



**GARDEN VALLEY PLANNING AREA
EXISTING CONDITIONS AND POTENTIAL FIRE HAZARD MANAGEMENT PROPOSALS
GEORGETOWN DIVIDE RESOURCE CONSERVATION DISTRICT
AND
GEORGETOWN DIVIDE FIRE SAFE COUNCIL**

MAY 2024

BACKGROUND

The Garden Valley Planning Area consists of about 13,000 acres located within the South Fork American River (SOFAR) Watershed in El Dorado County (Figure 1). The SOFAR Watershed is a priority landscape planning area proposed for implementing The National Cohesive Wildland Fire Management Strategy (Cohesive Strategy). The Cohesive Strategy is an all-lands wildland fire management strategy that has three goals:

1. Resilient Landscapes
2. Fire Adapted Communities
3. Safe and Effective Wildfire Response

The SOFAR Watershed is included in the Cohesive Strategy because of the many values at risk threatened by complex fire issues associated with drought, climate change, fuel loading, insects and disease. Communities, infrastructure, timber, water, power, recreation, protected species, and fire frequency are all reasons that this watershed is a high priority for collaborative action. Collaboration between partners is aimed at implementing ecologically sound forest management work on a larger landscape scale.

The values to be protected in the Garden Valley Planning Area are critical to the local and regional economy and to ecosystem health. The emphasis of planning for improved forest health and wildfire resiliency is on connected treatments across all lands designed to defend infrastructure, high value investments, and critical habitats.

This report was prepared to document environmental, social and infrastructure conditions within the planning area and to propose conceptual management actions that will meet the

goals of the Cohesive Strategy. Eventually, this Plan will be used as the basis for implementing recommended treatments. The Garden Valley planning study was funded by a grant from CAL FIRE to the Georgetown Divide Fire Safe Council (FSC). The FSC in turn contracted with the Georgetown Divide Resource Conservation District (RCD) to prepare this report. The Planning Area has been identified as a high priority due to heavy fuel loads, relatively dense rural population, acknowledged inadequacy of emergency access and history of catastrophic wildfire, the most recent of which was the Kelsey Fire in 1994. The Planning Area is almost entirely within the Wildland Urban Interface and is mostly classified as “very high severity fire zone” by CAL FIRE (Figure 5). CAL FIRE identifies Garden Valley as a “community at risk”.

The process initiated by the preparation of this Plan was used in several other areas where implementation is occurring. A plan for the Kelsey area covering 2100 acres was used as the basis for a successful grant proposal awarded to the FSC (\$4.8 million) to implement fuel treatments on over 1500 acres. Plans prepared for the South County project encompassing parts of the Mount Aukum-Fairplay, Omo Ranch and Oak Hill Fire Safe Councils were used to obtain funding (\$2.1 million) to treat 748-845 acres of fuel breaks and roadside treatments. Additional examples include projects in the Copperton and Texas Hill communities where funding for treatments was obtained from the U.S. Forest Service and Sierra Nevada Conservancy. In all cases, the local Fire Safe Council worked with the RCD to both plan and implement the projects with the RCD administering contracts to do the work.

LAND USE

The land uses in the Planning Area are a mosaic of single family residential (2.5 acres/unit or less), rural residential (2.51-20 acres/unit), mobile/manufactured residences on fee or rented land, agricultural and forestry uses and minor amounts of commercial, institutional, and public utility use. There is a significant amount of land zoned for residential development on lots ranging from 2.51-20 acres/unit. Developed area examples include the Garden Park Subdivision (283 homes) and the Johntown Creek Subdivision (277 homes).

VEGETATION AND LAND COVER

Aerial photographs and field surveys were used to obtain an overview of the vegetation in the planning area. The focus of this overview is on fuel loads and potential wildfire hazards.

The California Wildlife Habitats Relationships Program (CWHR) modeling was used to estimate the spatial distribution of vegetation types and other land uses in the Planning Area. The results are presented in the following table and shown in Figure 3.

Land Cover	Acres	Description
Agriculture	66	Irrigated pasture, vineyards, orchards
Barren	34	No discernible vegetation cover
Conifer	3415	Ponderosa pine, Douglas fir, Sierran mixed conifer
Hardwood	6404	Blue oak-foothill pine, blue oak, valley oak, riparian
Herbaceous	1644	Annual grassland, wetland
Shrub	1050	Mixed chaparral, montane riparian shrub
Urban	715	Developed (not including dispersed single family residential)
Water	38	Ponds and streams
Total	13,366	

Wildfire scientists and foresters commonly refer to fuel loads in terms of “fuel models”. There are three general types of fuel models in common use: grass, shrub, and timber. In the project area grassland and other herbaceous vegetation and shrubs occupy about 20 percent of the area. The primary shrub type in the project area is mixed chaparral comprised of chamise, manzanita, toyon, live oak and other shrub species. Hardwood and conifer vegetation types comprise over 70 percent of the area.

A common condition in the project area is a combination of conifer or hardwood forest over-story and shrub understory. Where the shrub layer is tall enough to extend into the tree canopy the stand is highly susceptible to a crown fire if a wildfire starts. Tolerant tree regeneration and the lower limbs on the trees also create connectivity between the tree canopy and shrub layer. Trees that are dead or dying due to the prolonged drought and bark beetle attacks increase the hazards in these stands.

Nearly half of the project area is overly dense montane hardwood or montane hardwood-conifer stands. The conditions in these stands are a direct reflection of effective fire suppression over the past several decades. Without intervention by periodic low intensity wildfires these stands become packed with shade tolerant trees and shrubs and become a virtual wall of vegetation. Stands like this are extremely susceptible to severe wildfire effects.

There are two other hazardous fuel conditions in the project area. One is associated with invasive species, most notably French and scotch broom. In some locations these species dominate open areas adjacent to roadsides. In addition to being a scourge in natural ecosystems, they are very flammable and can quickly occupy areas after a fire or other disturbance.

The second condition is encroachment of vegetation into the traveled way of roads. This is described in detail in a following section of this report. Most of the local roads in the planning area are narrow and vegetation encroachment would impair access by emergency vehicles during a fire or evacuation. Tree crowns overhanging roads also promote propagation of a fire over the clearing that might otherwise serve as a firebreak.

Except for some areas where private landowners have taken the initiative to reduce fuel loads on their properties or within the defensible space of residences, excessive fuels characterize the majority of the Planning Area. The fire history of the area attests to the risks that residents and landowners face. The situation is extremely dangerous to the people who have chosen to live in this relatively remote location. During field reconnaissance numerous developed properties were observed in the midst of dangerous conditions. For those located on single lane roads miles from the highway the danger is particularly critical.

SPECIAL STATUS PLANT AND WILDLIFE SPECIES

Special status plant and wildlife species are defined as follows:

- Species listed as rare, threatened, or endangered under the federal Endangered Species Act or California Endangered Species Act including candidates and species proposed for listing.
- Species designated as rare, protected, or fully protected pursuant to the California Fish and Game Code.
- Species of Special Concern as designated by the California Department of Fish and Wildlife (CDFW) or California Board of Forestry.
- Species meeting the definition of rare or endangered under Section 15380 of the California Environmental Quality Act.
- Plants having a California Rare Plant Rank of 1, 2, or 3 as defined by the California Native Plant Society.
- Nesting bird species protected by California Fish and Game Code or Migratory Bird Treaty Act.

To assess the presence or potential presence of special status species within the project area a search of the California Natural Diversity Data Base (CNDDB) for reported occurrences within the Planning Area was conducted (see Figure 5). The search disclosed the recorded presence of one plant (Layne's ragwort; pictured below) and four wildlife species (California red-legged frog, foothill yellow-legged frog, western pond turtle and pallid bat) in the vicinity of the Planning Area. Layne's ragwort is listed as "threatened" under the Federal Endangered Species Act. As of 2019, the foothill yellow-legged frog was a candidate for "threatened" status under the State Endangered Species Act and the California red-legged frog was listed as "threatened" under the Federal Endangered Species Act. Western pond turtle and pallid bat have no formal status under either Act but are considered "species of special concern" (California Department of Fish and Wildlife, Natural Diversity Data Base 2019).



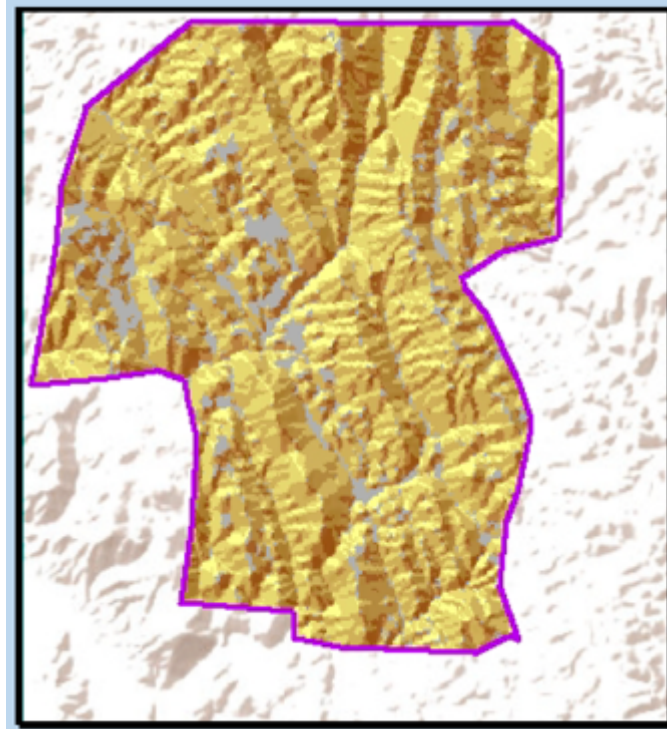
There are six species covered under the Migratory Bird Treaty Act that are likely to breed or forage within or near the project area. These include bald eagle, Cassin's finch, golden eagle, Lewis's woodpecker, olive-sided flycatcher and Williamson's sapsucker (Cohoon 2019). All these species require specific habitat conditions for nesting. The general nesting season in the Planning Area is March-August.

INVASIVE PLANTS

A data base search was conducted to determine what invasive plant species are found within or near the Planning Area. An invasive species is defined as one that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (<https://www.fs.fed.us/wildflowers/invasives/>). Scotch broom is ubiquitous in the Planning Area and throughout much of El Dorado County. It is particularly harmful because of its persistent buried seed bank and ability to rapidly colonize or re-occupy disturbed areas. Other common invasive species in the Planning Area include yellow star-thistle, medusahead, barbed goatgrass and rush skeletonweed. The latter species are most often associated with grassland rather than forested settings.

TOPOGRAPHY AND HYDROLOGY

The topography in the Planning Area is predominately gentle to moderately steep slopes. Only five percent of the area is over 35 percent slope. There are prominent ridgelines running north-south bordering the designated center of Garden Valley. This is illustrated in the following topographic model (zoom to view).



Elevations in the planning area range from approximately 1200 feet to 2500 feet above mean sea level. Perennial and intermittent watercourses in the general area include Johntown Creek, Coloma Canyon, Irish Creek, Empire Creek, and Slate Creek. There are several man-made ponds and impoundments on watercourses.

CULTURAL RESOURCES

The Planning Area has a rich history and an equally rich pre-historic past before the gold rush. It was in the territory of the Mi-Wuk and Nisenan tribes who occupied the foothills and seasonally used the high Sierra for hunting and gathering for many centuries. When gold was discovered at Sutter's Fort and miners flocked to the area there were frequent conflicts between the natives and the newcomers, ultimately leading to what were known as the El Dorado Indian Wars in 1850-51. Both wars resulted in the death of several miners and an unknown number of natives. They ended when Sheriff William Rogers successfully negotiated peace with the natives.

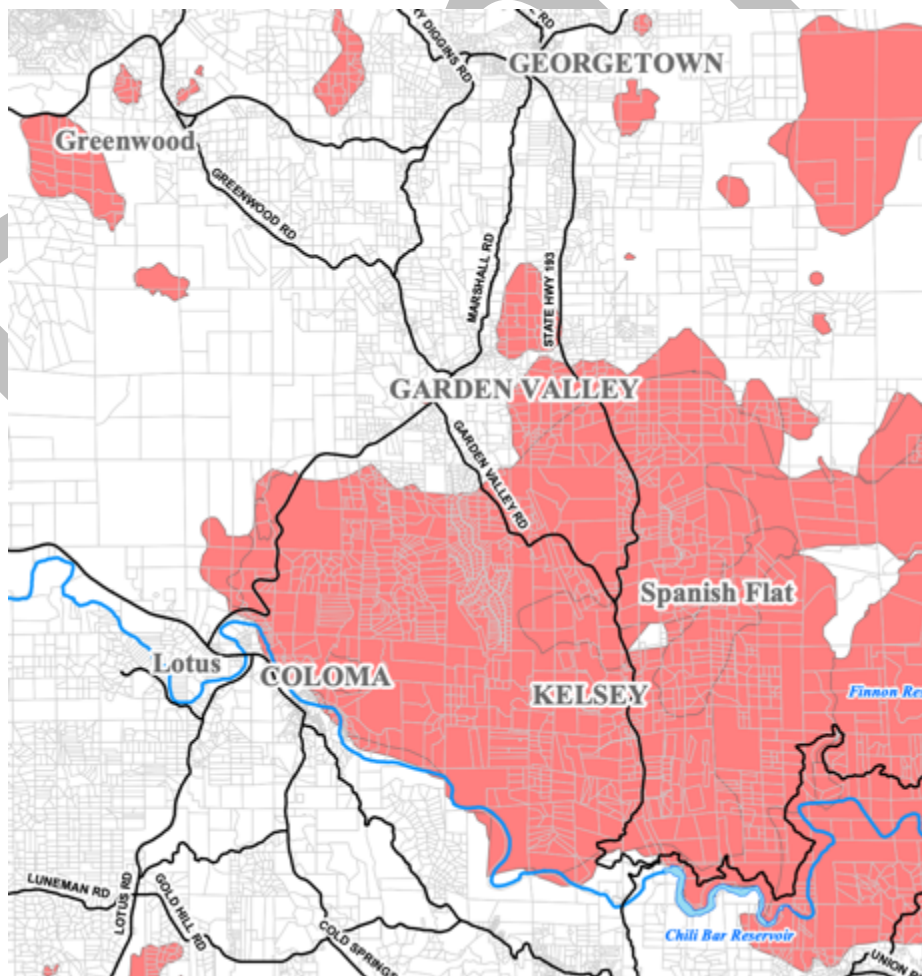
The Kelsey Mining District is that portion of the Mother Lode gold belt that extends from Kelsey to Garden Valley. The area was placer-mined soon after the gold discovery at Coloma and later supported several hard rock mines that operated from the 1860s through the early 1900s and again in the 1930s. The Black Oak mine alone produced \$1.25 million in gold (equivalent to \$35 million today, without considering changes in the value of gold). Some intermittent work has continued at that mine in recent years.

The Planning Area is also noted for its important role in agriculture. In the 1880's it had two of the largest dairies in the County. There were and continue to be fruit orchards and vegetable farms that supply the local "farmers' markets".

Given the history, it would be expected that there are numerous cultural resource sites located in the Planning Area. A search of records conducted by the North Central Information Center at Sacramento State University revealed the existence of 19 indigenous period cultural resource sites and 63 historic period sites. Approximately 30 percent of the Planning Area has been surveyed for cultural resources. The North Central Information Center indicated that there is a high likelihood that unrecorded sites exist within the Planning Area.

FIRE HISTORY

The following figure shows the perimeters of historic fires within and around the Planning Area. Note that the large area between Coloma and Garden Valley does not represent one fire but many that occurred between 1916 and 1979. Individual fires occurred in 1916, 1918, 1922, 1934, 1943, 1944, 1954 and 1979. The most recent fire was the Cutter Fire in 2003, located south of Greenwood Road.



FIRE MODELING

Fire behavior modeling was conducted to provide a basis for predicting the effects of a wildfire and provide guidance on the potential location of landscape-scale fuels treatments. The following is a summary of results in terms of burn probability (likelihood that an area would burn), flame length and integrated hazard (combined burn probability and flame length). Environmental data on aspect, elevation and topographic slope are inputs to the modeling. Assumptions about wind speed and direction, fuel moisture and other variables are also incorporated into the model. Initial modeling predicted “burn probability” ranging from low (0-20 percent) to highest (80-100 percent) based on multiple simulated ignitions. Burn probability is the likelihood that a wildfire will burn a given point or area over a specified period. The following table indicates the area within each probability class resulting from the simulations.

Burn Probability	Acres in Planning Area	Percent of Planning Area
Non-Burnable	896	7
Burnable but not burned	7	0
Lowest (0-20% of maximum)	454	3
Low (20-40% of maximum)	2280	17
Middle (40-60% maximum)	4187	31
Higher (60-80% maximum)	3254	24
Highest (80-100% maximum)	2287	17

Figure 8 shows a map indicating the spatial distribution of the burn probabilities. Higher and highest probabilities are concentrated in northern portion of the planning area.

Modeling also provided results in terms of the expected flame length that would be experienced during a wildfire. This is estimated with data on vegetation canopy cover, stand height and canopy base height as well as vegetation type i.e., forest versus grassland or shrub. In general, fires with flame lengths of four feet or less are considered controllable with ground forces while flame lengths of 12 feet or greater require aerial and mechanical approaches e.g., airplanes, helicopters and bulldozers, to achieve containment. Flame lengths of 12 feet or greater are commonly experienced when crown fires occur. The following table indicates the area and percentage of the Planning Area within each flame length class for simulated fires. Non-burnable and burnable but not burned areas are not included in the table.

Conditional Flame Length (feet)	Acres in Planning Area	Percent of Planning Area
>0-1	708	5
>1-4	1277	15
>4-8	1595	12
>8-11	581	4
>11-25	2147	16
>25	6153	46

The spatial distribution of modeled flame lengths is shown in Figure 9. Greater flame lengths during a wildfire would be experienced throughout the Planning Area in the event of a wildfire indicating potential difficulties and higher costs associated with suppression. The likelihood of greater flame lengths is correlated with the distribution of dense, multi-storied forest stands in the Planning Area.

Considering both conditional probability and flame length together creates depiction of “integrated hazard”. This generally results in an expansion of highest risk areas beyond the area potentially subject to high and highest burn probability. The following table indicates the areas in lowest to highest integrated wildfire hazard. Non-burnable and burnable but not burned acres are omitted from the table.

Integrated Hazard	Acres in Planning Area	Percent of Planning Area
Lowest	896	7
Lower	1820	14
Middle	2825	21
Higher	2692	20
Highest	4219	32

The spatial distribution of integrated hazard classes is shown in Figure 10. Over half of the Planning Area falls into the higher and highest hazard classes. This is in general agreement with the CAL FIRE fire hazard severity classification for the Planning Area and asserts the need for effective actions to reduce hazards essentially throughout the area: nearly the entire area is classed as “high” or “very high” fire hazard severity.

The fire modeling produced additional results that reinforce the overall assessment of integrated hazard. For example, during a wildfire the modeled “rate of spread” would exceed 20 chains/hour (a quarter mile/hour) on over 66 percent of the Planning Area. “Passive crown fire” defined as intermittent or persistent torching where fire intensity is sufficient to ignite tree crowns individually or in groups, but winds are not sufficient to support propagation from tree to tree would occur over 59 percent of the area.

The full results of the modeling are in reports that are on file at the Georgetown Divide Resource Conservation District office in Placerville.

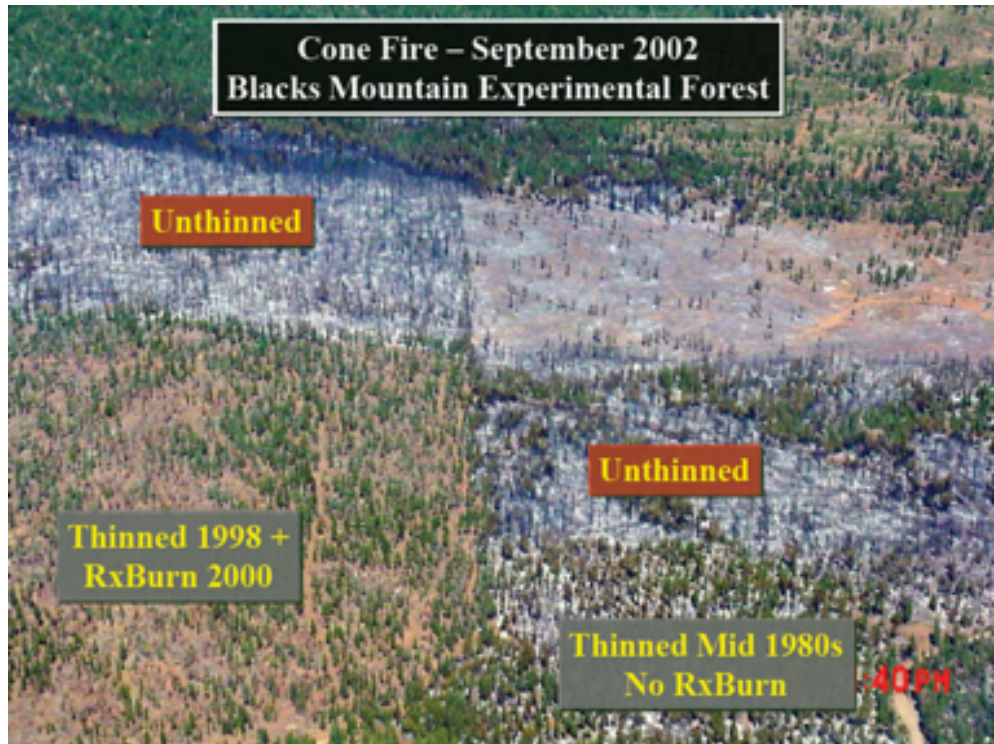
DESIRED CONDITIONS

Efforts to reduce wildfire hazards focus on two distinct locations: roadsides and undeveloped forest and shrub landscapes. Areas that are developed are subject to defensible space regulations that require reduced fuel loads within 100 feet of habitable structures. The emphases of recommendations in this study are on roads and improvement of emergency ingress and egress and creation of strategically located shaded fuel breaks. The desired condition is illustrated in the following photograph taken on Shoo Fly Road in the Kelsey area after completion of a roadside vegetation management project. The understory has been cleared, ladder fuels have been eliminated, vegetation no longer encroaches into the traveled way and surface fuels that can be ignited by traveling vehicles

are absent. The extent of roadside treatment ranges from 10-200 feet depending on land ownership and environmental conditions.



Future planning will focus on verifying the locations where roadside treatments and landscape-scale shaded fuel breaks can be feasibly implemented. The primary difference between a roadside treatment and a landscape treatment is in the scale. Roads and ridgelines commonly anchor landscape-scale treatments that may cover several hundred acres. They are intended to interrupt the spread of a fire in the heading direction while providing staging areas for fire fighters to safely fight a fire. The efficacy of landscape-scale treatments was well demonstrated by the results of the Cone Fire in 2002 at Blacks Mountain Experimental Forest (Skinner et al. 2004). Areas that had been thinned to reduce ladder fuels and where surface fuels had been removed through prescribed burning survived that fire with minor tree mortality while untreated areas burned at high severity. The following image depicts the effects. Shaded fuel breaks are not intended to stop a fire but to modify its behavior i.e., change a fire that is propagated through the crowns thereby generating embers that may travel great distances to affect structures and create spot fires to a ground fire that has reduced flame lengths and limited capacity to generate embers.



A study conducted by the El Dorado Resource Conservation District after the 2021 Caldor Fire indicated that areas treated to reduce fuel loads south of Jenkinson Lake performed well when subjected to backfiring by CAL FIRE. Surface fuels were consumed, crown fires did not occur, and post-fire mortality was limited. Those units did not experience the full force of the wildfire since backfiring is strictly controlled in terms of ignition and weather conditions. Nevertheless, the event demonstrated the benefits of treatment in providing a location to stop a fire and provide a staging area for suppression. The Cone Fire example demonstrates performance of treated areas during a full-blown wildfire.

PURPOSE AND NEED FOR ACTION

The purpose and need for action are to achieve the desired conditions described above within the Planning Area and thereby meet the following objectives:

1. Protect forest resources and infrastructure improvements within the Planning Area and beyond from potential severe wildfire effects.

As a result of decades of fire suppression and lack of recent management, forests in the Planning Area have an abundance of dense smaller trees, thick undergrowth, and a high density of surface fuels. These fuel conditions, together with periodic drought and a warming climate, create a high potential for uncharacteristically severe, stand-replacing wildland fire. High severity fires in turn create significant tree mortality, damage to soils, watersheds, wildlife habitat, and recreational values and may result in destruction of homes and property. Action is needed to reduce surface and ladder fuels to minimize fire severity and to make the stands more resilient to wildfire. Removing dense understory

trees, shrubs, and surface vegetative debris reduces fuel loading, fuel continuity, and fuel ladders, and also increases the ability to directly suppress fire in a safe and efficient manner.

2. Strategically place treatments which complement and extend the continuity of existing forest and fuel treatments to create a fire resilient landscape.

There is a need to strategically place fuel reduction treatments that are effective and that complement planned and existing treatments. Private landowners have completed work to reduce fuel loading and improve forest health on their lands and in their defensible space. The locations of treatment should be planned to enhance these efforts and benefit from them. Potential locations for fuel breaks include ridgelines and areas along roads where separations of reduced fuel loads between development and natural vegetation can be provided.

POTENTIAL FUEL REDUCTION METHODS

A combination of thinning, chipping/mastication of brush and smaller trees, and hand treatments including brush cutting, hand thinning, and pruning may be used to reduce tree density and to change the structure of live and dead vegetative material in treated stands. The most cost efficient and effective treatment within each stand should be chosen based on timing, equipment availability, and desired post-treatment results, but would generally be implemented as described below.

Mastication

Mastication may be employed for roadside vegetation treatments and within shaded fuel breaks where feasible. Shrubs and small trees (<12 inches diameter breast height) may be thinned and masticated to reduce the density of understory fuels and small trees. Mastication is defined as shredding, mowing, mulching, chipping, and/or grinding vegetative material with the use of machinery (see photographs below). Mastication is generally applied on slopes up to 45 percent. The treatment will reduce stand density, reduce ladder fuels, and rearrange surface fuels such that future prescribed fire could be used to maintain desired conditions within the stands. Masticated vegetative debris should be discontinuous on the forest floor, and generally be less than four inches deep with pieces less than eighteen inches long. Stump height generally does not exceed four inches. Shrub dominated areas may retain up to ten percent live shrub cover following mastication.



Hand Thinning

Shrubs and small trees (<12 inches diameter breast height) may be hand cut and chipped in areas where mechanical treatments are prohibited or inaccessible to mastication machinery, or in other areas most appropriately treated with this method. Any resulting piles are normally burned.

Pruning

After mastication or hand treatments to remove excessive fuels, residual trees may be pruned to at least ten feet from the ground while maintaining a minimum of 33 percent live crown. The intent is to increase the base height to live crowns to reduce the risk of wildfire or prescribed fire moving from the ground via “ladder fuels” into the upper tree crowns.

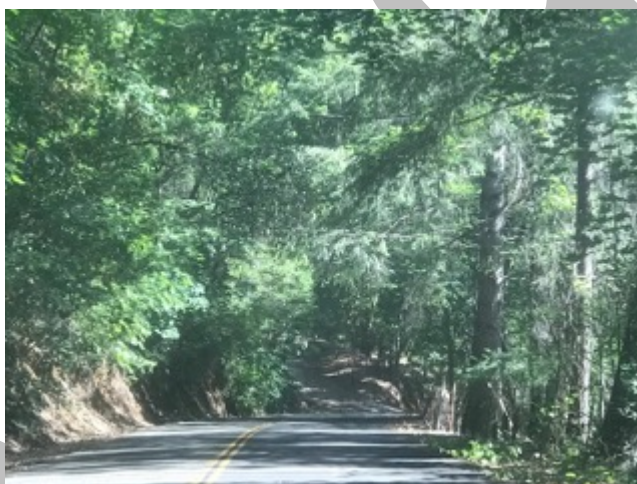
Understory Prescribed Burning

Where feasible, treatment acres may be planned for future understory prescribed burning using ground based or aerial ignition methods to reduce understory fuels and maintain the desired condition. Prescribed burning usually takes place a few years following initial treatments with mastication such that masticated vegetative material will have decomposed to a level where fire effects on residual trees are reduced. Prescribed burning occurs thereafter at intervals determined by the re-growth of understory vegetation.

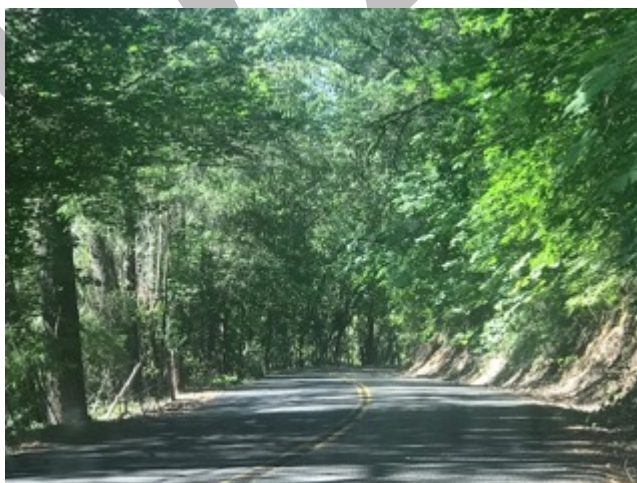
PROPOSED TREATMENT AREAS

Roadside Units

The roads proposed for treatment include Marshall Road (4.3 miles), Black Oak Mine Road (1.2 miles), Hackomiller Road (2.2 miles), Garden Valley Road (3.2 miles), Greenwood Road (2.8 miles) and Graybar Mine Road (1.3 miles) for a total of 15 miles. Treatment on Marshall Road between Lower Main Street in Georgetown and Black Oak Mine Road (3.5 miles) is already scheduled for the summer of 2024. There are some additional local and collector roads that may be proposed for treatment pending further field investigations. Extensive lengths of all these roads are bordered by dense vegetation. Some roads or portions of roads are narrow, adjacent to watercourses, have multiple driveways and steep cut and fill banks. The following photographs illustrate conditions (captions below).



Marshall Road from Mount Murphy Road to Garden Valley Road and beyond is partly developed. The remainder of the road to the Planning Area boundary has steep cut and fill banks, dense roadside vegetation and is adjacent to Johntown and Empire Creeks.



Black Oak Mine Road between Marshall and Georgetown Roads has areas of dense roadside vegetation and steep cut and fill slopes. Spur roads include Kings Trail and Old Sawmill Road that are both private roads serving local residents.



Hackomiller Road between Black Oak Mine Road and Garden Valley Road is parallel and close to Irish Creek and narrow. It is bordered by some open grassland areas and dense roadside vegetation.



Garden Valley Road from Marshall Road to Georgetown Road traverses rural residential and open range land uses with some areas of dense roadside vegetation. Some spur roads e.g., Johnson Valley Lane are present. They may be either public or private.



Greenwood Road from Marshall Road to the Planning Area boundary is intersected by several spur roads and residential driveways e.g., Andy Wolf Road. Andy Wolf Road is 1.18 miles long and is a County road.



Graybar Mine Road from Greenwood Road to the Planning Area boundary is narrow and generally bordered by dense roadside vegetation. Spur roads including Wonson Way and Eucalyptus Drive serve residences and are both private roads.

For all roadside work the following prescription would be used. If terrain permits, roadside vegetation removal would be done with a masticator in conjunction with other work as described below. Where terrain or other factors prevent use of machinery, hand thinning and chipping would be accomplished with chainsaws and a mobile chipper. Material up to 12 inches diameter breast height would be removed while creating a 20-foot spacing between the boles of remaining trees. A minimum 90 percent of shrub cover would be removed. Residual trees would be pruned up to 10 feet while retaining 33 percent minimum live crown ratio.

Landscape Treatments

Conceptual fuel breaks are currently proposed in six locations (see Figure 11). They would be 400-600-feet wide focused on roads (Greenwood Road, Garden Valley Road, Marshall Road and Hackomiller Road) and ridgelines above Johntown, Slate, Manhattan, and Irish Creeks for an estimated total of 3,469 acres. Existing conditions within the proposed units are illustrated in Attachment 1. In all fuel break units, the prescription would be to thin forest stands by removing all trees up to 12 inches in diameter breast height or to space trees at 20 feet apart in smaller diameter stands. Certain tree and shrub species may be favored for retention if they do not constitute ladder fuels e.g., oaks, dogwood, big-leaf maple and madrone. Residual trees would be pruned to a height of 10 feet and understory brush would be removed to reduce ladder fuels and thereby discourage crown fires if a wildfire occurs. The desired condition is illustrated in the photograph on page 10.

In stands that are primarily composed of brush and chaparral the prescription would be to create a mosaic of shrubs that are spatially separated to reduce horizontal connectivity constituting approximately 10 percent of pre-treatment cover. Minor areas of grassland located in all treatment areas would not be affected by the project but would contribute to its effectiveness by maintaining openings within forest stands.

In all locations, vegetative material that is removed would either be chipped or masticated and left in place. Use of masticating machines would be limited on slopes greater than 45 percent, within riparian areas next to watercourses, during designated "limited operating periods" associated with wildlife species of special concern, in or near cultural resource sites or sensitive plant populations or during periods when soils are saturated, and erosion and sedimentation may occur. In certain locations, crews using chainsaws and pruning saws may do the work because of environmental or other constraints. Where work is done by hand, removed vegetative material may be piled for later burning.

All vegetation management work will be done by qualified contractors or in the case of hand crews, possibly by CAL FIRE or California Conservation Corps crews. Registered Professional Foresters would supervise all work.

POTENTIAL ENVIRONMENTAL IMPACTS AND OFFSETTING BEST MANAGEMENT PRACTICES

To implement recommendations of this report the California Environmental Quality Act (CEQA) requires an evaluation of potential environmental impacts. Based on that evaluation, a Categorical Exemption, Negative Declaration or Environmental Impact Report may be required. The following environmental assessment provides the documentation to support CEQA findings for roadside treatments and creation of fuel breaks on private land. Note that the exact boundaries of roadside treatments and fuel breaks will depend on return of right of entry forms by landowners and field verification of conditions. Ultimately, the goal is to undertake the required work to reduce risk of wildfire while having no negative impacts on any environmental feature.

Potential impacts of proposed treatments are described below along with measures intended to eliminate the potential for significant impacts. Additional analysis will be required when exact locations for roadside and landscape-scale treatments are determined.

- Understory trees and shrub vegetation will be removed and cause displacement of wildlife and changes in forest stand structure.

Fuel treatments will be limited to the removal of trees that are 12 inches diameter or less and reduction of understory shrub cover to approximately 10 percent of pre-treatment levels. In areas dominated by shrub or scrub vegetation horizontal connectivity will be reduced but patches of cover will be retained as wildlife habitat. The proposed treatment will not change the CWHR habitat class in any forest type and displaced wildlife would be expected to return after project completion. Some species (bats and raptors) may benefit from the project because of enhanced prey visibility.

- Equipment operations could cause soil erosion and/or compaction particularly if they occur when soils are saturated.

No soil disturbance would be expected from the operation of rubber tired or tracked equipment. Mastication of trees and shrubs would be done in place and no yarding of materials would occur. No operations would be conducted on slopes greater than 45 percent or within designated streamside or watercourse protection zones. If project activities occur during the winter or in cases where there are precipitation events that may lead to saturated soils, equipment operations would be prohibited to avoid soil compaction.

- Sensitive wildlife species could be adversely affected by equipment operations, noise and removal of habitat elements such as food plants, nesting trees or vegetation cover.

Sensitive wildlife species that may reside permanently in the Planning Area include western pond turtle, foothill yellow-legged frog, California red-legged frog and pallid bat. Other unrecorded species may occur in the area as well.

To avoid impacts on the pond turtle and frogs three measures will be implemented: 1) all streams and ponds will be provided with buffers that are inclusive of riparian and wetland vegetation; 2) prior to implementation, visual encounter surveys will be conducted by the supervising forester at all water bodies capable of providing habitat for the turtle and/or frogs; and 3) in the event that operations occur between October 15 and April 15, a limited operating period will be applied within one mile of potential or verified red-legged frog breeding habitat when a precipitation event depositing one quarter inch of rain has occurred. Since western pond turtle nests outside of water bodies and may spend considerable time in upland habitat it will be important to verify its presence or absence in project areas prior to operations. Breeding in upland habitat up to 0.5 mile away from

water occurs in the spring and sometimes in the fall. The incubation period is 90-130 days and hatchlings usually overwinter in the nest. Avoiding nest destruction will be essential.

Regarding the pallid bat or other bats that may occur in the Planning Area, the impacts that may occur include disturbance and potential disruption of nesting behavior and removal of snags used for nesting and roosting. During the course of operations in each unit, the supervising forester will determine if suitable habitat elements are present. If they are present and/or if bats are observed the supervising forester will determine a course of action that would prevent significant, permanent impacts. Preventative measures may include retention of snags and/or limitation of equipment operations within 100 feet of occupied habitat.

To avoid impacts on birds covered under the Migratory Bird Species Act, two alternatives may be implemented. Surveys could be conducted prior to project implementation. If nesting species are identified prior to or during project implementation, no activities will occur within 100 feet of an active nest during the breeding season. Alternatively, no project activities would occur between March and August of any year.

- Sensitive plant species could be adversely impacted by equipment operations.

The only known sensitive plant species that may occur within treatment units is Layne's ragwort, but other unrecorded species may be present. The ragwort is associated with chaparral and foothill woodland. Prior to operations the supervising forester will conduct a survey to determine if the ragwort or any previously unknown sensitive plant species are present. If present, their occurrences will be flagged and avoided by the operations.

- Invasive species could be introduced into new areas through dispersal by equipment and workers.

Operations may occur in areas that are currently infested with noxious plants. Existing invasive plant infestations may be treated to reduce their extent or potential for spread. To prevent new infestations equipment will be thoroughly cleaned prior to entering unaffected areas. If work occurs within areas that are already infested, equipment will be cleaned prior to moving on to unaffected areas. Workers will also be instructed on methods to prevent the spread of noxious weeds, including daily cleaning of boots, clothing, and hand tools.

- Cultural resource sites could be damaged by equipment operations.

There are known cultural resource sites present in the Planning Area, but additional resources may be present. Prior to implementation, a qualified cultural resources specialist will survey proposed project areas. Any known or previously unknown resource sites found within treatment areas will be flagged for avoidance. If during operations previously unknown sites are discovered, operations will cease within 100 feet of the site at the

direction of the supervising forester and if needed, consultation with appropriate tribal representatives will be initiated to inform them of the findings.

BEST MANAGEMENT PRACTICES

To avoid any additional potential impacts the following best management practices will be implemented and enforced through contractual requirements:

Exposure to Smoke, Dust and Fumes:

- If required, contractors may have to prepare storm water erosion control plan(s) and obtain any permits for staging areas, debris management sites, or any other activity associated with fuels treatment contracts.
- Dust abatement measures including watering will be implemented at the direction of the supervising forester. No dust suppressing chemicals are permitted.
- Vehicle speeds will be limited to 15 miles/hour on dirt roads and surfaces.
- No visible dust transport will be permitted outside of project boundaries. Operations will be suspended at the direction of the supervising forester if that occurs.
- All equipment will conform to California emission standards.

Impacts on Soil Resources and Water Quality:

- No drafting of water from natural watercourses is permitted.
- All streams, other watercourses, wetlands, and riparian vegetation will be protected through implementation of protection buffers with widths determined by site-specific conditions. No equipment operations will be permitted within these zones.
- No equipment operations will be permitted on slopes greater than 45 percent or less if erosion hazard rating is high or extreme unless approved by the supervising forester.
- No equipment operations are permitted on saturated soils, as determined by the supervising forester.
- Water breaks will be installed at spacing prescribed by the supervising forester on any areas that are compacted or made otherwise susceptible to erosion due to equipment operations.
- The contractor is required to remove processed material from roadside ditches or any water conveyance systems where it impedes flow.

Noise:

- Hours of operation will be limited to the hours of 7 a.m. to 6 p.m. Monday through Saturday to minimize the potential for noise impacts on residences near and within the project areas.
- All equipment will meet or exceed State standards for noise control.
- If necessary, equipment operations around occupied wildlife habitats such as nest sites will be subject to restrictions on timing and location.
- To the degree possible, stationary noise producing equipment will be located as far as possible from sensitive receptors.

Transportation and Traffic:

- Movement of equipment to and from project areas will be subject to restrictions on timing and traffic controls to avoid congestion.
- Warning signs shall be posted in work areas to alert oncoming traffic and recreational users (roads and trails) to the safety hazards associated with the operations.

Other Issues:

- Where mastication is employed, the maximum depth of masticated material will not exceed six inches.
- The maximum stump height on cut trees will not exceed four inches on the uphill side.
- The contractor will be responsible for ensuring protection of structures, property improvements, fences, power lines, any underground water- power-septic systems- drainage structures and other utilities.
- Residual trees will be protected from damage.

IMPLEMENTATION

Upon approval of this plan by the FSC the first step in implementation will be to obtain clearance under CEQA. The RCD will act as lead agency and will conduct the required environmental analysis.

The next step will be to procure funding to conduct further planning and ultimately to implement the project. Note that roadside treatment on a portion of Marshall Road is currently planned for the summer of 2024. The primary sources of funding for fuel treatment projects are the CAL FIRE Forest Health and Fire Prevention grants. Preparation of this plan was funded by a Forest Health grant to the FSC. Other potential sources of funding for project components include the Sierra Nevada Conservancy and the U.S. Forest Service, State and Private Forestry. Both entities have provided funding for fuel treatments and forest restoration in El Dorado County. It is assumed that the submittal of grant proposals will be a joint effort of the FSC and the RCD.

It is not possible to predict when funding for the project will be obtained. When funded, the next step in implementation will be to procure permission from property owners to do the work. It is critical that as many landowners as possible be recruited into the project so that treatments can be as comprehensive as possible. Methods for obtaining landowner participation in addition to direct mailing include informational media releases, workshops and field days and face-to-face meetings. Permission to work on a property is formalized by return of a right of entry form executed by the landowner, the FSC and the RCD.

The actual proposed boundaries of treatments will be defined by landowner participation. Participating parcels will be mapped, potential treatment areas will be delineated and georeferenced maps will be prepared for use in the field. Initially, Resource Conservation

District staff and Registered Professional Foresters will use these maps to more precisely define feasible treatment areas. This entails traversing treatment area perimeters and interiors or in the case of roadsides, lengths of road and excluding places where treatments are not needed, or conditions are not suitable for treatment. Examples include house sites or areas within 100 feet of an occupied dwelling, watercourse protection zones, slopes steeper than 45 percent, infrastructure such as water conveyance canals and vegetation types not requiring treatment such as grasslands, cultivated fields or areas previously treated by landowners.

Field-verified maps will be used by a cultural resources specialist to conduct field surveys. The cultural resources specialist will verify known cultural sites and locate previously unknown sites. Any sites will be flagged for avoidance. No impacts on cultural sites are permitted. Field surveys to identify sensitive biological resources will also be conducted prior to implementation. Any discovered resources will be flagged for avoidance. If limited operating periods are required to protect sensitive wildlife species, those will be implemented.

All this preparation results in the creation of a plan that is used to solicit bids from qualified contractors to do the work. One or more contractors may be retained. Contracts are normally offered, awarded, and administered by the RCD. The FSC will usually participate in the selection of contractors.

Beginning and doing the work depends to some degree on timing. For example, work may be affected by weather conditions e.g., winter operations and/or restrictions due to fire hazard. Other operational constraints may include restrictions due to presence of sensitive wildlife species. During periods of operations, RCD staff and Registered Professional Foresters supervise and monitor contractor performance. In addition to ensuring that contractual specifications are met, compliance with environmental protection measures is monitored and documented. Upon completion of discrete units, RCD staff, with the assistance of Registered Professional Foresters, verify completion. During the entire process, a project record is maintained that includes monitoring reports, before-after photographs from established photo-monitoring points and as-built completion maps.

From start to finish the entire implementation process for a project of the scale proposed in this plan can take several years. Most CAL FIRE grants allow a three-to-four-year performance period.

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Cohoon, B. 2019. Letter-report to Tamara Johnston regarding project compliance with federal environmental laws.

Skinner, C.N, M.W. Ritchie, T. Hamilton and J. Symons. 2004. Effects of prescribed fire and thinning on wildfire severity: the Cone Fire, Blacks Mountain Experimental Forest. Proceedings of the 25th Vegetation Management Conference, January 2004. Redding, CA.

FIGURES

Figure 1: General Location of Planning Area

Figure 2: Distribution of Structures and Wildland Urban Interface Status

Figure 3: Land Cover

Figure 4: Hydrologic Features

Figure 5: Search Results California Natural Diversity Data Base

Figure 6: Fire Hazard Severity Zones

Figure 7: Planning Area Road Classification

Figure 8: Simulated Wildfire Burn Probability

Figure 9: Simulated Wildfire Flame Length

Figure 10: Simulated Integrated Wildfire Hazard

Figure 11: Conceptual Fuel Breaks

Figure 12: Alternative Fuel Break

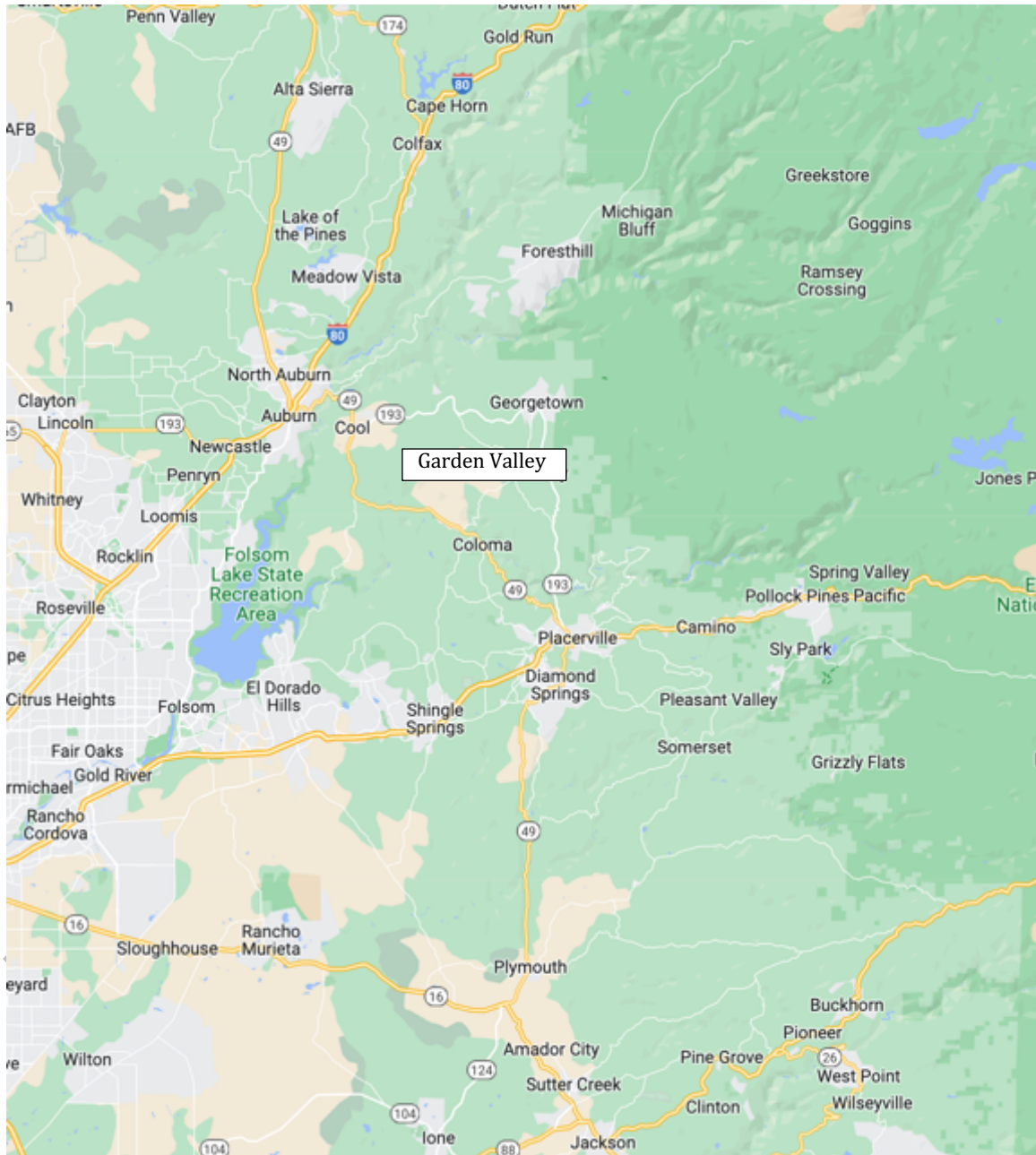


Figure 1: General Location of Planning Area

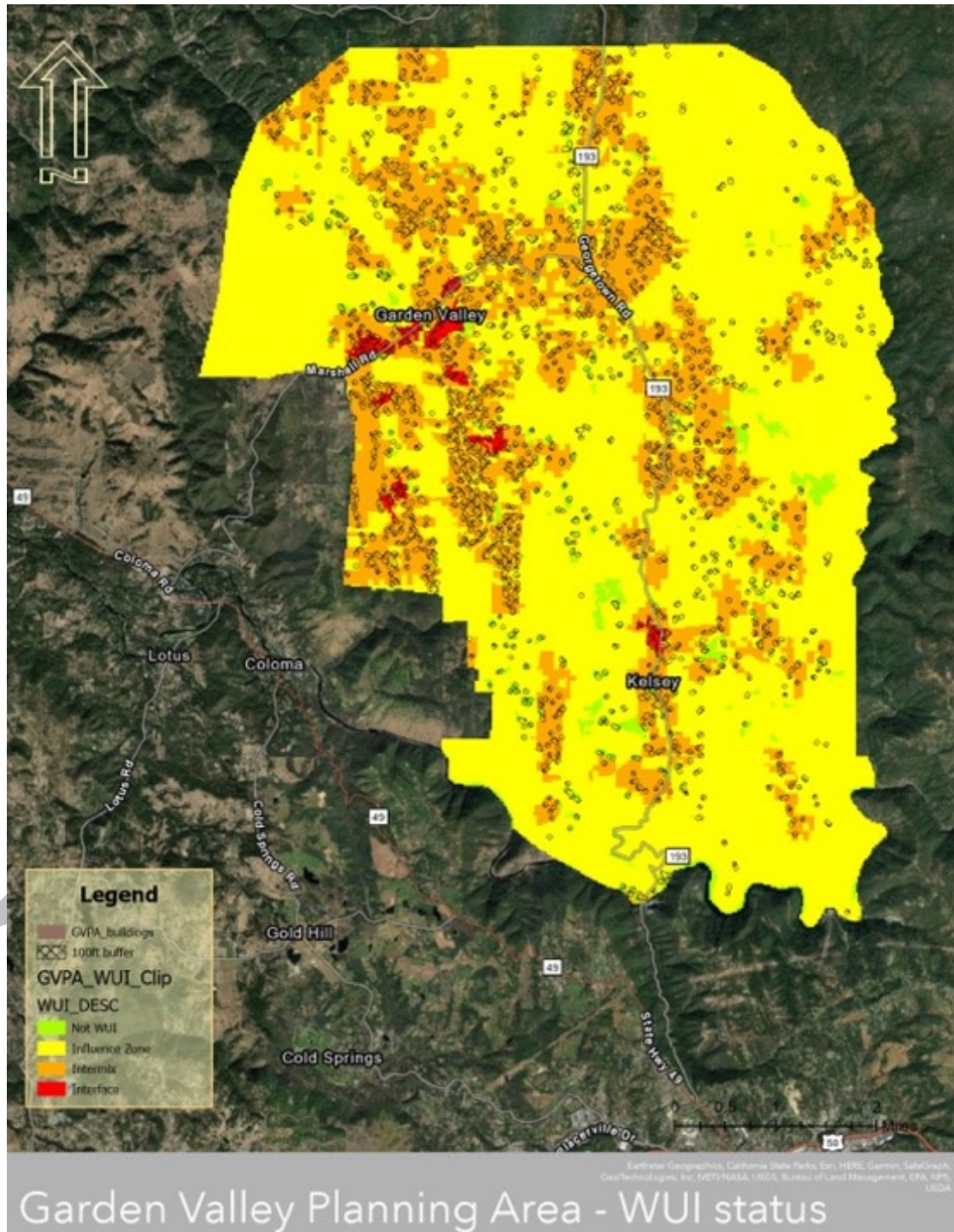


Figure 2: Spatial Distribution of Structures and Wildland Urban Interface Status (zoom to view)

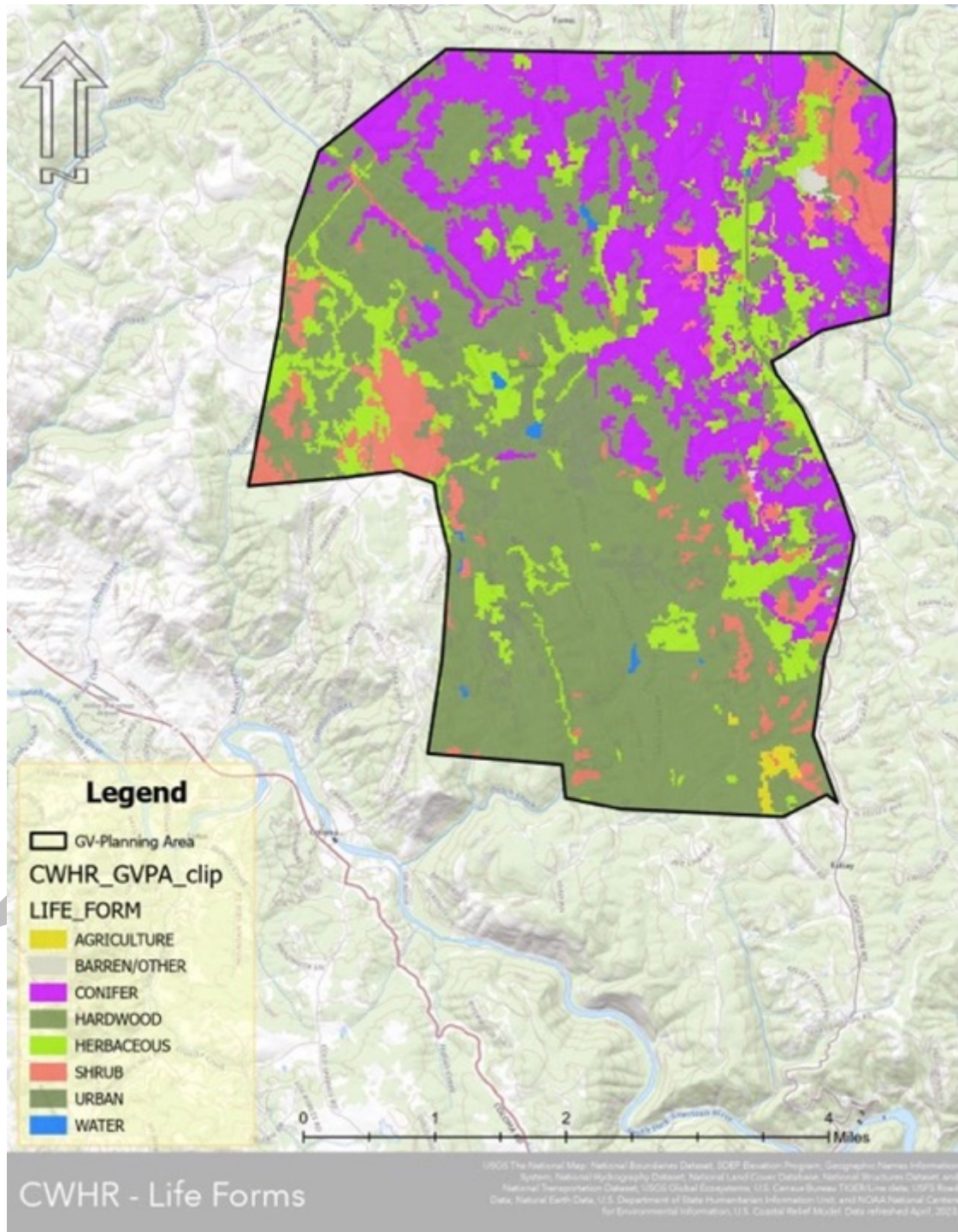


Figure 3: Land Cover (zoom to view)

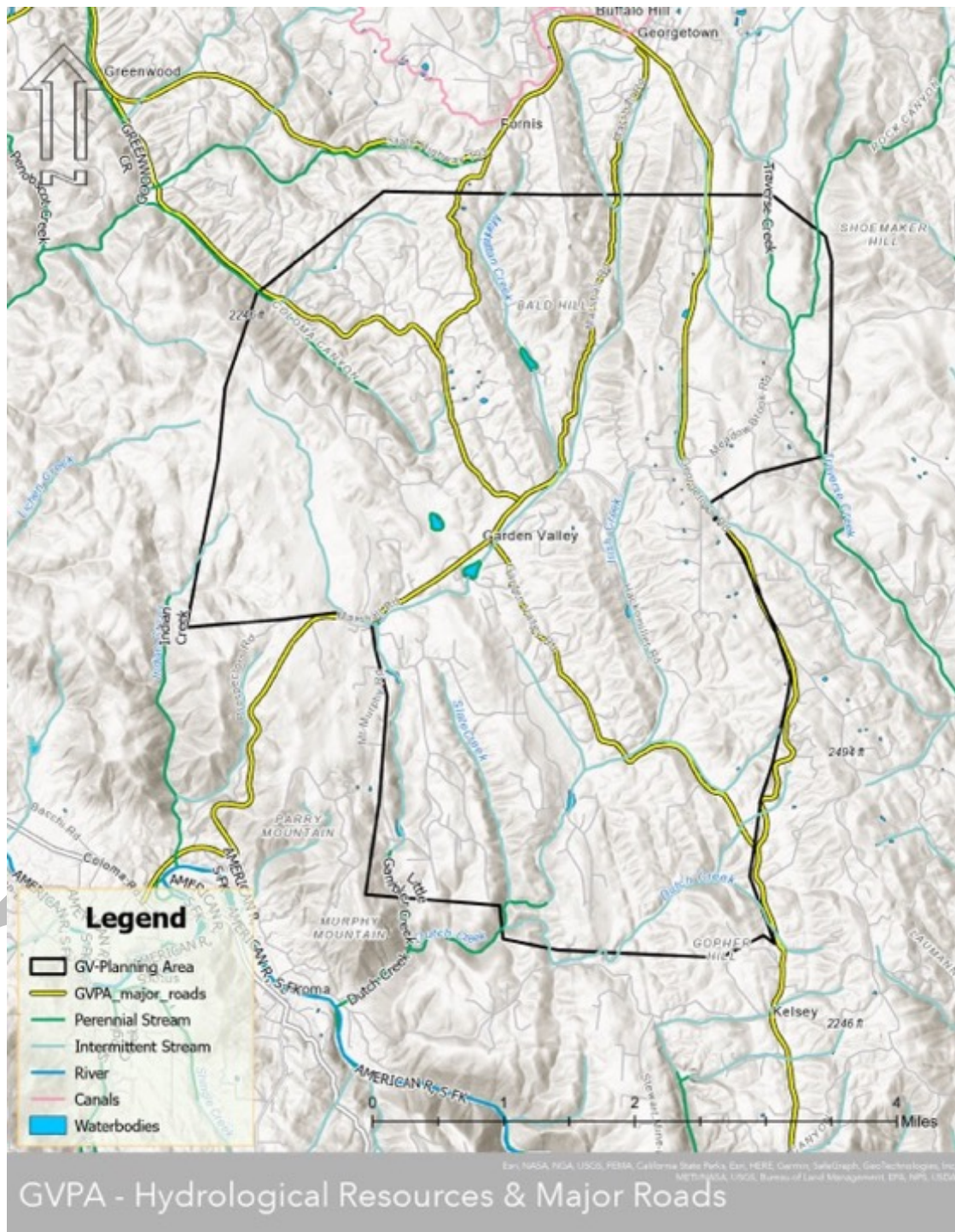


Figure 4: Hydrologic Features (zoom to view)

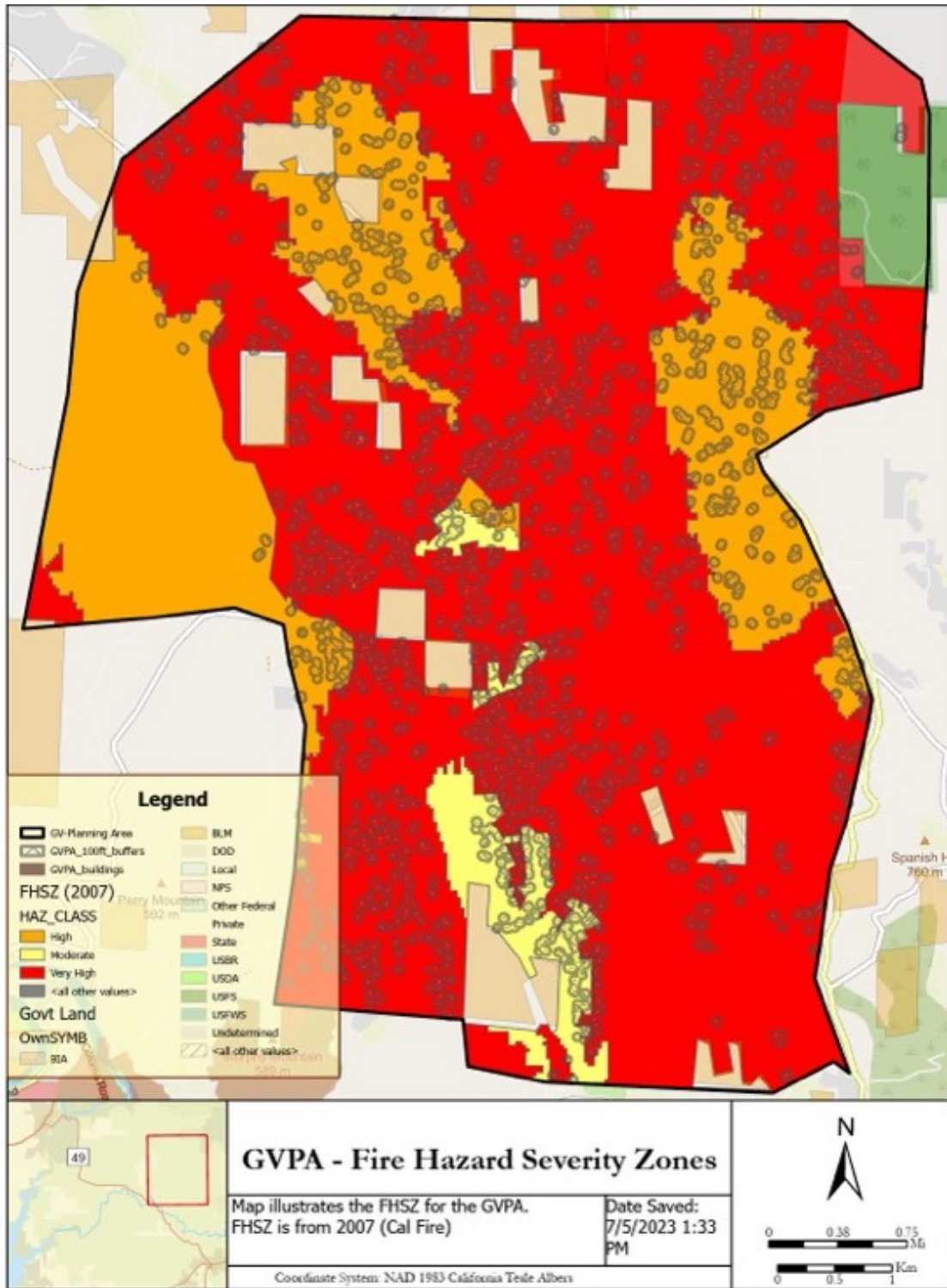


Figure 6: Fire Hazard Severity Zones (zoom to view)

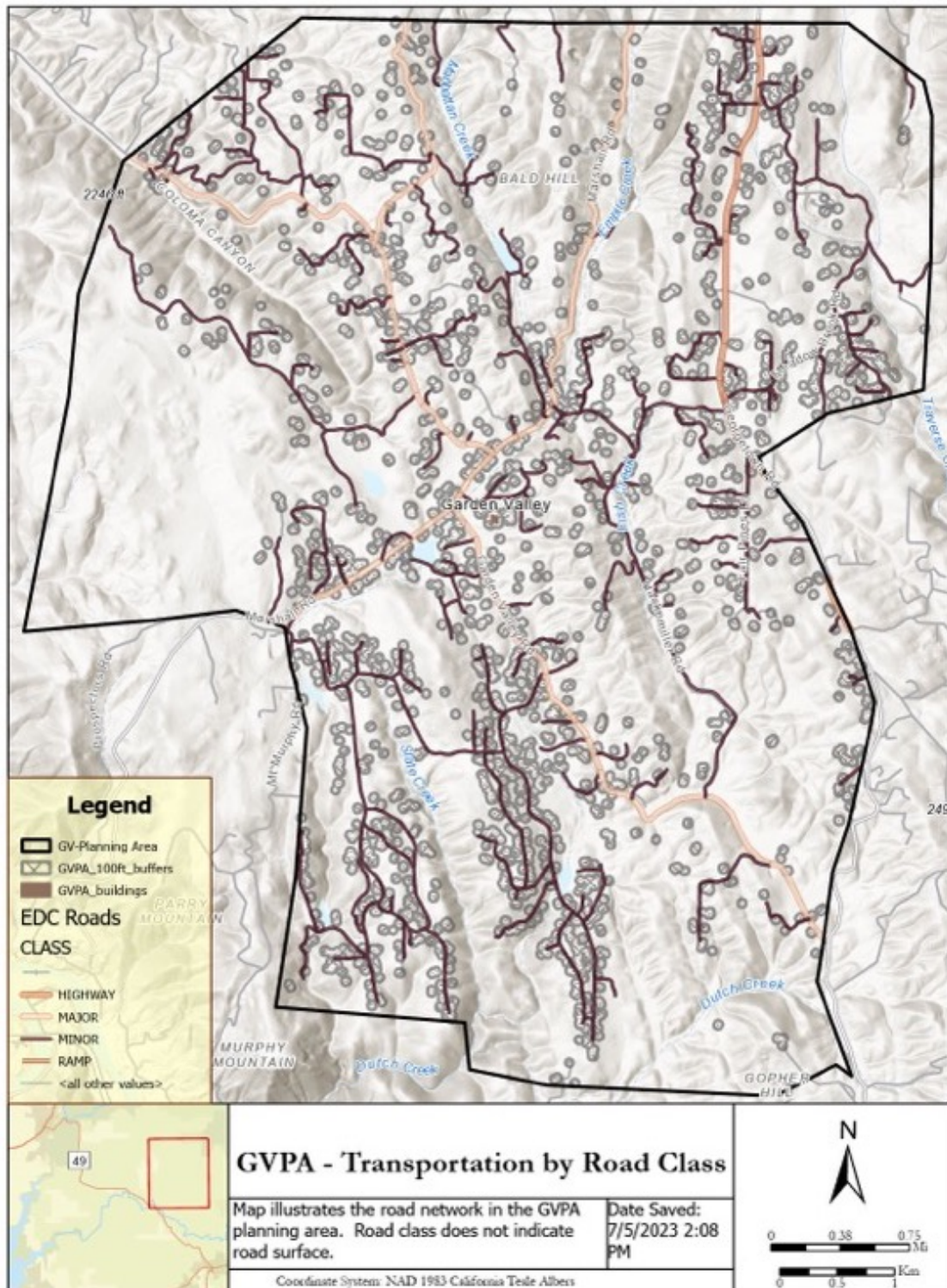
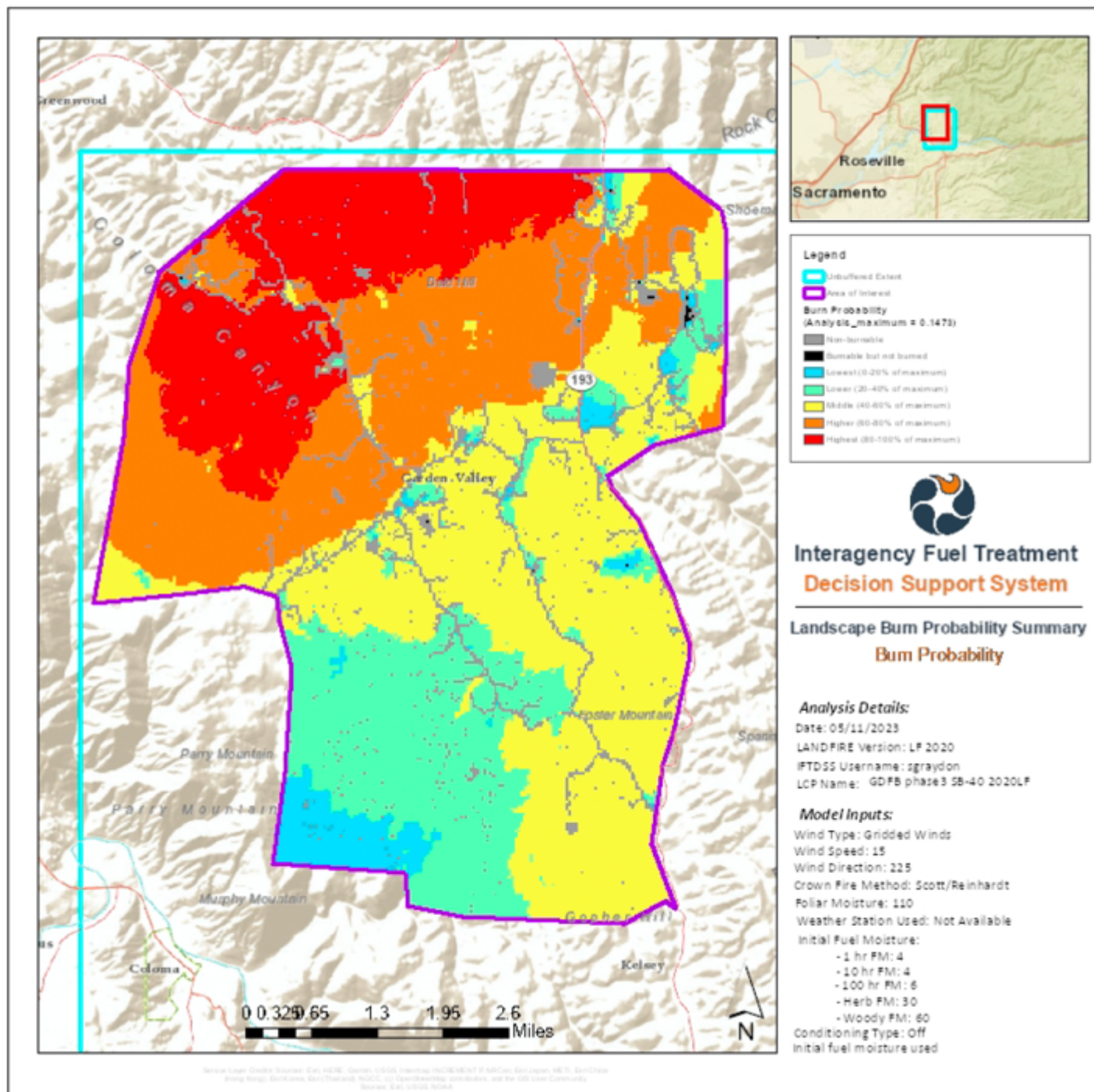


Figure 7: Planning Area Road Classification (zoom to view)



Conceptual Fuel Breaks

1 – Greenwood Road: 400 feet wide on both sides of Greenwood Road 370.54 acres.

2 – Garden Valley Road: 400 feet wide on both sides of Garden Valley Road 406.41 acres.

3 – Manhattan/Irish Creeks: up to 600 feet wide on the ridgelines above Manhattan Creek (north) and Irish Creek/Hackomiller Road (south) 1612.11 acres.

4 – Marshall Road South: shaded fuel break throughout the area 248.4 acres.

5 – Slate Creek: up to 600 feet wide on the ridgeline above Slate Creek 591.32 acres.

6 – Mount Murphy: up to 600 feet wide on the ridgeline above Johntown Creek 239.95 acres.

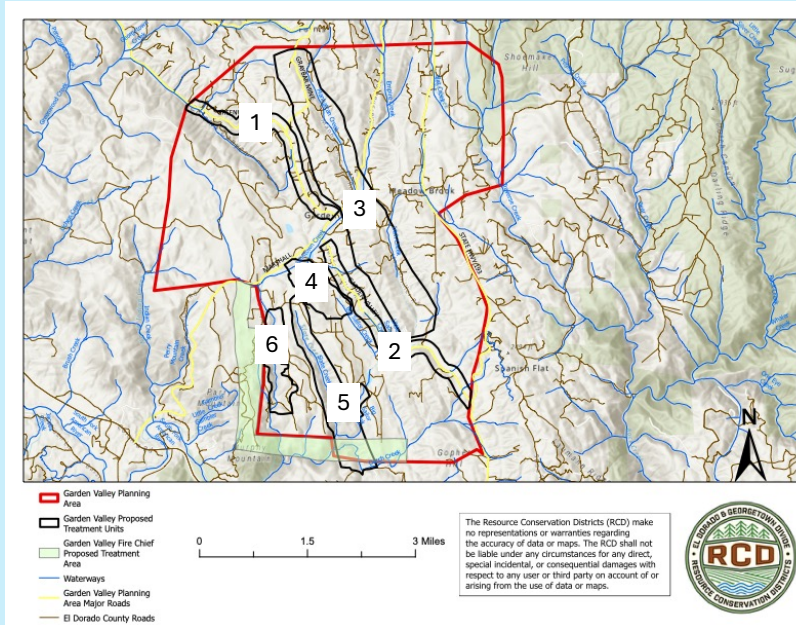


Figure 11: Conceptual Fuel Breaks (zoom to view)