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SDC Fire Fuels Management Plan

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Introduction

Photographs from the late 1800s show the eastern flank of Sonoma Mountain, and the current, open space lands of the Sonoma Developmental Center (SDC) specifically, to consist of extensive prairie lands and oak woodland areas that were much more open and less dense than what they are today (Figures 1 and 2). Over the past 50-100 years, and especially in the last 20-30 years, as the eventuality of facility closure became more and more assured, devolving land management practices have allowed the property to become a tinderbox.

During indigenous times, these were prime hunting and foraging lands, kept open through the regular application of cultural burns. The arrival of Europeans in the 1800s brought logging of the site's redwoods followed by extensive grazing practices and the introduction of exotic/invasive grassland species. It also brought a new culture of fire suppression. These suppression activities continued once the lands became part of the State of California, along with active cattle grazing and ranching that supported food production for the clients of the developmental center facility.

A shift in practice came in the 1920s when a large wildfire broke out in the Mayacamas range on the Eastern side of Sonoma Valley. To better protect the state's facilities and land from wildfire, a wide fire break was cut into forested lands along the northern property boundary, running westward from the site's old orchard up to the summit of the mountain, and new and existing ranch roads were used as fire roads. Additional fire roads below the orchard areas ran along the northern and southern property lines to the valley floor.

By the 1950s, the advent of canned foods and improved food distribution systems rendered livestock production less important to the institution, and grazing activities on the mountain ceased. A brief return to grazing occurred in the mid-1970s through a private lease, but no grazing has occurred since approximately 1980. In addition, SDC employees were for some time allowed access to the fire road system to cut up downed trees for firewood. This practice kept much of the fire fuel load low within the woodland areas. The fire roads themselves were disced annually during the spring and early summer by SDC staff and equipment. All these activities ceased by the early 2000s, which is also when transfer of the upper 600 acres of SDC to California State Parks occurred.

Since that time, prairie lands have filled with chapparal species including coyote brush, poison oak, manzanita, and live oak scrub (Figure 3). Forested sections have become choked with ladder fuels, and an increasing number of downed trees are seen as recurring drought conditions and sudden oak disease have weakened trees, leaving them susceptible to falling during strong winds (Figure 4). And while the

site's primary fire roads have had occasional grading by CalFire staff since the 1990s, most fire roads have been encroached by native and non-native vegetation, such as coyote brush and invasive Scotch and French broom. These fire fuels, along with road erosion issues, are now blocking emergency access to many sections of the property (Figures 5 and 6).

During the 2017 firestorm, the Nuns fire reached the edges of SDC open space lands on two flanks (across Sonoma Creek from the east and to Asbury Creek from the north). Luckily, fire crews and several adjacent landowners prevented the fire from spreading into this area, where it likely would have burned uncontrollably toward adjacent hillside communities of Sobre Vista and Diamond A. While the clay-soiled and wetter eastern flank of Sonoma Mountain is not as susceptible to wildfire as the volcanic-soiled, chapparal covered Mayacamas Range, because of fire suppression and land management, the SDC property is now considered a significant fire hazard. Left unaddressed and unmanaged, its fuels create the opportunity for wildfire to spread rapidly along the western side of Sonoma Valley, as has been seen multiple times on the Eastern side of the valley. However, with planning, and through a combination of manual vegetation management and controlled burns, this same land, with its patchwork of historic prairie lands and network of once-functional fire roads, could be managed to have the opposite effect – to function as a natural, north-south and east-west firebreak, and help arrest the propagation of increasingly common wildfires.

SDC Open Space Fire Fuels Reduction Planning

In June of 2022, the Sonoma Ecology Center was awarded a grant of $15,000 from the Sonoma County Vintners Foundation to advance fire fuels planning on the SDC open space lands on the flank of Sonoma Mountain. Using these funds, SEC staff combined a longstanding familiarity of the property along with field reconnaissance and GIS (Geographic Information Systems) tools to map out areas on the property with particularly problematic accumulations of fire fuels. Due to time and budget limitations, we did not focus here on the collection of quantitative or semi-quantitative biomass estimates for fire fuels. Instead, staff surveyed the property and its network of fire roads and trails, to identify simple polygon areas where management actions could be taken to address discrete stands of invasive species (primarily French broom (*Genista monspessulana*) and Scotch broom (*Cytisus scoparius*), or where future prescribed burn or other activities could be planned to restore prairie lands choked by fire fuels and invasive grasses, paticularly medusahead (*Elymus caput-medusae*) to a more open and ecologically resilient state. The overall goal is to promote management of the property to help restore ecological function, including its extremely important wildlife corridor area, and also to improve regional fire resiliency by leveraging the site's network of fire roads and historic prairie lands to restore strategic and favorable fire progression breaks in the landscape. In this document, we discuss and identify on a map (see Figure 7) 11 discrete fire fuels management areas. Beyond these specific areas, French and Scotch broom, along with Blackberry (*Rubus armeniacus*) briars, Teasel (*Dipsacus fullonum*), Klamath weed (*Hypericum perforatum*) and other non-native invasive species are found diffusely throughout the open

spaces of the property, primarily along margins of its fire road system (Figures 8 and 9). These areas would be addressed through manual removal.

Fire Fuels Planning Areas

The collection of 11 discrete sites outlined below consists of six sites where manual vegetation management is warranted and a collection of sites (Sites 5a through 5e) where prescribed fire management is recommended. The sites are ordered by management complexity such that sites 1 through 4 could be addressed quickly with low operational and planning costs, with the other sites requiring more extensive vegetation management planning. Beyond these specifically delineated planning areas, infestations of invasive species and other fire fuels encroaching on fire roads and trails throughout the SDC open space property are also an issue, and one which could be addressed with relatively low operational costs.

Site 01

This cluster of mostly Scotch broom is centered around the top of a knoll low on the property and not far from SDC campus buildings. It is encroaching upon a critical fire road on both sides, threatening to make it impassable to emergency vehicles. The patch is manageable and could be addressed by crews through hand pulling and simple tools. More diffuse patches of mostly French broom occur down slope from the knoll along the margins of the Sonoma Creek riparian area to the north and south (Figures 10 and 11). One flank of the 2017 Nuns Fire was halted just below this site.

Site 02

This large, dense French broom cluster is blocking emergency vehicle access along the northern perimeter fire road along Asbury Creek (Figures 12 and 13). This site is particularly important with respect to blocking north-south fire progression. A second flank of the Nuns Fire was arrested across Asbury Creek from this site, and within the creek channel just downstream. The patch is very well established with plants up to 15 feet or more high, often with multiple stems. Removal could be done with some effort using mostly hand tools. A few plants are so large that they may require larger tools to remove. Thinning of other ladder fuels such as coyote brush is needed here, and young Douglas Fir (*Pseudotsuga menziesii*) saplings, a fire hazard in this location, are also moving into the area.

Site 03

This site is in a small, historical meadow to the side of a fire trail, sloping up to knoll topped by a grove of redwood trees. Dense clusters of Scotch broom, patches of invasive Klamath weed, coyote bush and other fire-loving species have encroached upon the meadow (Figures 14 and 15). As with the other meadow habitats listed below, keeping this area open represents a key fire break opportunity in the

landscape. But the smaller size of this meadow, along with its topography and accessibility, favor manual vegetation management instead of prescribed fire operations.

Site 04

At this site, a small section of fire access road exists above the Asbury Creek canyon further uphill from Site 2 along the northern perimeter of the property. The old, Roulette Springs delivery pipeline traverses this site. Steep terrain above and below this fire road make this a particularly strategic site for arresting north-south fire progression. Extremely dense accumulations of French broom, Scotch broom, and coyote bush have encroached upon the fire road making it almost impassable even to foot traffic (Figures 16 and 17). A small meadow at the uphill terminus of this section has also become choked with these fire fuel species. Manual vegetation management is warranted here.

Site 05

Site 5 consists of a series of potential prescribed burn areas in historically open prairie/meadow areas Over the years, dense encroachment of fire loving vegetation including invasive species has occurred in these areas following the cessation of cattle grazing and indigenous burning. Healthy patches of native bunch grasses still occur in some places (Figure 18). In other remaining meadow areas, invasive medusahead grasses (the target of conservation burn activities elsewhere) have invaded (Figure 19).

- Site 05a: This lower meadow area, along a primary fire road (more recently referred to as Carolyn Day Trail), is a high priority area and good candidate for prescribed fire (Figures 20 and 21). Fire loving vegetation has been encroaching on the fire road for several years. Manual removal may be an option, but site lends itself to controlled burn operations, and the presence of medusahead grass in the lower portions makes fire management more ecologically beneficial. At least one adjacent landowner is supportive of the prescribed burn strategy.
- Site 05b: This second, lower meadow area is adjacent to Site 5b on the opposite side of an unnamed tributary branch, north of the SDC water treatment plant. Fire loving vegetation including invasive species have encroached on this meadow for years, and many areas between patches of scrub are heavily invaded with medusahead (Figures 22 and 23). This is another high priority area that would be a good candidate for prescribed fire. Manual removal could still be an option to address the patches of scrub. The old Roulette Springs delivery pipeline traverses the upper portion of this site.
- Site 05c: This large meadow below Fern Lake contains fire-loving vegetation and several fallen trees (Figures 24 and 25). There are also several scattered clusters of invasive species found here. The relatively flat landscape, overall, provides a good opportunity for management using prescribed fire.
- Site 05d: The northern extent of this same large meadow (adjacent to Site 5c) below Fern Lake has extensive coverage of fire loving scrub that has encroached into this area over the last

two decades (Figures 26 and 27). These two sites collectively are highly strategic with respect to north-south or east-west fire transmission. They are both excellent candidates for prescribed fire.

- Site 05e: This site consists of a historical meadow across Asbury Creek canyon from Jack London State Historic Park. Unknown to most hikers and bikers, this secluded area is important for wildlife, but it has become thick with fire loving vegetation and invasive species (Figure 28). It has an important landscape position relative to wildfire progression, especially given its proximity to historical resources within the state park. Its size and topography make it a good location for prescribed fire. Manual vegetation management could also be an option here.

Site 06

This fire fuels thinning zone is in the forested area bounded by Sites 3, 4 and 5a. The area is predominantly oak woodland, but three discrete redwood groves also occur here. Douglas fir trees are also present, and many of them are saplings. A dense encroachment by bay trees, many of which have fallen in recent years, is filling this wood area with fire fuels (Figure 29). Other ladder fuels and invasive species are present as well. Bay tree thinning, ladder fuels management, and removal/chipping of downed branches and logs is needed in this area to help slow any north-south or east-west progression of fire that is not able to be contained in the surrounding prairies lands.

Site 07

This site consists of sloping terrain between a primary fire access road (Carolyn Day Trail) and the paved Orchard Road leading to Fern Lake and Camp via. From the north, the site slopes down to an unnamed tributary before sloping back up to the paved road. A steep and heavily used access trail traverses this area which connects the SDC campus to the fire road network. Historically this was open land with a sparse covering of oak trees. In recent years it has been invaded by fire fuel species, including invasive French and Scotch Broom and coyote brush (Figure 30). The sloping terrain would not be as conductive to prescribed fire as the Site 5 prairie lands. Instead, manual vegetation management is likely warranted to help aid prevention of north-south wildfire progression.

Conclusion

When considered in the context of the current condition of the land – one where fire suppression for more than a century and climate change have helped cause fire storms that have impacted our communities in recent years – it is in the interest of site managers to plan for future wildfires by managing SDC's open space lands in a fire resistant and ecologically sound manner. These lands present a unique opportunity to proactively design and implement a management strategy that can make a significant difference to help stop the spread of future wildfires and promote ecological health of both meadow and woodland habitats within this critical portion of the Sonoma Valley Wildlife Corridor.

Figure 1. Sonoma Mountain foothills 1887.

Figure 2. Sonoma Mountain foothills present day.

Figure 3. Historic prairie lands now choked with chapparal/fire fuels.

Figure 4. Downed trees and ladder fuels in forested areas.

Figure 5. Vegetation encroaching on fire access roads.

Figure 6. Fire roads now single track trails preventing emergency access.

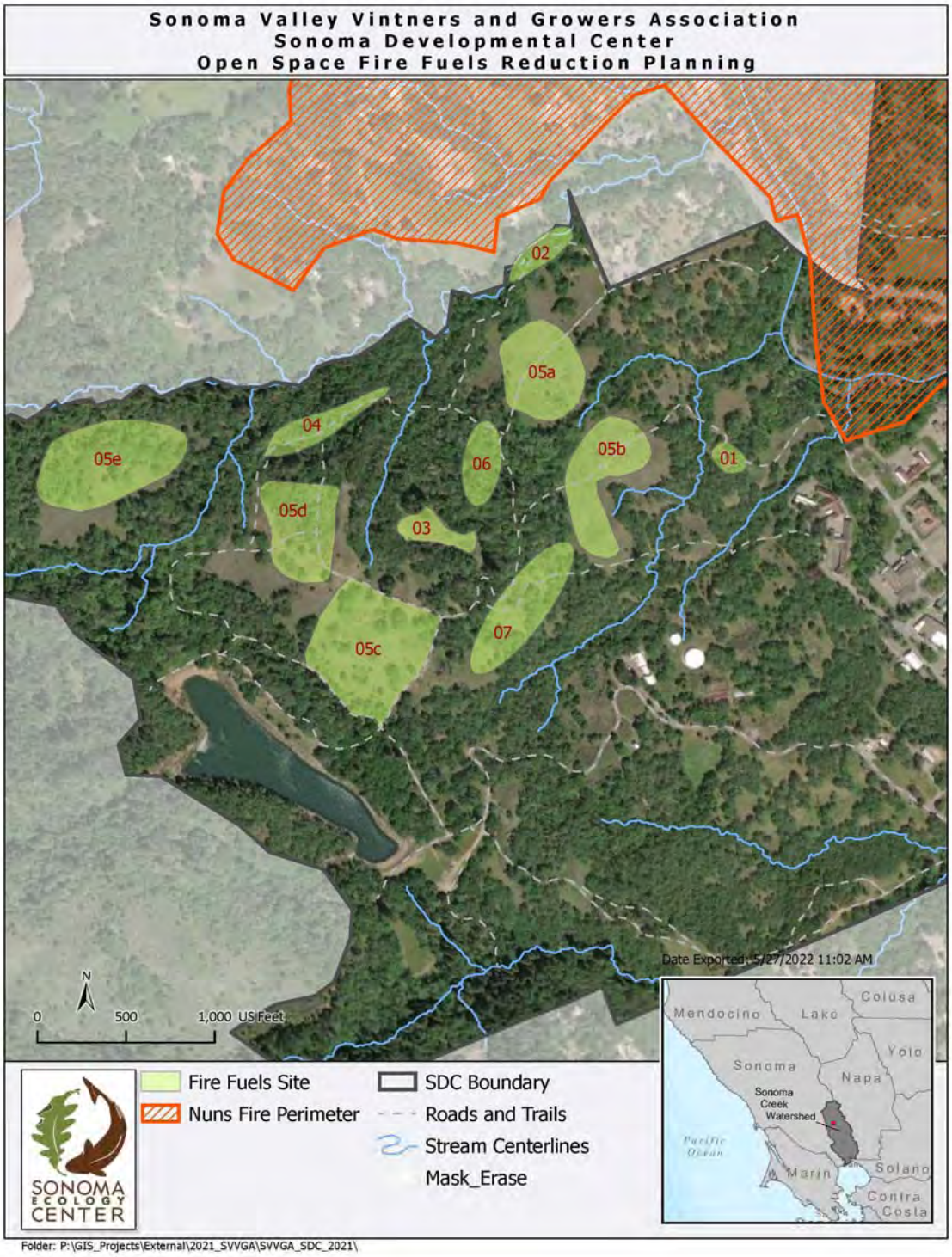

Figure 7. Map of fire fuels planning areas on SDC open space areas on Sonoma Mountain.

Figure 8. Invasive species along fire roads/trails.

Figure 9. Invasive species along fire roads/trails.

Figure 10. Fire fuels Site 1 planning areas with Scotch broom.

Figure 11. Fire fuels Site 1 planning areas with Scotch broom.

Figure 12. Fire fuels Site 2 planning area with large French broom cluster encroaching upon the trail.

Figure 13. Fire fuels Site 2 planning area showing French broom encroachment as well as Douglas Fir recruitment.

Figure 14. Fire fuels Site 3 planning area. Encroachment of toyon, live oak, manzanita and Klamath weed. Manual vegetation management recommended here.

Figure 15. Fire fuels Site 3 planning area. Scotch broom abundant near top of knoll.

Figure 16. Fire fuels Site 4 planning area. Dense French and Scotch Broom impeding emergency vehicle access.

Figure 17. Fire fuels Site 4 planning area. Dead broom encroaching on the trail.

Figure 18: These native bunch grasses provide a good example of a more natural state.

Figure 19: Presence of Medusahead in some meadow areas is particularly problematic.

Figure 20. Fire fuels Site 5a planning area. A potential controlled burn area as viewed from upslope.

Figure 21. Fire fuels Site 5a planning area as viewed from downslope. Medusahead is common in the area depicted.

Figure 22: Fire fuels Site 5b planning area. A potential controlled burn area as viewed from upslope.

Figure 23: Fire fuels Site 5b planning area as viewed from downslope. Medusahead is common in the area depicted.

Figure 24: Fire fuels Site 5c planning area. A good candite area for conservation burning.

Figure 25: Fire fuels Site 5c planning area. Manzanita and other fire loving species are common here.

Figure 26. Fire fuels Site 5d planning area Site topography, size and position are optimal for prescribed fire.

Figure 27. Fire fuels Site 5d planning area. Fire fuels are extremely dense in this area.

Figure 28. Fire fuels Site 5e planning area Site topography, size and position are optimal for prescribed fire.

Figure 29. Fire fuels Site 6 planning area. Here dense accumulations of fallen trees and other fire/ladder fuels are choking this area where forest thinning and shaded fuel break actions should be taken.

Figure 30: Fire fuels on sloped terrain.