: <http://fire.org/>

National Wildfire Coordinating Group - S-290 Intermediate Fire Behavior Manual

National Wildfire Coordinating Group – S-390 Introduction to Wildfire Calculations Manual

*Aids to Determining Fuel Models for Estimating Fire Behavior*, Hal E. Anderson,

United States Department of Agriculture Forest Service Intermountain Forest and Range Experiment Station General Technical Report INT-122, April 1982

*Physics-Based Modeling for WUI Fire Spread – Simplified Model Algorithm for Ignition of Structures by Burning Vegetation*, USDA Fire Research Division, NISTIR 7179

### **US Forest Service Fire Effects Information System**

U.S. Department of Agriculture Fire Effects Information System (FEIS), [www.feis-crs.org](http://www.feis-crs.org)

### **NFPA Publications:**

National Fire Protection Association - NFPA 13-D, *Standard for the Installation of Sprinkler Systems in One – and Two-Family Dwellings and Manufactured Homes*, 2010, 2013 and 2016 Editions.

National Fire Protection Association - NFPA 1142 *Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2012 Edition.

National Fire Protection Association - NFPA 1144 *Standard for Reducing Structure Ignition Hazards from Wildfire* (2013 Edition).

National Fire Protection Association - NFPA 1141, 2008 Edition. Table C.11 (b) Time-Distance Table Using an Average Speed of thirty-five mph.

National Fire Protection Association Pamphlet 299 *Protection of Life and Property from Wildfire*

National Fire Protection Association, *Assessing Structural Ignition Potential from Wildfire* (2017)

National Fire Protection Association, *Fire Protection Handbook*

### **State of California Regulatory Documents**

California Code of Regulations, Title 14, Natural Resources, SRA Requirements

California Public Resources Codes sections 4201 through 4204

California Government Code, sections 51175 through 51189.

2019 California Fire Code, CCR Title 24 Part 9, including Local Amendments and Appendices

2019 California Building Code, CCR Title 24, Part 2

2019 California Residential Building Code, Title 24, Part

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

San Diego County Consolidated Fire Code, 2020 Edition

### **Other References:**

*An Introduction to Fire Dynamics*, Third Edition, Dougal Drysdale, John Wiley & Sons LTD Publications, 2011

*Structural Design for Fire Safety*, Second Edition, Andrew H. Buchanan, John Wiley & Sons LTD Publications, 2017

*SFPE Handbook of Fire Protection Engineering*, Fifth Edition, Morgan J Hurley Editor-in-Chief, Springer Publications, 2016

*Fire Dynamics Course Guide*, FEMA/USFA/NFA Publication, May 1999

*Fire, Chaparral and Survival in Southern California*, Richard W Halsey, Sunbelt Publications, 2005

*Wildland-Urban Interface Code*, 2018 Edition, International Code Council

*San Diego County Native Plants* Third Edition, James Lightner

*Management Priorities for Invasive Non-Native Plants*, Dendra Inc., September 2012

*A Manual of California Vegetation*, 2nd Edition, 2008

*Building Fire Performance Analysis*, Robert W. Fitzgerald, 2004

*SFPE The Code Official's Guide to Performance-Based Designs*, 2004

*Development Strategies in the Wildland-Urban Interface*, Western Fire Chief's Association & International Association of Fire Chiefs

**APPENDIX A  
APPROVED PLANT LISTS**

SUGGESTED PLANT LIST FOR A DEFENSIBLE SPACE

BOTANICAL NAME	COMMON NAME	Climate Zone
<b>TREES</b>		
Acer		
platanoides	Norway Maple	M
rubrum	Red Maple	M
saccharinum	Silver Maple	M
saccarum	Sugar Maple	M
macrophyllum	Big Leaf Maple	C/ (R)
Alnus rhombifolia	White Alder	C/I/M (R)
Arbutus		
unedo	Strawberry Tree	All zones
Archontophoenix		
cunninghamiana	King Palm	C
Arctostaphylos spp.**	Manzanita	C/I/D
Brahea		
armata	Blue Hesper Palm	C/D
edulis	Guadalupe Palm	C/D
Ceratonia siliqua	Carob	C/I/D
Cerdidium floridum	Blue Palo Verde	D
Cercis occidentalis**	Western Redbud	C/I/M
Cornus		
nuttallii	Mountain Dogwood	I/M
stolonifera	Redtwig Dogwood	I/M
Eriobotrya		
japonica	Loquat	C/I/D
Erythrina caffra	Kaffirboom Coral Tree	C
Gingko biloba "Fairmount"	Fairmount Maidenhair Tree	I/M
Gleditsia triacanthos	Honey Locust	I/D/M
Juglans		
californica	California Walnut	I
hindsii	California Black Walnut	C/I
Lagerstroemia indica	Crape Myrtle	I/D/M
Ligustrum lucidum	Glossy Privet	I
Liquidambar styraciflua	Sweet Gum	C/I/M
Liriodendron tulipifera	Tulip Tree	I
Lyonothamnus floribundus		
ssp. Asplenifolius	Fernleaf Catalina Ironwood	C
Melaleuca spp.	Melaleuca	C/I/D
Parkinsonia aculeate	Mexican Palo Verde	C/I
Pistacia		
chinensis	Chinese Pistache	
	Pistachio Nut	C/I/D

vera	Pistachio Nut	I
Pittosporum		
phillyraeoides	Willow Pittosporum	C/I/D
viridiflorum	Cape Pittosporum	C/I
Platanus		
acerifolia	London Plane Tree	All zones
racemosa**	California Sycamore	C/I/M
Populus		
alba	White Poplar	D/M
fremontii**	Western Cottonwood	I
trichocarpa	Black Cottonwood	I/M
Prunus		
xblireiana	Flowering Plum	M
caroliniana	Carolina Laurel Cherry	C
ilicifolia**	Hollyleaf Cherry	C
lyonii**	Catalina Cherry	C
serrulata 'Kwanzan'	Flowering Cherry	M
yedoensis 'Akebono'	Akebono Flowering Cherry	M
Quercus		
agrifolia**	Coast Live Oak	C/I
engelmannii	Engelmann Oak	I
**  suber	Cork Oak	C/I/D
Rhus		
lancea**	African Sumac	C/I/D
Salix spp.**	Willow	All zones (R)
Tristania conferta	Brisbane Box	C/I
Ulmus		
parvifolia	Chinese Elm	I/D
pumila	Siberian Elm	C/M
Umbellularia californica**	California Bay Laurel	C/I

SHRUBS		
Agave	Century Plant	D
americana	Century Plant	D
deserti	Shawis Century Plant	D
shawi**		
Amorpha fruticosa**	False Indigobush	I
Arbutus		
menziesii**	Madrone	C/I
Arctostaphylos spp.**	Manzanita	C/I/D
Atriplex**		
canescens	Hoary Saltbush	I
lentiformis	Quail Saltbush	D
Baccharis**		
glutinosa	Mule Fat	C/I
pilularis	Coyote Bush	C/I/D
Carissa grandiflora	Natal Plum	C/I
Ceanothus spp.**	California Lilac	C/I/M
Cistus spp.	Rockrose	C/I/D
Cneoridium dumosum**	Bushrue	C
Comarostaphylis**		
diversifolia	Summer Holly	C
Convolvulus cneorum	Bush Morning Glory	C/I/M
Dalea		
orcuttii	Orcutt's Delea	D
spinosa**	Smoke Tree	I/D
Elaeagnus		
pungens	Silverberry	C/I/M
Encelia**		
californica	Coast Sunflower	C/I
farinose	White Brittlebush	D/I
Eriobotrya		
deflexa	Bronze Loquat	C/I
Eriophyllum		
confertiflorum**	Golden Yarrow	C/I
staechadifolium	Lizard Tail	C
Escallonia spp.	Escallonia	C/I
Feijoa sellowiana	Pineapple Guava	C/I/D
Fouquieria splendens	Ocotillo	D
Fremontodendron**		
californicum	Flannelbush	I/M
mexicanum	Southern Flannelbush	I
Galvezia		
juncea	Baja Bush-Snapdragon	C
speciosa	Island Bush-Snapdragon	C
Garrya		
elliptica	Coast Silktassel	C/I
flavescens**	Δchy Silktassel	I/M

Salvia spp.**	California Wild Rose	C/I
Sambucus spp.**	Baja California Wild Rose	C/I
Symphoricarpos mollis**	Sage	All Zones
Syringa vulgaris	Elderberry	C/I/M
Tecomaria capensis	Creeping Snowberry	C/I
Teucrium fruticans	Lilac	M
Toxicodendron**	Cape Honeysuckle	C/I/D
diversilobum	Bush Germander	C/I
Verbena		
lilacina	Poison Oak	I/M
Xylosma congestum		
Yucca**	Lilac Verbena	C
schidigera	Shiny Xylosma	C/I
whipplei		
	Mojave Yucca	D
	Foothill Yucca	I

<b>VINES</b>		
Antigonon leptopus	San Miguel Coral Vine	C/I
Distictis buccinatoria	Blood-Red Trumpet Vine	C/I/D
Keckiella cordifolia**	Heart-Leaved Penstemon	C/I
Lonicera japonica 'Halliana'	Hall's Honeysuckle	All Zones
subspicata**	Chaparral Honeysuckle	C/I
Solanum jasminoides	Potato Vine	C/I/D

<b>PERENNIALS</b>		
Coreopsis gigantea	Giant Coreopsis	C
grandiflora	Coreopsis	All Zones
maritima	Sea Dahlia	C
verticillata	Coreopsis	C/I
Heuchera maxima	Island Coral Bells	C/I
Iris douglasiana**	Douglas Iris	C/M
Iva hayesiana**	Poverty Weed	C/I
Kniphofia uvaria	Red-Hot Poker	C/M
Lavandula spp.	Lavender	All Zones
Limonium californicum var. mexicanum	Coastal Statice	C
perezii	Sea Lavender	C/I
Oenothera spp.	Primrose	C/I/M
Penstemon spp.**	Penstemon	C/I/D
Satureja douglasii	Yerba Buena	C/I
Sisyrinchium bellum	Blue-Eyed Grass	C/I
californicum	Golden-Eyed Grass	C
Solanum xanthii	Purple Nightshade	C/I
Zauschneria** californica	California Fuschia	C/I
cana	Hoary California Fuschia	C/I
'Catalina'	Catalina Fuschia	C/I

<b>ANNUALS</b>		
Lupinus spp.**	Lupine	C/I/M

### 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.

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

**APPENDIX B**  
**BEHAVE FIRE MODELING CALCULATION WORKSHEETS**

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BehavePlus 5.0.5 Tue, Dec 13, 2022 at 18:18:45 Page 1

**Inputs: SURFACE, SAFETY, SIZE, SPOT, IGNITE**

Description ▾ 9011LOSCOCESGR1

**Fuel/Vegetation, Surface/Understory**

Fuel Model ▾ gr1

**Fuel/Vegetation, Overstory**

Downwind Canopy Height ft ▾ 0.5

**Fuel Moisture**

1-h Moisture % ▾ 30

10-h Moisture % ▾

100-h Moisture % ▾

Live Herbaceous Moisture % ▾ 50

Live Woody Moisture % ▾

**Weather**

20-ft Wind Speed (upslope) mi/h ▾ 10

Wind Adjustment Factor ▾ .5

Air Temperature oF ▾ 75

Fuel Shading from the Sun % ▾ 0

**Terrain**

Slope Steepness % ▾ 95

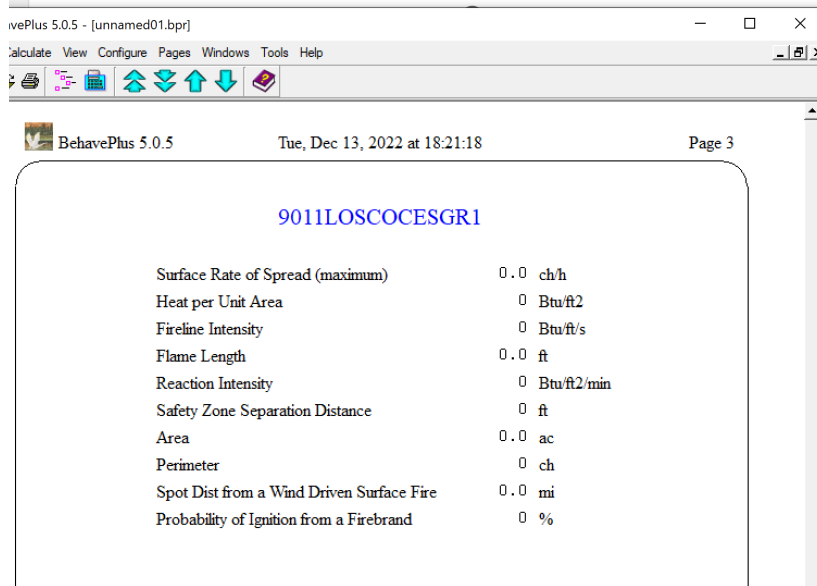
Ridge-to-Valley Elevation Difference ft ▾ 20

Ridge-to-Valley Horizontal Distance mi ▾ 0.1

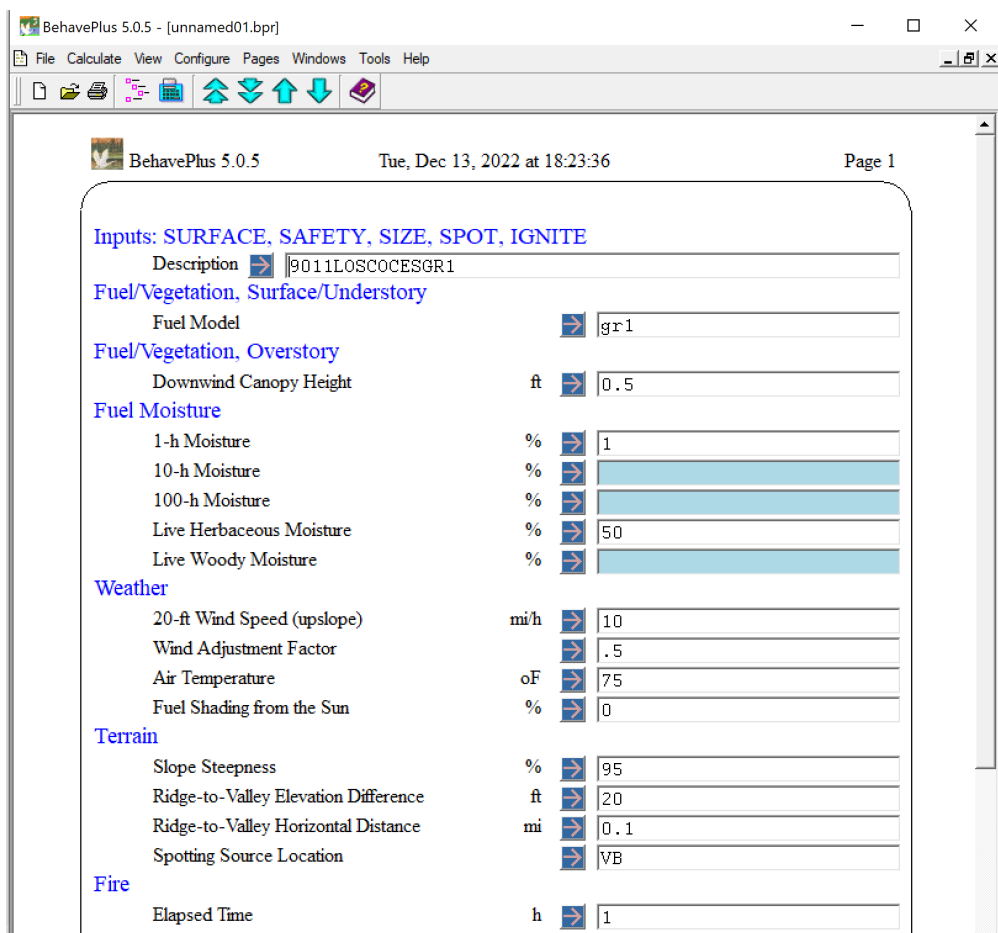
Spotting Source Location ▾ VB

**Fire**

Elapsed Time h ▾ 1



FUEL MODEL GR-1 TYPICAL LATE SUMMER-FALL BURNING CONDITIONS

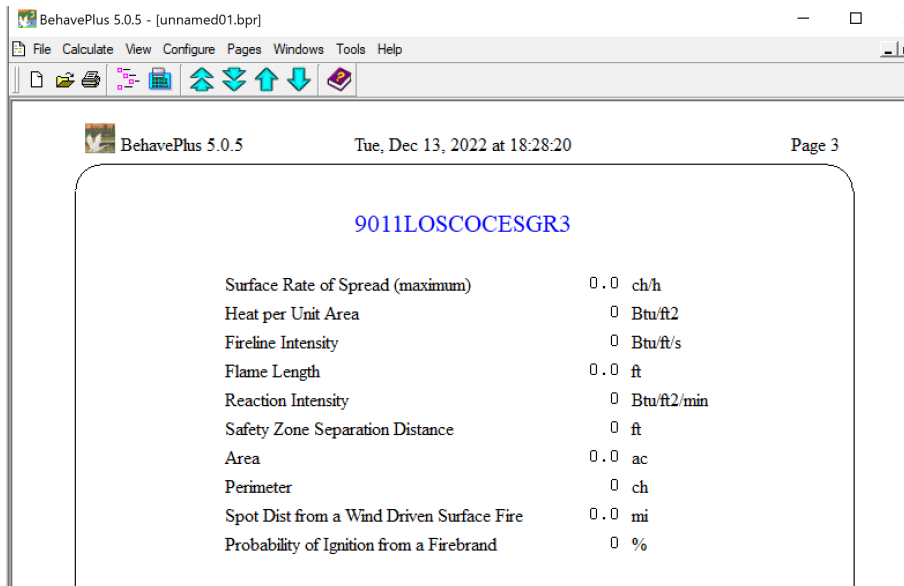
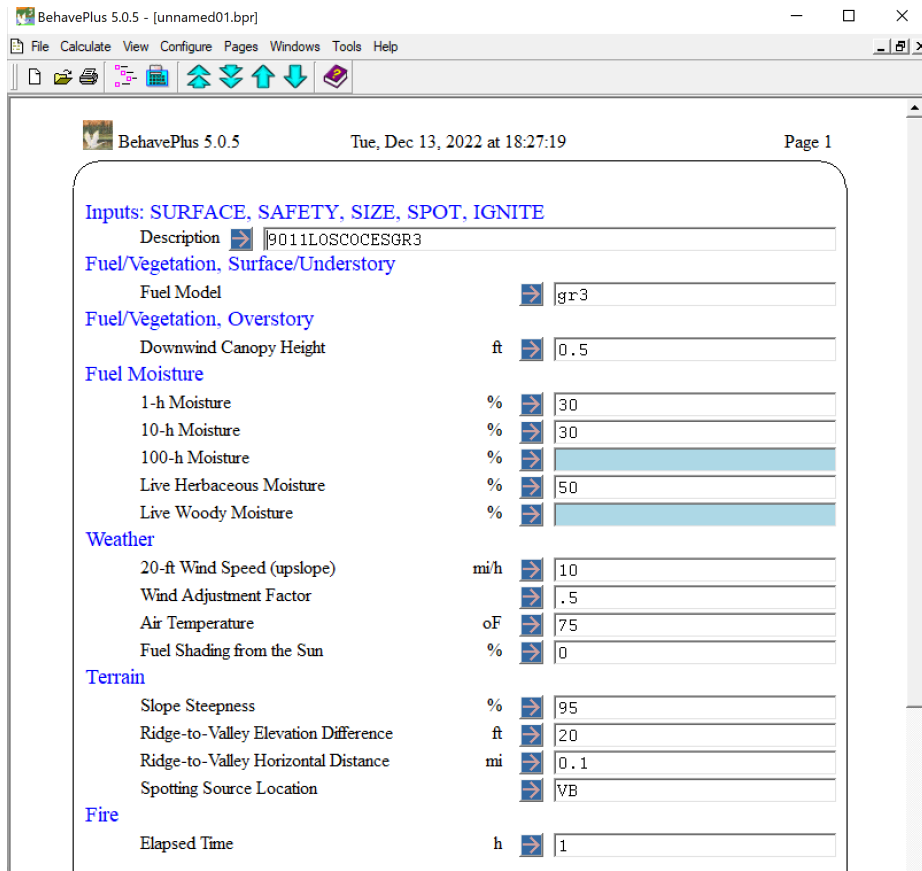




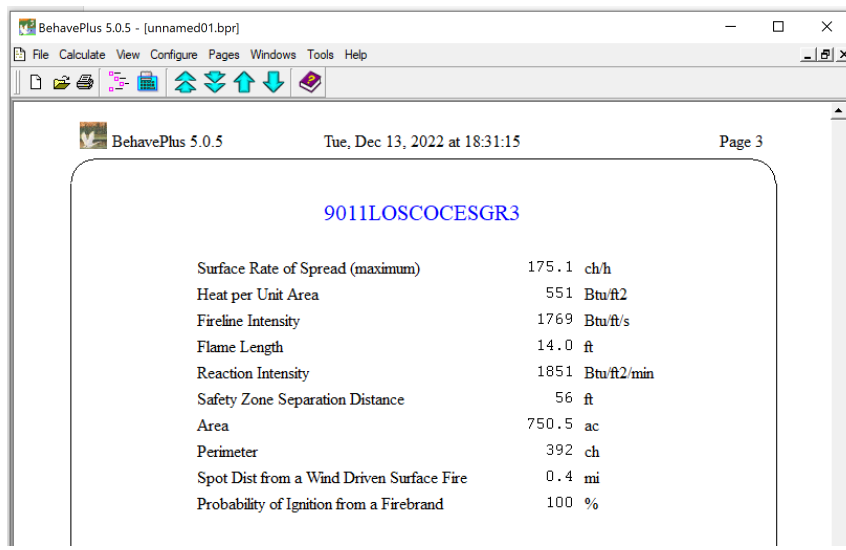
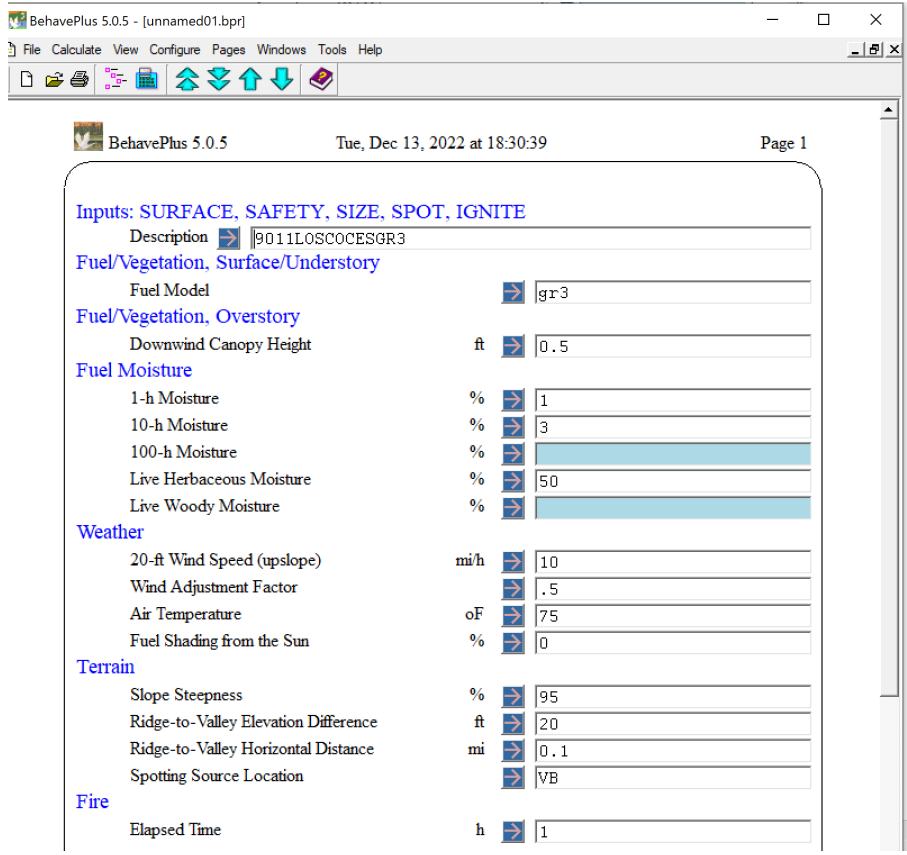
9011LOSCOCESGR1

Surface Rate of Spread (maximum)	43.2 ch/h
Heat per Unit Area	114 Btu/ft <sup>2</sup>
Fireline Intensity	91 Btu/ft/s
Flame Length	3.6 ft
Reaction Intensity	611 Btu/ft <sup>2</sup> /min
Safety Zone Separation Distance	14 ft
Area	62.2 ac
Perimeter	103 ch
Spot Dist from a Wind Driven Surface Fire	0.1 mi
Probability of Ignition from a Firebrand	100 %

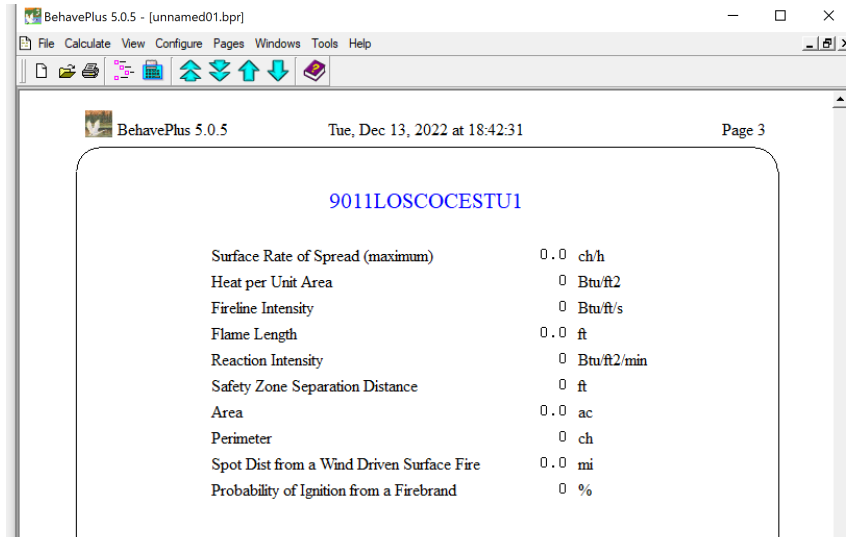
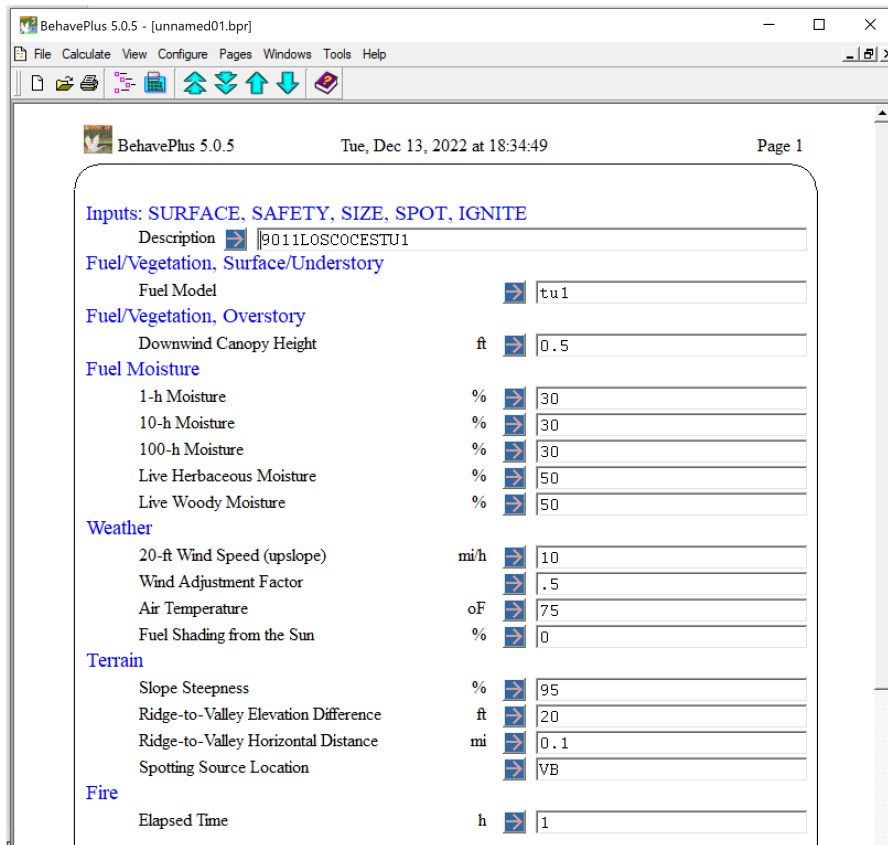
FUEL MODEL GR-1 TYPICAL SANTA ANA WIND EVENT BURNING CONDITIONS



FUEL MODEL GR-3 TYPICAL LATE SUMMER-FALL BURNING CONDITIONS



FUEL MODEL GR-3 SANTA ANA WIND EVENT BURNING CONDITIONS



FUEL MODEL TU-1 TYPICAL LATE SUMMER-FALL BURNING CONDITIONS

## Inputs: SURFACE, SAFETY, SIZE, SPOT, IGNITE

Description		↳	LOSCOCHESTU1
<b>Fuel/Vegetation, Surface/Understory</b>			
Fuel Model		↳	tu 1
<b>Fuel/Vegetation, Overstory</b>			
Downwind Canopy Height	ft	↳	0.5
<b>Fuel Moisture</b>			
1-h Moisture	%	↳	1
10-h Moisture	%	↳	3
100-h Moisture	%	↳	5
Live Herbaceous Moisture	%	↳	30
Live Woody Moisture	%	↳	50
<b>Weather</b>			
20-ft Wind Speed (upslope)	mi/h	↳	10
Wind Adjustment Factor		↳	.5
Air Temperature	oF	↳	75
Fuel Shading from the Sun	%	↳	0
<b>Terrain</b>			
Slope Steepness	%	↳	0
Ridge-to-Valley Elevation Difference	ft	↳	0
Ridge-to-Valley Horizontal Distance	mi	↳	
Spotting Source Location		↳	
<b>Fire</b>			
Elapsed Time	h	↳	1

## Run Option Notes

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

## LOSCOCHESTU1

Surface Rate of Spread (maximum)	6.2 ch/h
Heat per Unit Area	519 Btu/ft <sup>2</sup>
Fireline Intensity	59 Btu/ft/s
Flame Length	2.9 ft
Reaction Intensity	2171 Btu/ft <sup>2</sup> /min
Safety Zone Separation Distance	12 ft
Area	1.5 ac
Perimeter	15 ch
Spot Dist from a Wind Driven Surface Fire	0.1 mi
Probability of Ignition from a Firebrand	100 %

## FUEL MODEL TU-1 SANTA ANA WIND EVENT BURNING CONDITIONS

BehavePlus 5.0.5 Sat, Dec 17, 2022 at 07:31:13 Page 1

Inputs: SURFACE, SAFETY, SIZE, SPOT, IGNITE

Description [v] LOSCOCHESTU5

Fuel/Vegetation, Surface/Understory

Fuel Model [v] tu5

Fuel/Vegetation, Overstory

Downwind Canopy Height ft [v] 20

Fuel Moisture

1-h Moisture % [v] 1

10-h Moisture % [v] 3

100-h Moisture % [v] 5

Live Herbaceous Moisture % [v] 30

Live Woody Moisture % [v] 50

Weather

20-ft Wind Speed (upslope) mi/h [v] 20

Wind Adjustment Factor [v] .5

Air Temperature oF [v] 75

Fuel Shading from the Sun % [v] 0

Terrain

Slope Steepness % [v] 0

Ridge-to-Valley Elevation Difference ft [v] 0

Ridge-to-Valley Horizontal Distance mi [v]

Spotting Source Location [v]

Fire

Elapsed Time h [v] 1

Run Option Notes

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

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BehavePlus 5.0.5 Sat, Dec 17, 2022 at 07:33:03 Page 3

LOSOCHESTU5

Surface Rate of Spread (maximum)	35.8 ch/h
Heat per Unit Area	3365 Btu/ft <sup>2</sup>
Fireline Intensity	2211 Btu/ft/s
Flame Length	15.5 ft
Reaction Intensity	10721 Btu/ft <sup>2</sup> /min
Safety Zone Separation Distance	62 ft
Area	30.1 ac
Perimeter	80 ch
Spot Dist from a Wind Driven Surface Fire	0.6 mi
Probability of Ignition from a Firebrand	100 %

FUEL MODEL TU-5 ARRUNDO SANTA ANA WIND EVENT BURNING CONDITIONS

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BehavePlus 5.0.5 Sat, Dec 17, 2022 at 07:44:53 Page 1

**Inputs: SURFACE, SAFETY, SIZE, SPOT, IGNITE**

Description [X] [LOSCOCHESSH2]

**Fuel/Vegetation, Surface/Understory**  
 Fuel Model [X] sh2

**Fuel/Vegetation, Overstory**  
 Downwind Canopy Height ft [X] 0.5

**Fuel Moisture**

1-h Moisture	%	[X]	1
10-h Moisture	%	[X]	3
100-h Moisture	%	[X]	5
Live Herbaceous Moisture	%	[X]	30
Live Woody Moisture	%	[X]	50

**Weather**

20-ft Wind Speed (upslope)	mi/h	[X]	10
Wind Adjustment Factor		[X]	.5
Air Temperature	oF	[X]	75
Fuel Shading from the Sun	%	[X]	0

**Terrain**

Slope Steepness	%	[X]	0
Ridge-to-Valley Elevation Difference	ft	[X]	0
Ridge-to-Valley Horizontal Distance	mi	[X]	
Spotting Source Location		[X]	

**Fire**

Elapsed Time	h	[X]	1
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**Run Option Notes**  
 Maximum reliable effective wind speed limit IS imposed [SURFACE].

BehavePlus 5.0.5 Sat, Dec 17, 2022 at 07:46:51 Page 3

**LOSCOCHESSH2**

Surface Rate of Spread (maximum)	14.1	ch/h
Heat per Unit Area	1629	Btu/ft2
Fireline Intensity	421	Btu/ft/s
Flame Length	7.3	ft
Reaction Intensity	7092	Btu/ft2/min
Safety Zone Separation Distance	29	ft
Area	7.7	ac
Perimeter	35	ch
Spot Dist from a Wind Driven Surface Fire	0.2	mi
Probability of Ignition from a Firebrand	100	%

OFF-SITE FUEL MODEL SH-2 SANTA ANA WIND EVENT BURNING CONDITIONS

# APPENDIX C PROJECT DOCUMENTS



**County of San Diego, Planning & Development Services  
INITIAL CONSULTATION MEETING  
REQUEST  
ZONING DIVISION**

An Initial Consultation (IC) meeting is intended to identify the general regulatory constraints of a property, answer specific customer questions and/or provide a cursory review of a conceptual project for potential issues. Attendance at an [Initial Consultation meeting](#) does not satisfy mandatory [Major Pre-Application](#) requirements for major projects.

An IC meeting is not to review or submit an application for a discretionary permit. For information on submitting an application for a [Discretionary Permit](#), contact the Planning & Development Services (PDS) Zoning Counter at 1-888-267-8770 or to schedule a submittal appointment call 1-888-267-8770.

Requestor's Name: ELLIOTT MAY Requestor's Phone: 619-251-5094  
 Mailing Address: 12322 "A" WOODSIDE AV #286 LAKESIDE 92040  
 Requestor's Fax: \_\_\_\_\_ Email Address: elliottmay901@gmail.com

Are you an Attorney or are you bringing an Attorney to the Initial Consultation Meeting?  Yes  No  
 Are you an Attorney or are you bringing an Attorney and will legal issues be discussed?  Yes  No

Be aware that PDS Policy requires that a Deputy County Counsel attend meetings where an outside attorney is present. Deputy County Counsel will charge at the hourly rate shown below. If you check the "Yes" box, above, change your mind and fail to notify PDS that you will not bring an attorney, County Counsel charges for preparation and travel (generally 1-2 hours) will still be applied.

**MEETING ATTENDEES AND COST**

A PDS Project Manager will be assigned to the IC and additional attendees may be requested in the table below. The PDS Project Manager will recommend the appropriate representatives based on this request, site constraints, and project features. The IC deposit of \$2,535 will be collected (+ \$500 for each additional specialty requested) to cover the initial review, however the total cost of the meeting will be based on total staff time including, but not limited to, completing background research, reviewing application materials, studies, responding to phone inquiries, preparation of correspondence, meeting preparation and attendance, and follow up. If the actual cost exceeds the initial \$2,535 deposit, an additional deposit must be paid by the financially responsible person to cover the difference.

Attendance Requested?	Staffing	Issues Covered	Deposit/Fee	Hourly Rate	Approximate Staff Hours
Yes (Required)	PDS Project Manager	Planning, Ordinance Compliance, Environmental Issues	\$2,535 (D)	\$189 - \$226/hr	5 - 10 hours
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	PDS Land Development	Access, Road Improvements, Drainage, Stormwater	\$500 (D)	\$189 - \$226/hr	3 - 4 hours
<input type="checkbox"/> Yes <input type="checkbox"/> No	Department of Environmental Health	Wells/Septic Systems	\$266 (F)	n/a	varies
<input type="checkbox"/> Yes <input type="checkbox"/> No	Department of Parks and Recreation	Parkland Dedication Ordinance	hourly	\$72 - \$116/hr	varies
<input type="checkbox"/> Yes <input type="checkbox"/> No	County Counsel	Legal Issues/Interpretation	hourly	\$214/hr	varies

— PDS STAFF USE ONLY —

Record ID: \_\_\_\_\_  
 Student Intern: \_\_\_\_\_  
 Project Manager: \_\_\_\_\_  
 Planning Manager: \_\_\_\_\_

— OFFICIAL USE ONLY —

**SDC PDS RCVD 2-26-21**  
**IC21-018**

5510 OVERLAND AVE, SUITE 110, SAN DIEGO, CA 92123 • (858) 565-5981 • (888) 267-8770  
<http://www.sdcounty.ca.gov/pds>





County of San Diego, Planning & Development Services  
**DISCRETIONARY PERMIT APPLICATION**  
 ZONING DIVISION

RECORD ID(S): PDS 2021-IC-21-018

	Planning	LD Review Teams	DEH	Trails Review	Other
<b>FEES</b>	_____ +	_____ +	_____ +	_____ +	_____ +
<b>DEPOSITS</b>	<u>3035</u> +	_____ +	<u>3035</u> +	_____ +	_____ +
<b>TOTAL FEES AND INITIAL DEPOSIT: \$</b> _____ <u>3035</u>					

The submitted Initial Deposit is estimated to cover only the initial project review (Scoping). Additional monies will be required. A project-specific cost estimate will be provided at the conclusion of Scoping, along with a letter detailing any project issues, revisions, and studies as deemed necessary for compliance with State and County codes and ordinances.

Have you had a pre-application conference? YES  NO  If yes, Planner's Name \_\_\_\_\_

Is this project the subject of a code violation? YES  NO  If yes, provide a copy of the Warning/Citation/Violation Notice, \_\_\_\_\_

Are there any related, open applications such as DEH permits, Grading permits, etc? YES  NO

If yes, list permits: \_\_\_\_\_

Is there an existing Trust Account on any of the open records related to this proposed project? YES  NO

Are there any prior related cases such as a specific plan? If yes, list Case Number(s) \_\_\_\_\_

**The Financially Responsible Party is responsible for all costs related to this application (See form PDS-126).**

Assessor's Parcel No. (APN) 397 060 79 00

**Owner's Name** Daniel Fitch Owner's Phone 619 561 1800

Owner's Address P O Box 1550 Lakeside Ca. 92040  
Number Street City State Zip

Owner's email fccan@cox.net Owner's Fax \_\_\_\_\_

**Applicant's Name** Owner Applicant's Phone \_\_\_\_\_  
(if different from owner)

Applicant's Address \_\_\_\_\_  
Number Street City State Zip

Applicant's email \_\_\_\_\_ Applicant's Fax \_\_\_\_\_

**Engineer's Name** Elliott M May Engineer's Phone 619 251 5094

Engineer's Address 12222 A Woodside Ave #237 Lakeside, Ca. 92040  
Number Street City State Zip

Engineer's email elliottmay901@gmail.com Engineer's Fax \_\_\_\_\_

**Project Contact Person** Engineer Phone \_\_\_\_\_

Address \_\_\_\_\_  
Number Street City State Zip

Project Contact's email \_\_\_\_\_ Project Contact's Fax \_\_\_\_\_

Project Name Fitch Lot Split

Project Address & Nearest Cross Street Via Diego

I declare under penalty of perjury under the laws of the State of California that the statements made as part of this application are true and correct. I hereby agree to provide the indemnification as required by Chapter 2 of Division 6 of Title 8 of the San Diego County Code.

**\*REQUIRED: an Authorized Agent signing below must attach a signed Letter of Authorization.**

[Signature]  
 Signature of Owner or **Authorized Agent**

Daniel Fitch  
 Print Signator's Name Date

--- OFFICIAL USE ONLY ---

SDC PDS RCVD 2-26-21  
**IC21-018**



PDS-346 (5/21/2018)



County of San Diego, Planning & Development Services  
**SUPPLEMENTAL APPLICATION**  
 ZONING DIVISION

- Type of permit requested:** (Check ALL that apply)
- |  |   |
|--|---|
| <input type="checkbox"/> Major Use Permit      | <input checked="" type="checkbox"/> Modification        |
| <input type="checkbox"/> Minor Use Permit      | <input type="checkbox"/> Minor/Administrative Deviation |
| <input type="checkbox"/> Administrative Permit | <input type="checkbox"/> Time Extension                 |
| <input type="checkbox"/> Site Plan             |   |
| <input type="checkbox"/> Others _____          |   |

**Waivers or exceptions:**

(e.g., height or setbacks with Major Use Permit) associated with the application:

Modify Limited Building Zone from 100 feet to 30 feet

**Description of proposed use:**

Describe in detail the use/projects in terms of purpose, capacities, operating characteristics, access-parking arrangement, service radius and any other relevant data. Attach additional sheets if needed.

See project description with form PDS325

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**SDC PDS RCVD 2-26-21**

**IC21-018**

5510 OVERLAND AVE, SUITE 110, SAN DIEGO, CA 92123 • (858) 565-5981 • (888) 267-8770  
<http://www.sdcountry.ca.gov/pds>

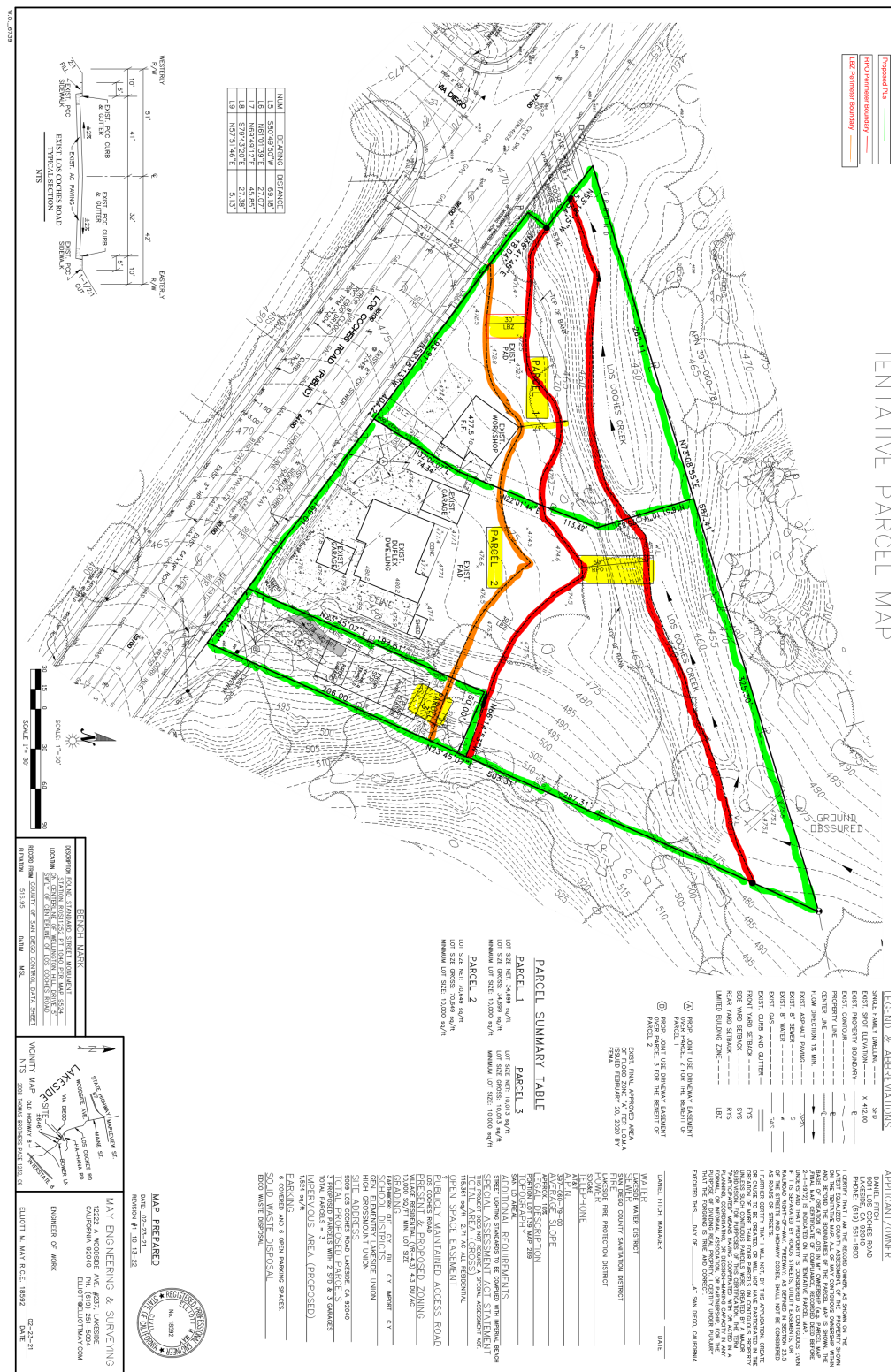
PDS-346S (Rev. 08/22/2018)



PAGE 1 of 2

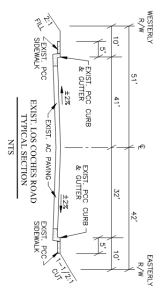






- Proposed PLS
- Proposed LBZ
- Proposed RPO
- Proposed Parcel Boundary
- Existing Parcel Boundary

MINI	BEARING	DISTANCE
1.5	S89°09'52"W	68.14
1.5	N81°01'39"E	27.07
4.6	S79°24'20"E	27.35
1.9	N57°51'40"E	5.13



TENTATIVE PARCEL MAP

LEGEND & ABBREVIATIONS

EXISTING PARCEL BOUNDARY --- X 41200

EXISTING PROPERTY BOUNDARY ---

PROPOSED PARCEL BOUNDARY ---

PROPOSED LBZ BOUNDARY ---

PROPOSED RPO BOUNDARY ---

PROPOSED PLS BOUNDARY ---

PROPOSED PARCEL 1 BOUNDARY ---

PROPOSED PARCEL 2 BOUNDARY ---

PROPOSED PARCEL 3 BOUNDARY ---

PARCEL SUMMARY TABLE

Parcel 1	Parcel 2	Parcel 3
LOT SIZE NET: 34,689 sq/ft	LOT SIZE NET: 10,000 sq/ft	LOT SIZE NET: 10,000 sq/ft
LOT SIZE GROSS: 34,689 sq/ft	LOT SIZE GROSS: 10,000 sq/ft	LOT SIZE GROSS: 10,000 sq/ft
MINIMUM LOT SIZE: 10,000 sq/ft	MINIMUM LOT SIZE: 10,000 sq/ft	MINIMUM LOT SIZE: 10,000 sq/ft

APPLICANT: [Name]

PROJECT: [Name]

DATE: [Date]

SCALE: 1"=50'

NEIGHBORHOOD: [Name]

CITY: [Name]

COUNTY: [Name]

STATE: [Name]

ZIP: [Code]

OWNER: [Name]

PREPARED BY: [Name]

DATE: [Date]

SCALE: 1"=50'

NEIGHBORHOOD: [Name]

CITY: [Name]

COUNTY: [Name]

STATE: [Name]

ZIP: [Code]

OWNER: [Name]

PREPARED BY: [Name]

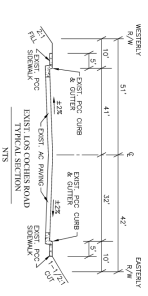
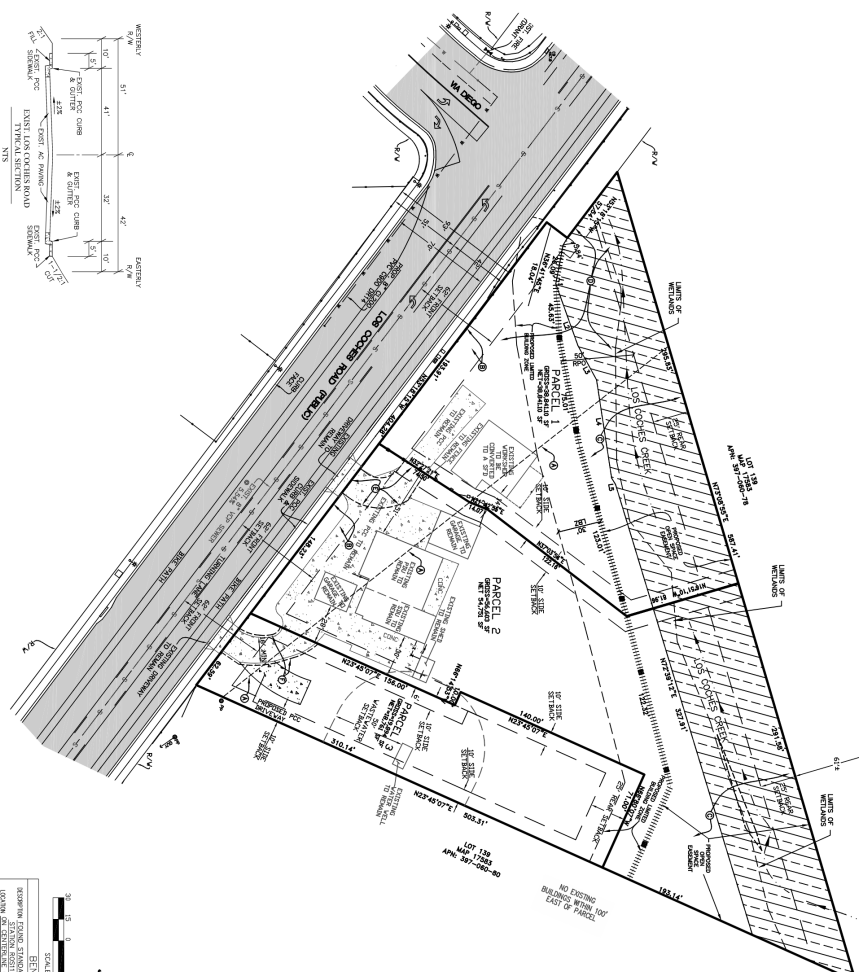
DATE: [Date]



Revised Tentative Parcel Map (1-12-23) with New LBZ & RPO Perimeters



PRELIMINARY GRADING PLAN



**REVISIONS**  
 REVISION NO. DATE DESCRIPTION  
 1 05/11/2021 PRELIMINARY GRADING PLAN  
 2 05/11/2021 PRELIMINARY GRADING PLAN  
 3 05/11/2021 PRELIMINARY GRADING PLAN

**PROJECT INFORMATION**  
 PROJECT NO. 2021-018  
 PROJECT NAME: 2025 TPM 21331 PRELIMINARY GRADING PLAN  
 CLIENT: MAY ENGINEERING & SURVEYING

**DESIGNER OF WORK**  
 MAY ENGINEERING & SURVEYING  
 10000 AVENUE 250  
 SAN DIEGO, CA 92121  
 TEL: (619) 231-5054  
 FAX: (619) 231-5054  
 WWW: WWW.MAYENGINEERING.COM

**DATE**  
 05/11/2021

**LEGEND OF SYMBOLS AND NOTATIONS**

SHIELD (MAY) DRAINAGE --- 570  
 EXISTING PAVEMENT --- 500  
 EXISTING CONCRETE --- 500  
 EXISTING ASPHALT --- 500  
 EXISTING GRAVEL --- 500  
 EXISTING SAND --- 500  
 EXISTING GRAVEL --- 500  
 EXISTING SAND --- 500  
 EXISTING ASPHALT --- 500  
 EXISTING GRAVEL --- 500  
 EXISTING SAND --- 500

**POP NOTE:**  
 THIS PLAN IS PROVIDED TO ALLOW FOR FULL REVIEW AND APPROVAL BY THE CALIFORNIA DEPARTMENT OF PUBLIC WORKS AND THE CALIFORNIA DEPARTMENT OF FIRE AND WEATHER SERVICES. THE CLIENT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CALIFORNIA DEPARTMENT OF PUBLIC WORKS AND THE CALIFORNIA DEPARTMENT OF FIRE AND WEATHER SERVICES. THE CLIENT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CALIFORNIA DEPARTMENT OF PUBLIC WORKS AND THE CALIFORNIA DEPARTMENT OF FIRE AND WEATHER SERVICES. THE CLIENT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CALIFORNIA DEPARTMENT OF PUBLIC WORKS AND THE CALIFORNIA DEPARTMENT OF FIRE AND WEATHER SERVICES.

**DISBURSED AREA**  
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2025 TPM 21331 Preliminary Grading Plan

