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## **MEMO**

TO: Carla Violet, Urban Planning Partners

FROM: Zeke Lunder, Wildfire Analyst at Deer Creek Resources

SUBJECT: Portola Valley Potential Housing Sites and Wildfire Hazard

DATE: 12/02/2022

Carla,

I have reviewed the June 2022 draft maps for potential new housing sites in Portola Valley. DCR was involved in the initial vetting of potential project sites for wildfire hazards, the sites identified in these maps appear to follow the guidance we provided in our earlier memo (attached below) on wildfire issues as related to residential development.

The selected sites appear consistent with the direction we provided in our earlier memo, and we feel that the sites identified in this map are the best available sites in the overall context of the Portola Valley community. The proximity of these sites to major thoroughfares and their location on fairly-flat ground make them more defensible from wildfire than other sites on steep ground, in heavier fuels, or with poorer access. These sites are also located in close proximity to the Woodside Fire Protection District's Station 8. Their proximity to both Alpine and Portola Road make them preferable from an evacuation standpoint. With respect to the projects fronting the Alpine corridor, future development may allow for the construction of a wider evacuation lane benefiting the entire community. Also, the proposed housing sites located close to Highway 280 have the least likelihood of increasing the evacuation time of other residents in the case of a larger fire. As with any development in fire-prone areas like Portola Valley, the buildings and grounds will need to be designed with wildfire safety in mind.

The Town of Portola Valley faces potential wildfire evacuation challenges *with or without* new development, and should prioritize vegetation management to the maximum extent possible within the right-of-way of Alpine Road and Portola Valley Road.

## **Moritz Map**

The 'Moritz Map', created by Ray Moritz, does a decent job of characterizing the highest hazard areas within the Town. However, the initial map is nearly 15 years old, and it appears to miss several areas with Very High hazards in steep canyon areas. Also, by calling almost the entire town 'high' hazard, Moritz's map lacks subtlety. There is a wide variety of conditions within the areas Moritz paints broadly as 'high' hazard, and in many of these areas, concerted vegetation management could greatly reduce hazards.

*The Moritz Map:*

## FUEL HAZARD MAP

Portola Valley General Plan Update



Since vegetation can be managed, especially on areas of milder slope, it is not reasonable to exert there is nowhere safe in town to build higher-density developments. Thorough and well-designed wildfire mitigations are possible, wildfire hazard is not chiseled in stone.

Note, the Moritz Map's characterization of "very high" and "high" hazard zones are based on vegetation fuel type (as described in the 2008 Fuel Hazard Assessment Study<sup>1</sup>) whereas the CalFire's definition of Very High and High Fire Hazard Severity Zones are based on multiple factors. The Fire Hazard Severity Zone maps are developed using a science-based and field-tested model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior. Many factors are considered such as fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, and typical fire weather for the area.<sup>2</sup>

Zeke Lunder

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### **February 3, 2022 Memo:**

In fall of 2021, Deer Creek Resources was contracted to conduct a cursory survey of wildfire hazards to inform the update of the Portola Valley General Plan's Housing and Hazard Elements. DCR Wildfire Analyst, Zeke Lunder, conducted a 2-day site survey of the community, and assessed existing vegetation, property ownership and building footprint maps, fire history, historic weather, and terrain mapping data. This document summarizes DCR's observations.

### ***What Wildfire Hazards Exist in the Project Area?***

Many areas of high and extreme wildfire hazard exist within the Portola Valley community. The highest-hazard areas are generally on steeper slopes of canyons or gullies, in difficult-to-access places where vegetation management is very difficult to accomplish. Hazards are amplified in east-west oriented canyon areas where the topography will funnel strong autumn winds, which tend to blow from the east or west.

<sup>1</sup> <https://www.portolavalley.net/home/showdocument?id=2420>

<sup>2</sup> <https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/>

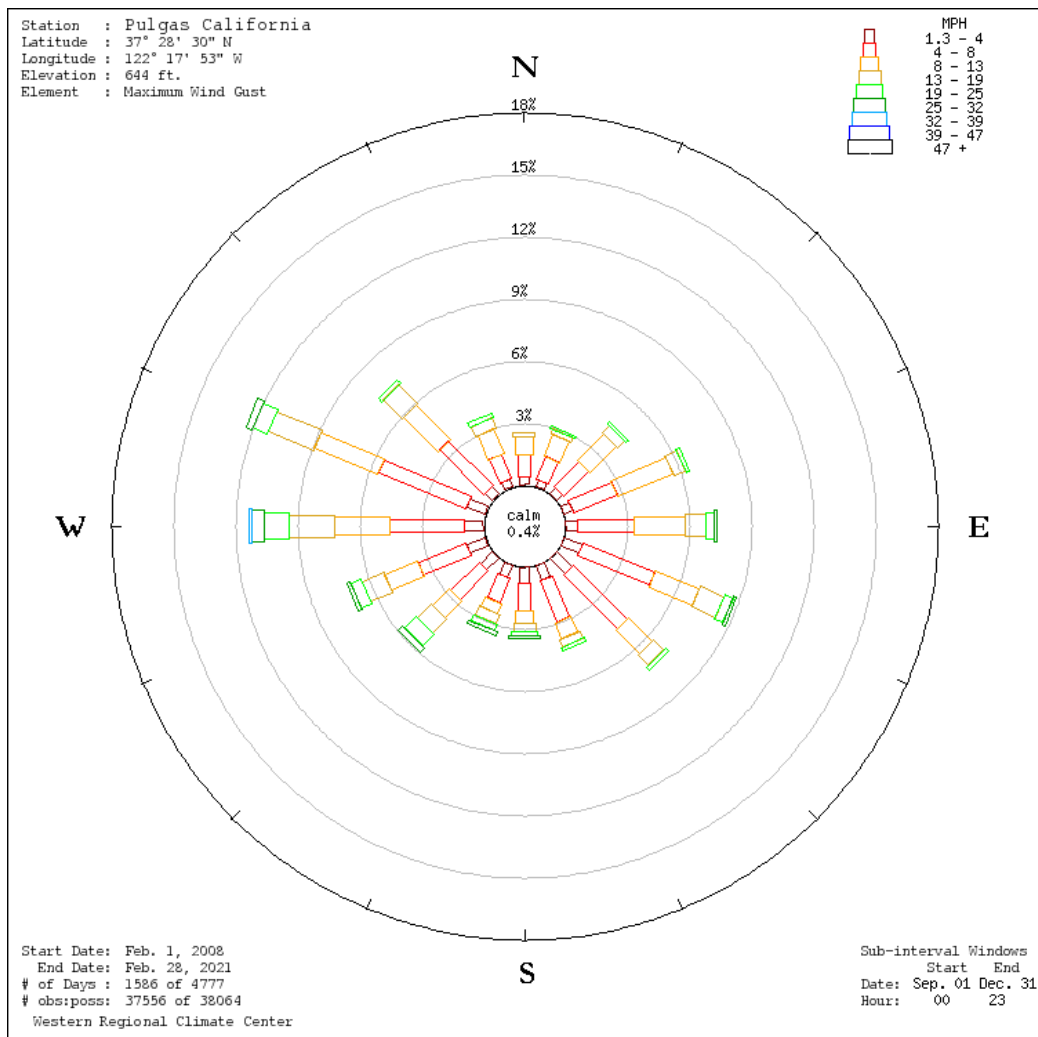




Steep, inaccessible areas have some of the highest hazard. Slopes over 30% shown in red.

### ***Wildfire Weather***

While many firefighting resources are available to respond to fires starting in Portola Valley, the greatest threat to the community is not the typical roadside fire or structure fire which burns into the vegetation, rather, it is a wind-driven conflagration which occurs when weather conditions are so severe firefighting will be ineffective. This low-probability/high consequence event may only happen once in a century, but when it occurs, no amount of firefighting will stop it until the winds subside.



Wind rose for Pulgas weather station. Colors show peak gust, length of bar is frequency of occurrence.

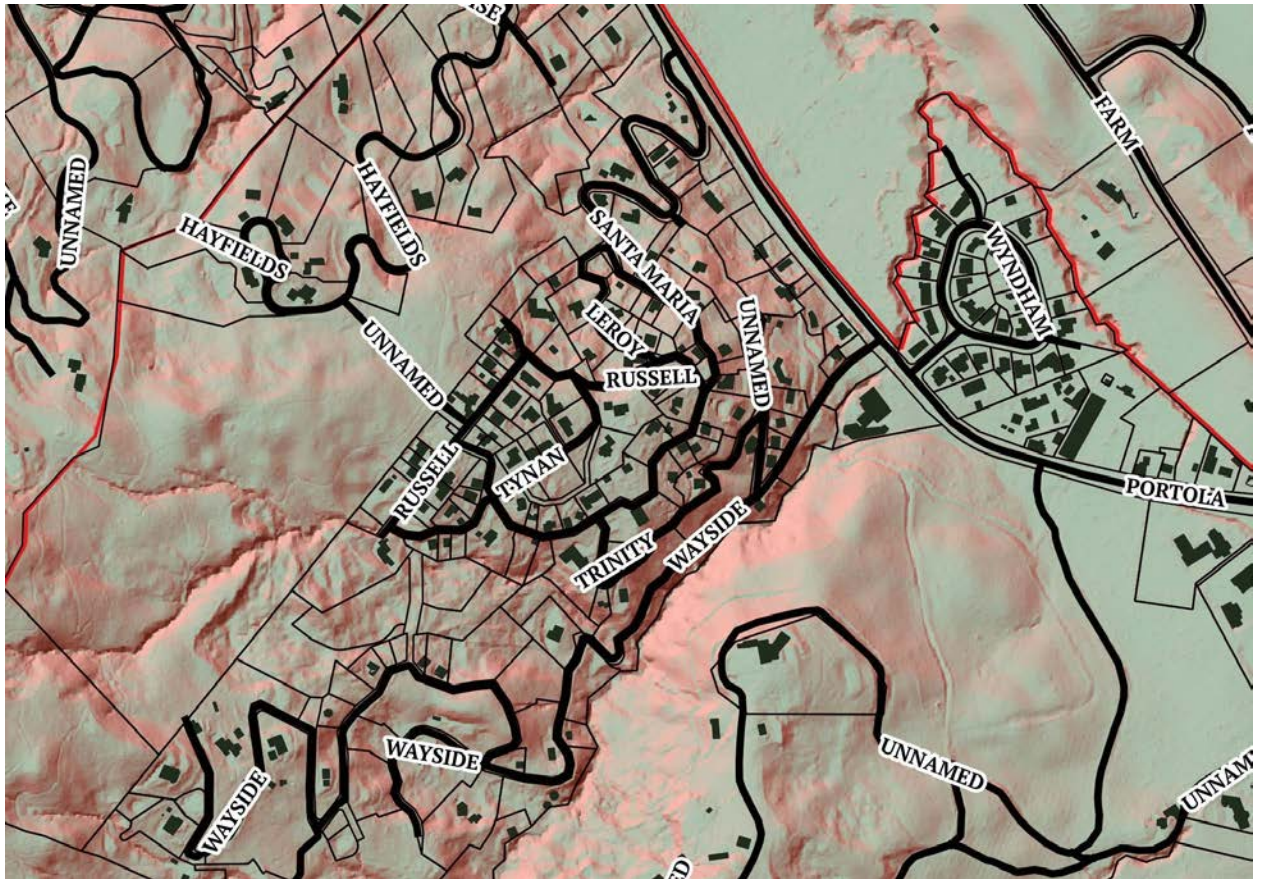
Historic weather data suggests a catastrophic fire is most likely to burn into the area from the east, in the autumn. While less common than west winds, east winds are generally drier, and the strongest winds are often preceded by days of milder offshore winds, which can create critically-dry fuel moistures. As such, they bring the greatest wildfire threat. This increases the relative hazard to areas on the east side of town. Also, Alpine Road has heavy traffic loads and powerlines, both of which increase the likelihood of a wildfire ignition on the toe of the slope which could run uphill toward the west.

### ***West Side of Town***

Wayside Road, Santa Maria Ave, and Hayfields Road all have poor access, extremely heavy vegetative fuel loads, and exposure to east winds. As shown above, winds tend to come out of the west during the driest parts of the year, but these winds, coming off the ocean, are generally moister than the east winds. Fires burning from the west will be burning downhill into these areas, but under drought conditions, the recent CZU



Complex showed the potential for catastrophic fires in similar coastal forests. These areas west of Portola Road also have the potential for severe wildfire losses.



Steep, inaccessible areas have some of the highest hazard. Slopes over 30% shown in red.

### ***Mapache/Westridge/Meadowood/Shawnee/Franklin Garden***

While these areas still have high exposure to wildfire losses, they have a somewhat lower wildfire hazard than the steeper areas mentioned above. There are fewer deep gullies in this area, and generally safer access and better vegetation clearance along somewhat wider roads. Gentler slopes mean there is more developable land on each lot, and this may provide some opportunities for ADU development in these neighborhoods. Any future infill development in this area should be accompanied by improved vegetation management along main roads like Westridge (60-85 foot right-of-way) and Mapache (60 foot right-of-way).





Green areas are slopes less than 20%, possible ADU sites. Slopes over 20% shown in tan.



***Which areas should PV avoid when siting new housing?***

In general, the community should avoid building new dwellings on slopes over 20% where natural vegetation creates elevated wildfire hazards. 20% is not an absolute number. It may be possible to mitigate fire hazards on some slopes steeper than 20% where the dominant vegetation is grass or in areas with mature oaks with a grass understory.

The community should also avoid developing hillside areas where property lines, terrain, or other factors constrain access for vegetation management on slopes below a structure. Generally, this would mean the potentially developed property, at a minimum, should have roads or trails which make it possible to safely navigate a vehicle to the bottom of the property.

New multifamily housing should not be constructed on dead-end streets or in neighborhoods identified as having potential wildfire evacuation problems unless the developers create an actionable plan to mitigate known wildfire hazards, and Woodside Fire Protection District staff have reviewed and approved the plan. We recommend the Town maximize vegetation thinning within their right-of-way along major arterial travel routes.

Any development for which approval is contingent upon ongoing wildfire hazard mitigation vegetation management should require establishment of an endowment or special assessment which will fund vegetation maintenance in perpetuity.

From a wildfire perspective, areas along Alpine and Portola Roads are the safest option for new development. These areas are relatively flat, and will not be in the path of slope-driven wildfires. ADU development may be a good solution for increasing housing in areas less than 20% slope shown in figures, above.

Given high-hazard wildland fuels conditions and poor ingress and egress along narrow roads within the interior of the community, the proposed building sites identified in this plan are the safest options (from a wildfire standpoint) available. Vegetation along Alpine and Portola Roads creates wildfire hazards which could render both of these corridors dangerous during a wildfire evacuation event. Regardless of whether or not new development occurs within the Portola Valley community, thinning heavy vegetation and pruning up trees within the right-of-way of these two major travel routes should be undertaken as soon as possible.

***Mapping Needs***

Current wildfire hazard maps lack sufficient detail to be useful in developing site/project-specific wildfire hazard mitigation projects. However, more detailed mapping is not needed to identify many of the places with the most extreme wildfire hazards within Portola Valley. We (DCR) feel that we have sufficient data to support the recommendations stated in this report.



More detailed vegetation/fuels data would be helpful in triaging areas for wildfire hazard mitigation. This would be especially useful in developing mitigations for any new development within the community. A draft LiDAR-derived vegetation mapping dataset is nearly ready for release by San Mateo County. DCR reviewed this data and while it does an excellent job describing vegetative cover, it lacks detail for the understory vegetation which is the primary determinant of wildfire behavior. We suggest the Town of Portola Valley or Woodside Fire Protection District undertake detailed 3-dimensional mapping of the understory vegetation. This mapping should be done in consultation with wildfire behavior analysts so it is collected in a format which is compatible with predictive wildfire spread models.