Vail Community Wildfire Protection Plan

Contributing Organizations

Town of Vail Community Development and Environmental Sustainability Departments, Eagle County Wildfire Mitigation, USDA Forest Service, Upper Colorado Fire Management Unit, Vail Fire and Emergency Services, Vail Police Department, Eagle River Water and Sanitation District, Colorado State Parks and Wildlife, Colorado State Forest Service, Town of Vail Economic Development, Vail Resorts (Vail Mountain), Eagle River Watershed Council, Vail Valley Partnership, Denver Water, Vail Chamber and Business Association, Eagle County Emergency Management, Xcel Energy

This document is intended to set forth a recommended plan only and imposes no obligations on the signatories. Specifically, executing this document in no way obligates the signatories to take any action requiring the commitment of funds in order to accomplish the summary recommendations.

The Vail Community Wildfire Protection Plan has been collaboratively developed and agreed to by the following entities:

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Executive Summary

Wildfire is a necessary and inevitable element of the ecosystem of the Vail Valley; however, it also presents the single largest threat to the safety, health and vitality of the Community of Vail. In 2015 the Town of Vail adopted the "Fire Adapted Vail" strategic frameworks to guide efforts to create a resilient community in the face of the growing risk from wildfire. This Community Wildfire Protection Plan (CWPP) expands upon the strategic framework by establishing five main community goals. These goals are supported by eleven strategies which can be accomplished by implementing 36 recommended actions. The plan identifies seven areas recommended for hazardous fuels reduction across private, local, state and federally managed lands.

This plan was collaboratively developed by a diverse stakeholder group. The stakeholders of this plan have long-standing working relationships and collectively have the knowledge, skills and motivation to increase resiliency throughout the community. The CWPP was developed to implement the National Cohesive Wildland Fire Management Strategy at a local level. The Cohesive Strategy has 3 pillars, Resilient Landscapes, Fire Adapted Communities and Safe and Effective Response, which are all incorporated within the recommendations.

This CWPP meets the intent and purpose as set forth in the Healthy Forest Restoration Act and the Colorado State Forest Service guidelines for development of a community wildfire protection plan. While this plan does not obligate any stakeholder to implement any of the recommendations, they should be considered when developing projects, budgets and allocation of stakeholder resources.

Together the stakeholders and community can continue to live, grow and thrive within this fire-dependent ecosystem.

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Fire Adapted Vail

The Town of Vail and the stakeholders of this plan recognize wildfire as an inevitable and important component of the natural ecosystem that the community is situated in. Wildfire is a matter of when, not if, and like the ecosystem, the community's resiliency is dependent upon its ability to adapt to a significant wildfire event. In 2015 Vail Fire developed and the Vail Town Council sanctioned the "Fire Adapted Vail" concept. Fire Adapted Vail is a strategic framework aimed at increasing community resiliency. The framework is developed around the three pillars of the National Cohesive Wildland Fire Management Strategy; Restore and Maintain Landscapes, Fire Adapted Communities, and Response to Fire. This Community Wildfire Protection Plan will provide specific goals and strategies to address the components of the Fire Adapted Vail framework.

Authorization

The initial authorities for community wildfire planning came from the Healthy Forests Restoration Act (HFRA) of 2003. Title I of HFRA outlined requirements for reducing hazardous fuels on federal lands. Vail's plan has been developed to be consistent with the requirements of the HFRA and to provide Vail with a community wide baseline from which to continue community wildfire planning in coordination with the various community stakeholder groups. The Colorado Legislature has since adopted specific statutes guiding community wildfire planning. The statutes providing authorization for this planning are outlined below:

- C.R.S. 23-31-312 Community wildfire protection plans, guidelines and criteria, legislative declaration, definitions
- C.R.S. 29-22.5-103 Wildland fires, general authority and responsibilities
- C.R.S. 30-10-513.5 Authority of Sheriff relating to fire within unincorporated areas of the County
- C.R.S. 30-15-401.7 Determination of fire hazard area, community wildfire protection plans, adoption, legislative declaration, definition.

Purpose

The purpose of this plan is to identify areas where wildfire hazard and community values intersect and create strategies to reduce the potential impacts of wildfire. The plan should guide and inform community efforts to reduce risks to the community through public education, reduction of hazardous fuels and decreased vulnerability to structural ignition. The plan is intended to be used as a living document. As projects are completed or new hazards are identified the plan should be revised to reflect these changes. At a minimum the stakeholder group should meet and revise the plan every 5 years.

Goals

1. Reduce the risk of a Wildland Urban Disaster within the Town of Vail
    a. Strategy 1- Build and maintain structures and their surrounding vegetation in a manner the resists ignition from wildfire or when ignited does not rapidly spread the fire
    b. Strategy 2- Implement fuels reduction projects immediately adjacent to the community to minimize fire behavior within 100 feet of structures
    c. Strategy 3- Ensure all community codes and ordinances are consistent with current best practices for reduction of structural ignitability
    d. Strategy 4- Integrate wildfire risk reduction and planning efforts with other Town(s), County and federal environmental and sustainability planning goals and activities
2. Decrease the probability of landscape scale high severity wildfire events
    a. Strategy 5- Create resilient landscapes that promote diversity of species, ages and condition classes
    b. Strategy 6- Create compartmentalization across the planning area where unplanned wildfire can be managed for multiple resource benefits when appropriate
    c. Strategy 7- Ensure the community has appropriate response resources for wildfire management
    d. Strategy 8- Identify and prepare watersheds and infrastructure that are at risk from post fire flooding and debris flow
3. Build business community resiliency to wildfire disasters
    a. Strategy 9- Promote and provide tools to businesses to implement and improve business continuity best practices
4. Citizen engagement and preparedness
    a. Strategy 10- Develop and support programs to educate and empower residents to prepare for evacuation
    b. Strategy 11- Improve the public's understanding of our existing community fire protection infrastructure and limitations
5. Support the utilization of forest products

Community Wildfire Protection Plan Standards

CWPPs are a direct extension of the HFRA authorized by Congress in 2003. In an effort to promote these plans and to encourage consistency in the development of these plans, a model handbook was prepared by the Communities Committee, National Association of Counties, National Association of State Foresters, Society of American Foresters and the Western Governors' Association. Colorado State statute further defines requirements specifically required for approval of CWPPs within Colorado. A list of these standards can be found at https://csfs.colostate.edu/wildfire-mitigation/community-wildfire-protection-plans/#1447445534754-268d6379-de99. This plan meets or exceeds all requirements as set forth by HFRA and Colorado State Statute.

Community and Agency Engagement in Development of this CWPP

The community and many interested stakeholders have been integral to the development of this plan. Beginning in the winter of 2018 a group of stakeholders including local government, federal land management agencies, utility providers, private business and environmental interests met on a number of occasions to develop this plan. Through the planning process the stakeholder group has developed a set of common concerns, strategies to reduce wildfire impact and an initial set of recommendations for implementation. The community has been engaged through a number of community meetings and surveys to better understand their perspective on potential wildfire impacts and support for different mitigation actions. The stakeholder group and community should continue to be engaged through the implementation of this plan.

Historical Background

When the Town Charter was signed in 1966, the hazards of wildland fire were not acknowledged, nor were they incorporated in any of the foundational documents of the Town of Vail. The impact of wildland fire has steadily increased throughout Colorado and the West for the past few decades. The size, frequency, intensity and impacts of wildland fires continues to grow across the state as we continue to develop wildland areas. Years of aggressive fire suppression, insect and disease activity and lack of active forest management have created conditions that increase the risk of a catastrophic wildfire. It has become clear that wildland fires have the potential to inflict significant damage to a community that is unprepared.

2002 was a record setting wildfire year in the state of Colorado in terms of number of acres burned, number of large fires, number of houses lost to wildland fire and total insurable loss from wildland fires. This record setting year captured the attention of many of the citizens, responders and elected officials around the state. It was in that year that Vail Fire and Emergency Services began in earnest its efforts to ensure the community was prepared for a wildland fire.

Since 2002 the community has engaged in numerous programs and projects, large and small, to reduce the risk of wildland fire within the community. Eagle County developed and adopted the first countywide CWPP in 2003. This plan has been regularly updated and used for countywide risk reduction. In 2007 the Town of Vail enacted codes that prohibit the installation of new wood shake roofs, which have long been recognized as one of the riskiest building practices in the wildland urban interface. Additionally, the Town of Vail invested in funding of a wildland mitigation program through the fire department. Since the inception of the program, the focus has been to measurably reduce wildfire risk to the community. The stakeholders of this plan have invested millions of dollars and thousands of hours of labor into community risk reduction efforts. A summary of the activities can be found in the “Previously Completed Wildfire Risk Reduction Projects” section of this plan.

CWPP Planning Area

Geographic

The Town of Vail and the CWPP planning area is in the central mountains of Colorado approximately 100 miles west of Denver. Interstate 70 bisects the planning area from east to west running the entire length of the Town of Vail. The planning area covers approximately 1177 square miles, of which approximately 95 percent is public lands managed by the White River National Forest. The other 5 percent of the land is owned and managed by a combination of private, municipal and state.

Elevations within the planning area range from just below 8000 feet in Dowd Junction to roughly 12,500 feet on the peaks of the Gore Range. Mountain shrub communities dominate the hotter and drier south and west aspects of the lower elevations while lodgepole pine, aspen and spruce-fir stands dominate the cooler and wetter east and north aspects as well as the higher elevations. Small areas of alpine tundra dominate the high peaks that flank the boundaries of the CWPP planning area.

Gore Creek, a tributary of the Colorado River, bisects the planning area from east to west. Additionally, a small portion of the Upper Eagle River watershed is covered by this plan. Gore Creek and the Upper Eagle River join at their confluence in Dowd Junction at the very western tip of the planning area. Water from these two watersheds provide drinking water and recreation to many larger communities down-river.

Vail Resorts operates the Vail Ski area under a special use permit of the U.S. Forest Service. The ski area boundary encompasses most the lands between the Town of Vail and the southern planning boundary. A large portion of the White River National Forest North and East of the Town of Vail is part of the federally designated Eagles Nest Wilderness.

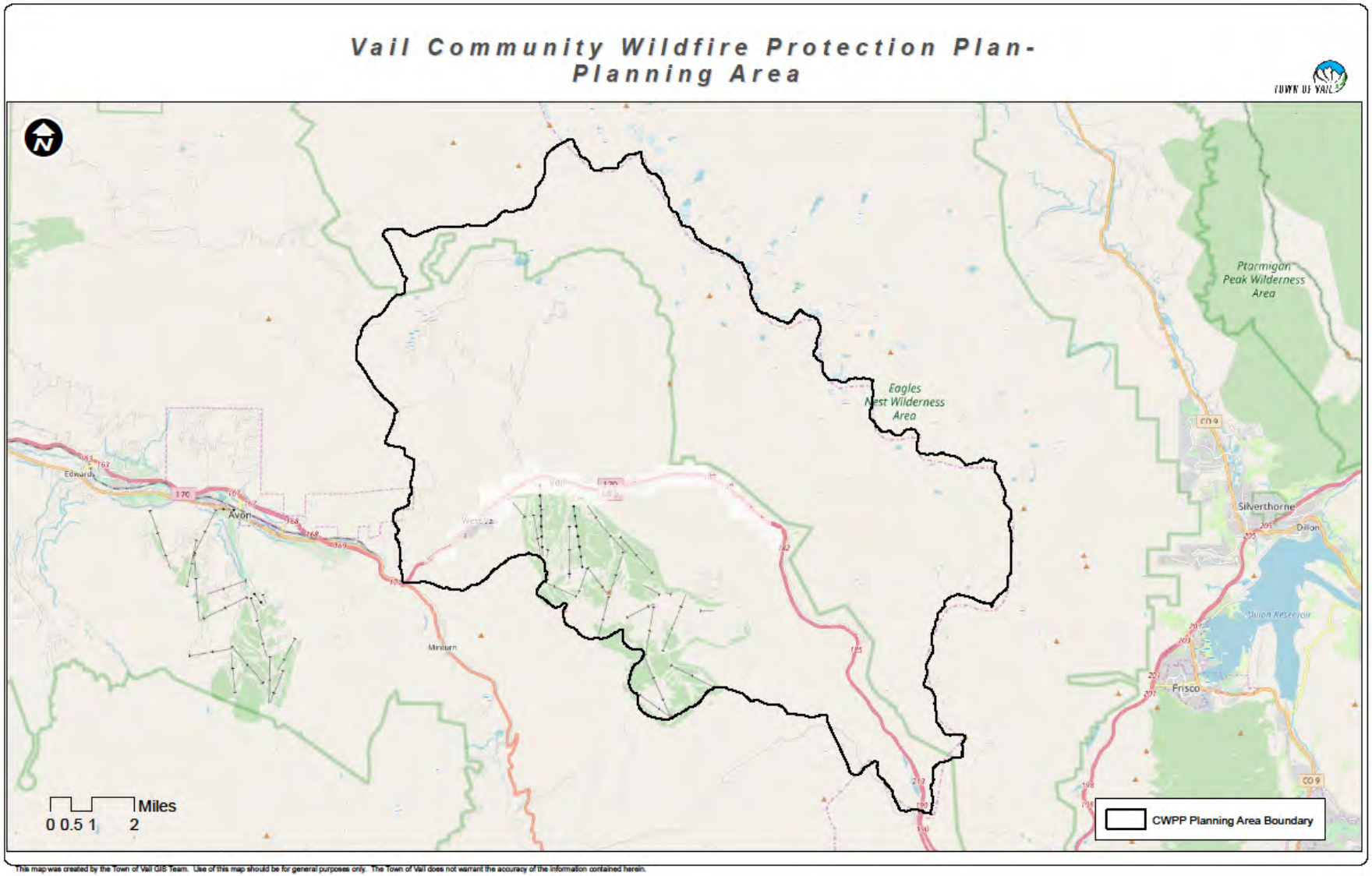


Figure 1- CWPP Planning Area Map

Fuels and vegetation

Fuel types, elevation and geographical location play an important part in identifying the natural fire return interval, or fire regime. A fire regime is a term given to the general pattern in which fires naturally occur within an ecosystem over an extended period of time. Fuel types are the driving factor in identifying the fire return interval or natural fire regime. A large percentage of the planning area fall within Fire Regime IV due to the predominant lodgepole pine and spruce-fir forests. The fire frequency for Fire Regime IV is predicted to be between 35-200 years. Although fires are less frequent for this fire regime, they are predicted to be high severity fires which consume or kill most of the aboveground vegetation. The second most prevalent group is Fire Regime I which is classified as more frequent (0-35 years) but less intense fire behavior. The areas of Group I are mostly the mountain shrub and aspen communities which occupy the lower elevations of the planning area. The maps below identify the type of fire regime in planning area and the type of fire that is predicted for this fuel type.

The condition class map shows the current departure from the natural fire return interval. Many of the areas of Fire Regime IV are within or near their historical range of variability. As can be seen in the map large portions of the planning area, primarily Fire Regime Group I, are highly departed from the natural fire return interval. When burned, areas highly departed from their normal fire return intervals tend to exhibit higher fire intensity and higher resistance to control.

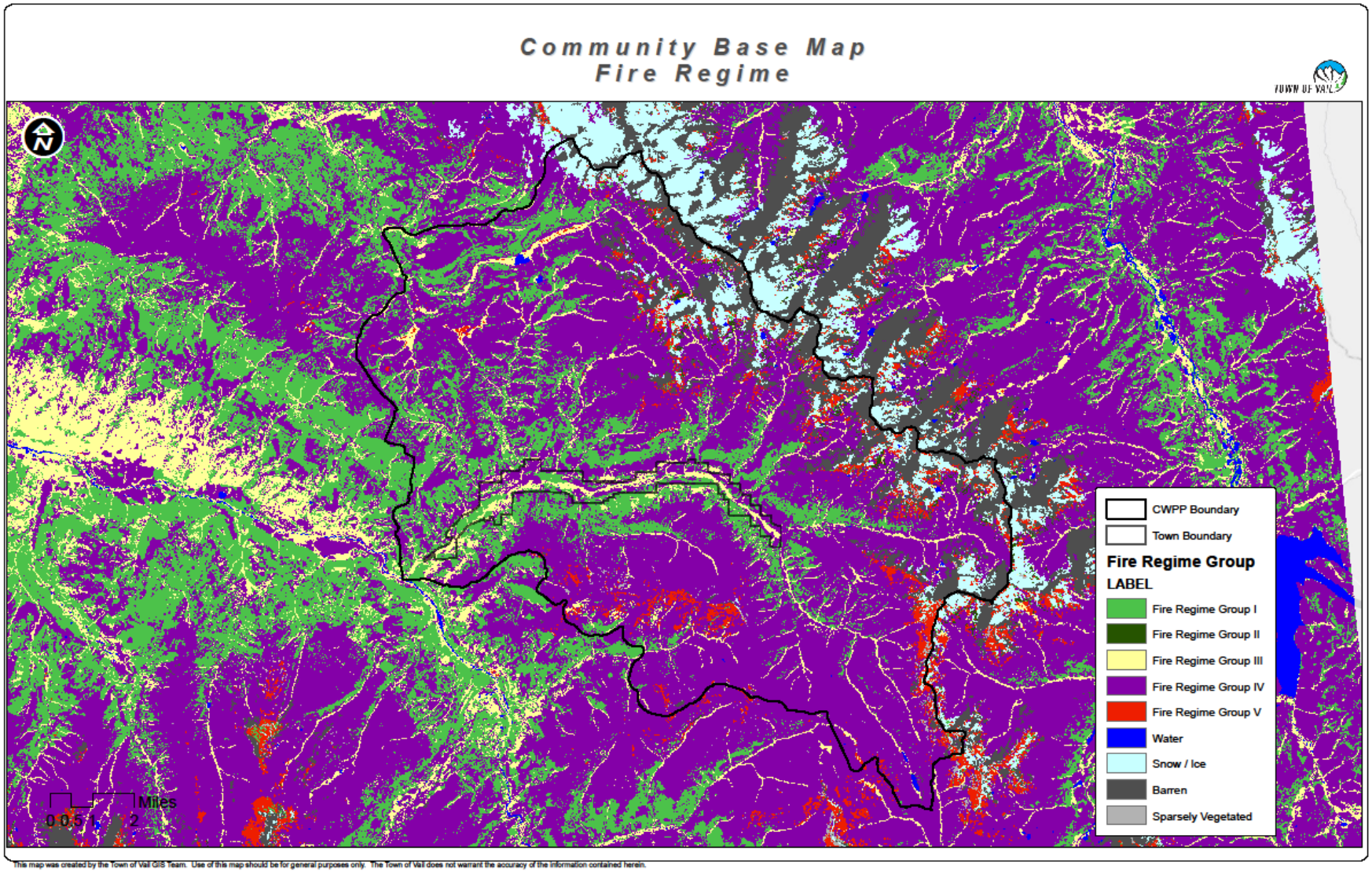


Figure 2- Fire Regime Map

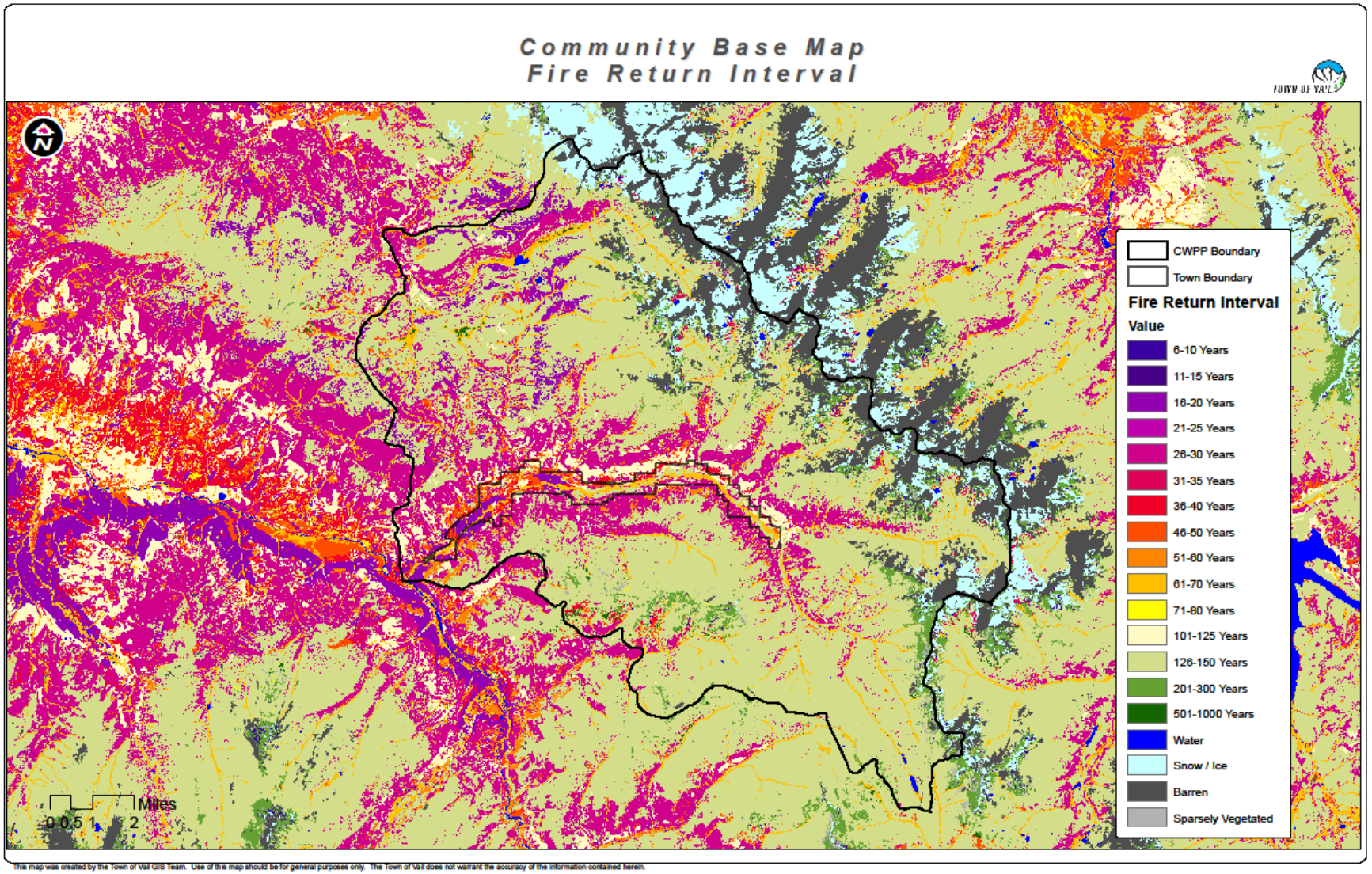


Figure 3- Fire Return Interval Map

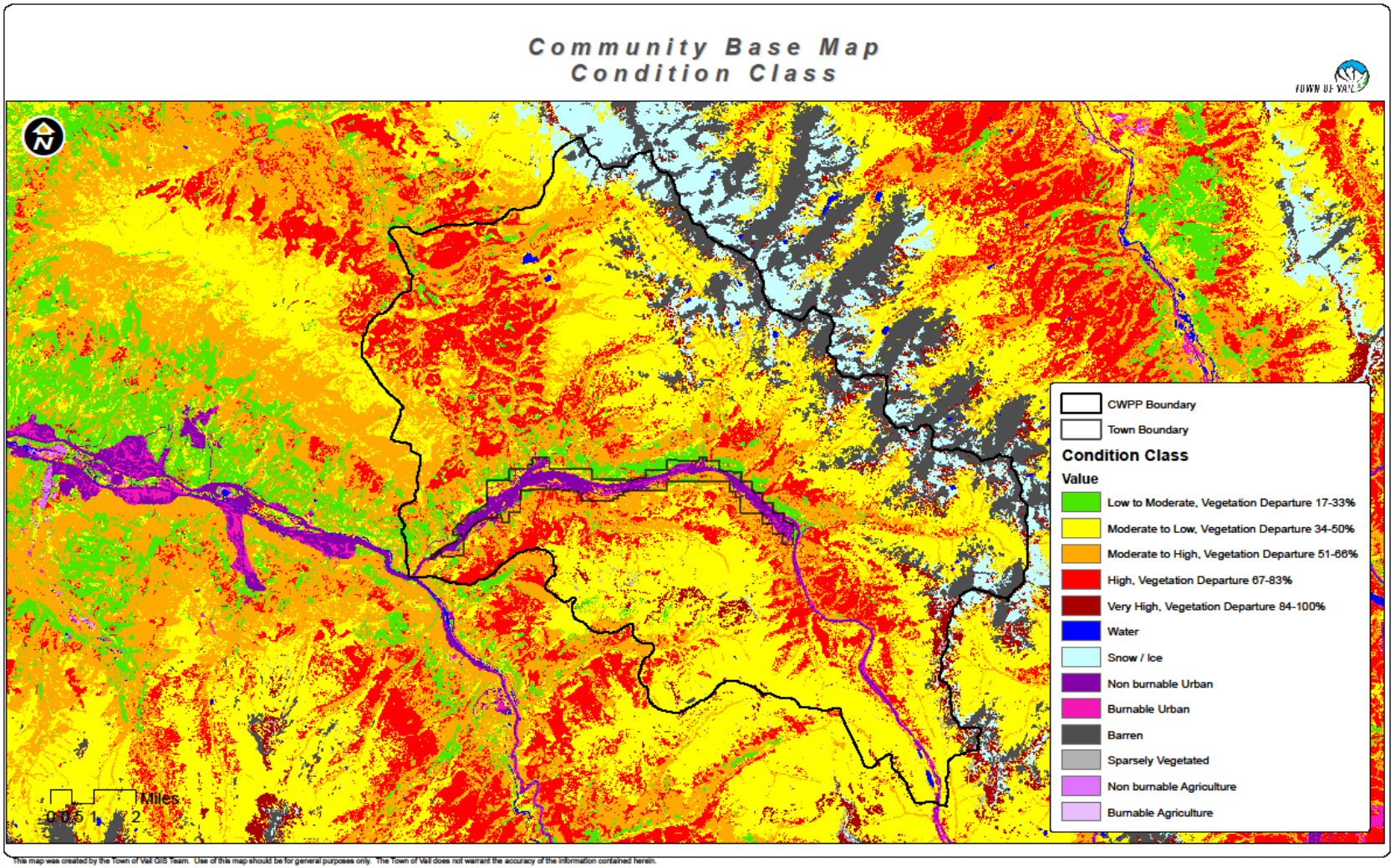


Figure 4- Condition Class Map

**A large percentage of the developed land within the planning area shows as Non burnable urban. The stakeholder group agrees that this is not representative of conditions on the ground, however, agree with all other portions of the map.

Community Profile

Since its incorporation in 1966, Vail has earned the distinction as one of the leading mountain resort communities in North America. With more open space than any other community of its kind, free transit and other environmentally sensitive services, plus an abundance of recreational, cultural and educational opportunities, Vail has become not only a great place to visit, but an even better place to live.

Vail Vital Statistics

- **Elevation:** 8,150 feet
- **Size:** 4.6 square miles, 10 miles in length
- **Location:** 100 miles west of Denver on Interstate 70 in Eagle County and easily accessible via the Eagle County Regional Airport, 35 miles to the west. Vail is surrounded by 350,000 acres of White River National Forest land.
- **Climate:** Vail receives more than 335 inches of snow annually and almost 300 days of sunshine each year. During the summer, daytime temperatures average 75 degrees and 45 degrees for the nighttime low. Winter daytime temperatures average 45 degrees, with lows dipping below 30 degrees.

Community

On the heels of its success as a resort, Vail has evolved into an appealing recreation-friendly alpine community now comprised of over 5,000 full-time residents and an estimated 5,000 part-time residents. Together, Vail is considered to be a leader in its resort-community qualities and best practices. Examples include:

- Largest free transit system in the nation
- First modern roundabout interchange in the nation
- More open space (30 percent of its lands) than any other resort community in the U.S
- Home to Gore Creek, one of only 11 Gold Medal fishing streams in the state
- 4 percent ski lift tax is the first of its kind in the country and represents the highest contribution level by a ski resort to its municipal partner in the state and perhaps the nation. The funds assist in the operation of Vail's free transit system
- Recognized as a resort leader in redevelopment initiatives of $1.5 billion in public-private investments from 2004 to 2008, representing more than 50 percent of property in the core areas of Vail Village and Lionshead
- Most connected resort in North America with the most technologically advanced outdoor LTE cellular system in the country

Resort

Vail Resorts, Inc. is the operator of Vail Mountain.
Coveted as one of the largest ski resorts in the world with more than 5,200 acres of skiable terrain, seven legendary Back Bowls spanning seven miles, and the most groomed terrain of any ski area. Vail has been an extraordinary winter vacation destination for passionate skiers and snowboarders for more than 50 years. It is home to world-class athletes during the U.S. Ski Team early-season training sessions in Golden Peak, the Burton US Open Snowboarding Championships and the 2015 World Alpine Ski Championships.

Wildland Urban Interface

The wildland-urban interface, or WUI, is any area where man-made improvements are built close to, or within, natural terrain and flammable vegetation, and where potential for wildland fire exists.

For the purposes of this plan the wildland-urban interface or WUI can be defined as an area that includes all developed private parcels of land and areas of special interest including Vail Mountain, the I-70 corridor and major utility lines. The WUI extends one and one half miles from the edges of these features. A visual depiction of the Vail WUI area can be seen on the WUI Map.

As can be seen in the wildland urban interface map (Figure 5) the community values identified within this plan extend beyond the planning boundaries. It is imperative that the stakeholders of this plan also work with the adjacent jurisdictions to ensure the communities values are appropriately mitigated and protected.

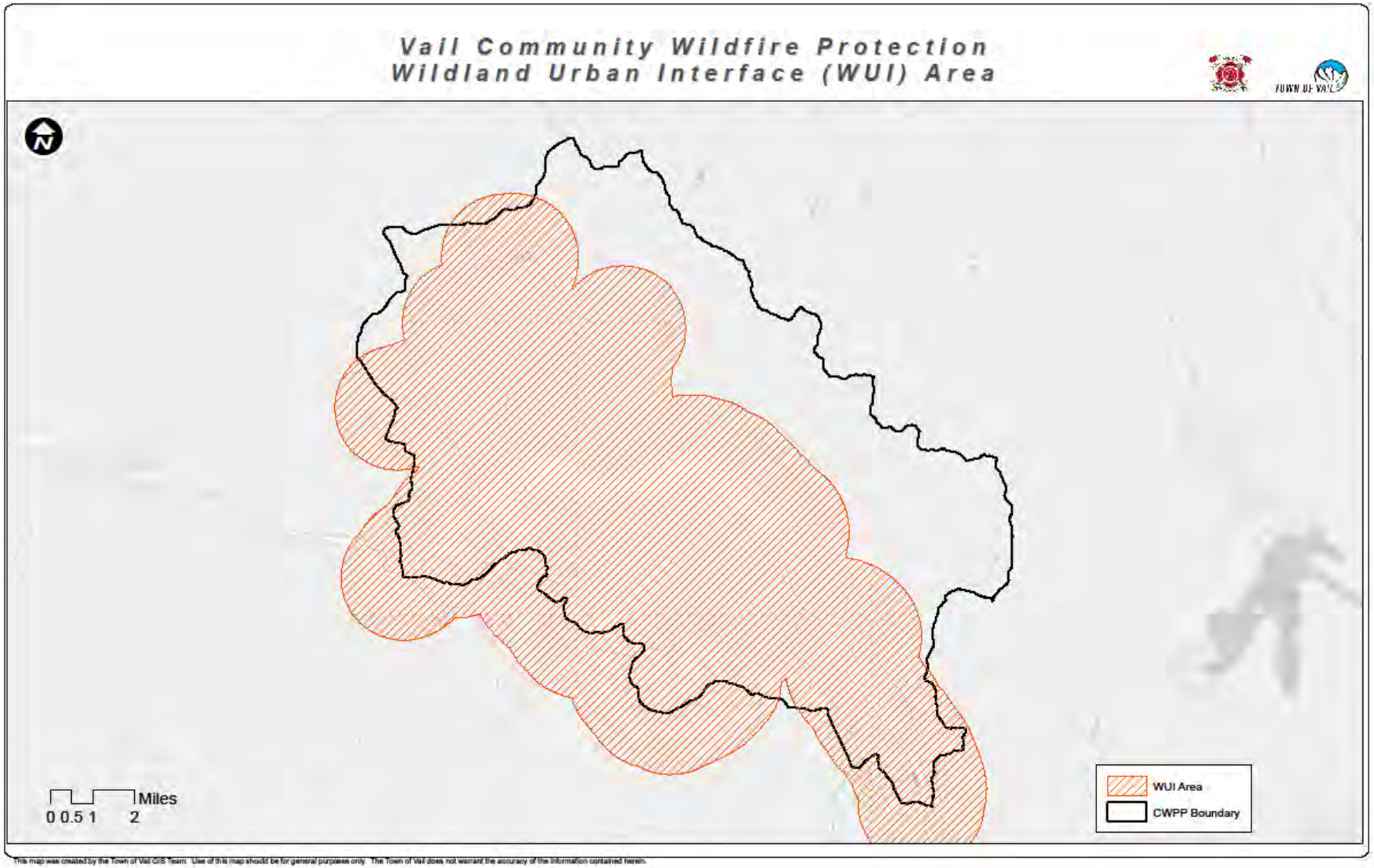


Figure 5- Wildland Urban Interface Map

Status of Natural Ecosystems

Wildland fire is a part of the natural ecosystem that the community exists within. The natural fire regime for an ecosystem such as the Vail Valley is low frequency, high severity fires (large fire every 30-200 years, fire regime IV). An average year may include several small fires (single tree to an acre in size) and few if any large or significant fires. The large fires would be expected in years of persistent drought typically coupled with ecosystem change such as insect and disease activity, large wind damaging events or even avalanche. Wildfire within our ecosystem acts as a successional reset and species such as aspen and lodgepole have adapted to thrive in the highly disturbed post fire environment.

It has been a significant time since a large-scale wildfire has burned in the Vail Valley. Folklore says that the famous wide open, relatively treeless back bowls of the Vail Ski resort are the result of wildfires set by the Ute Indians in the 1870's before they were driven from their lands by white settlers. Since that time no significant wildfires have burned within the CWPP planning area.

Between the time the first white settlers arrived in the Vail Valley and the 1960s, the area was primarily used for livestock grazing, small scale farming and a short-lived mining boom. Historical photos show the valley bottoms, south and west aspects covered mostly in grass and open brush except for spruce trees lining the riparian corridors. The East and North aspects were covered in mixed conifer and aspen stands. Stand sampling from a variety of stands throughout the planning area shows the average age of the conifer forest types to be near 130 years and the aspen stands 80-90 years indicating a predominantly mature forest condition. A relatively small portion of the of the planning area has been activity managed. Stands within those managed area range in age from 0-40 years old.

Drought, insect activity and disease have significantly impacted forest health throughout the planning area for the past 20 years. A persistent drought of the late 1990's and early 2000's significantly impacted the health of the area's aspen stands. A combination of drought stress, insect activity and a variety of funguses, termed Sudden Aspen Decline (SAD), worked together to outright kill some of the aspen stands within the valley. Following the end of the drought many of the stands that experienced impacts from SAD partially or fully recovered; however, nearly all stands have large accumulations of standing dead and down woody material. The fringe aspen stands, stands growing in marginal conditions for the species, were most heavily impacted by SAD and many of them did not recover.

The drought in combination with a continuous supply of suitable host trees also helped Mountain Pine Beetle (MPB) population build to epidemic populations. Between 2002 and 2014 the MPB outbreak infested trees on millions of acres throughout the Colorado high country. The height of the outbreak in the Vail Valley occurred between 2007 and 2010. While not as severe as places like Grand and Summit County the MPB still killed an estimated 30-50% of the mature lodgepole pine trees within the Vail Valley. This mortality has changed the stand structure of the lodgepole pine stands within the area. Lodgepole pine, a traditionally even aged monoculture with little understory vegetation, has been transformed into stands of mixed live and dead overstory with significant grass and shrub understory.

Lodgepole pine regeneration is patchy within most stands while shade tolerant species such as sub-alpine fir is becoming more prevalent.

In 2014 Spruce Beetle was identified in several trees along Gore Creek. Upon further investigate it was discovered that a small but potentially impactful population of Spruce Beetle had been building for several years in the area. Sanitation treatments to remove the infested trees were completed and the population continues to be monitored. The population continues to be active but is not growing at a significant rate. Throughout Eagle County populations of Spruce Beetle continue to be active along the numerous river drainages however no large populations have been identified within the upland forest stands. Spruce Beetle has become a major forest pest in both Southwest and Northwest Colorado where it has impacted 1.84 million acres between 1998 and 2018.

Wildfire and Wildlife

Like much of the vegetation in the area the wildlife has evolved with wildland fire. The aquatic and terrestrial life both need a variety of different ecosystem conditions to thrive. It is impossible to fit one statement on how wildfire impacts either positively and/or negatively the wildlife of the valley. One species may benefit from the disturbance by improving the habitat while another may be forced from the area because the disturbance has destroyed their preferred habitat. Of general note though is that an area that has a variety of ecotypes in a variety of successional stages will be much better habitat for a larger number of species.

The community has expressed concern in the recent past over the declining numbers of big game species such deer, elk, moose and big horn sheep as well as a decline in the aquatic health of Gore Creek. Wildlife habitat and the impacts of wildfire on the habitat should be evaluated during all planned activities as well as during the decision-making process in wildfire management.

Watersheds and Wildfire

The Gore Creek and Upper Eagle River watersheds are part of the headwaters of the Colorado River watershed providing water for people, wildlife and recreation across the western U.S. Locally they support the community with abundant high-quality water for consumption, wildlife and recreation.

Watershed scale high severity wildfire presents the single largest threat to watershed health in the Vail Valley. In 2010 JW Associates was contracted by the Rocky Mountain Region of the USFS to conduct a spatial analysis of the vulnerability of watersheds to wildfire throughout the Colorado High Country. The Eagle River Phase 1 Watershed Assessment studied the majority of the 12th level watersheds within the CWPP planning area boundary. The study ranked vulnerability of each watershed based on factors such as wildfire hazard, flooding or debris flow hazard, and soil erodibility. A map of the composite rating can be found in the Community Wildfire Risk Section of this plan (Figure 11). The Lower Gore Creek 12th level watershed is identified at the most vulnerable watershed within the CWPP planning area. This study should be consulted when prioritizing treatment areas. Priority should be given to projects that will limit the potential for watershed scale high severity fire behavior within these priority watersheds.

Post Wildfire Flooding and Debris Flow

Wildfire has the potential to fundamentally change the landscapes and watersheds that surround the Vail Community. Wildfire, and particularly high severity wildfires and/or those with long residence time, removes vegetation which covers slopes and creates hydrophobic soils which limits the ability of the soil to absorb water. Many of the drainages that surround the community are already identified at high risk for instability and have high potential for landslide and debris flow. Seasonal flooding is also a current concern for homes and infrastructure along Gore Creek and its many tributaries. The Town of Vail has upgraded some community infrastructure to accommodate predicted seasonal flood events; however, wildfire has the potential to increase predicted flows 20 to 50 times greater than the current predictions.

The Lake Christine Fire of 2018 in the Roaring Fork Valley provided an example of the potential effects on the community. Due to the proximity to the community of Basalt and the known instability of the underlying geology within the fire perimeter, federal land managers and community officials began post fire flooding preparations before the fire was even declared contained. A Burn Area Emergency Response (BAER) team was brought in to evaluate the environmental impacts of the fire. By examining burn severity and existing conditions they created a report which outlined the areas of at highest risk for flooding and debris flow. Local officials and land managers used this information to identify the downstream communities and infrastructure that was most at risk and implemented mitigation projects to decrease overall risks to life and property. Immediately post fire, increased stream flows and small-scale debris flows were observed. In the summer of 2019, the burned area was inundated with significant precipitation from a thunderstorm which has been classified as a 500-year event. This event caused localized flooding of approximately 12 homes downstream of the fire scar.

Many of the post fire rehabilitation actions are difficult to complete in advance, since the specific area burned, and the level of burn severity drive much of the required action. The community can however be prepared to respond rapidly in a coordinated effort. Federal land management agencies utilize a Burned Area Emergency Response (BAER) team to develop post fire rehabilitation plans and mitigate potential impacts. The BAER reports typically only cover federally managed land, leaving communities potentially vulnerable. Communities that have been successful in proactively managing post fire flooding impacts have:

- Rapidly completed cross boundary post fire risk assessment looking at burned area as well as downstream effects
- Assigned a lead to coordinate recovery efforts and accomplishing multijurisdictional work
- Implemented integrated advanced warning systems to provide adequate warning to the community about flash flood potential
- Engaged experts in identifying, designing and implementing mitigation projects

Community Preparedness to Respond

Emergency Response

Vail Fire and Emergency Services (VFES) is the all-risk fire department that provides incident response to wildland fire on non-federal lands within the planning area. In addition to the three 24 hour staffed engine companies, VFES employs a seasonal wildland fire crew each year from May through October. The Upper Colorado River Fire Management Unit (UCR) provides response to fires on all federal lands within the planning area. The UCR staffs response resources in Silverthorne and Eagle. Staffing of the UCR resources is 7 day effective during daylight hours from May through September with varying but more limited response capabilities in spring and fall. The Eagle County Sheriff is the jurisdictional authority for wildland fire suppression within the non-federal portions of unincorporated portions of Eagle County. Vail Fire and the UCR work closely together to ensure resources are dispatched to any report of a wildland fire. Additional resources are available as needed through multiple mutual aid and resource mobilization programs. Specific concepts of operations for wildland fire response are addressed in the most current version of the Eagle County Annual Operating Plan.

It is recognized by all within the response community that no one single entity has enough resources to contain all possible wildfires. Because of this local, regional, statewide and national mobilization programs have been developed to efficiently move resources to the areas of need. Rapidly expanding incidents within the planning area would initially be staffed by local resources such as those of Vail Fire and the UCR. As the fire expands and requires additional resources incident commanders may request resources from throughout Eagle County, Northwest Colorado, all of Colorado and then likely from other regions of the United States. There is a very real possibility that a fire ignited near the community could impact the community before sufficient resources were on scene. This is due to the relatively low staffing levels within the region and travel distances associated with significant mutual aid or resource mobilization. The National Wildfire Coordinating Group (NWCG) and the National Interagency Fire Center (NIFC) have established national standards for training, operations and equipment that the local resources follow to the best of their abilities.

Since most of the resources available to suppress a fire are from outside the area, it is critical to safe and effective firefighting that they can all work together. Two elements that are critical to effective firefighting are wayfinding and communications. Over the past few years the Eagle County response agencies have been working diligently to develop tools to ensure that out of area resources can quickly obtain quality tactical maps and integrate with the existing emergency radio systems. In 2019 the Eagle County Wildland Preplan Map book was rolled out for use throughout the county. The intention of the map book product was to provide responding resources with easy to use tactical maps that included street names, water sources, fuels modification areas and a host of other useful information. The foundation for each map book page is a “Wildfire Zone”. The zone is defined as an area of similar building, road and vegetation type that shares common access. These zones also play a key role in notification if an evacuation were to be needed. The zones are prepopulated in the county public notification system and can be rapidly used by dispatchers to send mass notifications to specific areas.

Local response capabilities have steadily increased in the past 15 year however there is still significant room for continued improvement. All firefighters within Eagle County receive all required basic wildland fire training as well as annual refresher training, however many of the responders lack significant real-world experience with wildland fire suppression operations. Locally wildland fire response is a relatively small portions of the overall call volume, with an average of 12 wildland calls in the VFES response area annually. To support outside agencies and gain additional experience, approximately a quarter of the employees of VFES participates in out of area deployments. To ensure that the remaining three quarters of the department builds adequate experience it is critical that ongoing training be provided in as realistic situations as possible.

Citizen Preparedness and Evacuation Planning

Large fires across the west each year continue to point to the need for robust evacuation planning as well as engaged and prepared citizens. VFES and Vail Police Department (VPD) have been working for years on improving evacuation preparedness within the planning area. In 2014 a formal evacuation plan was drafted, which included some basic traffic flow studies as well as potential resource placement for evacuation operations. In 2016 and 2017 VFES and VPD hosted functional exercises where the evacuation plan was tested in a limited capacity with willing community participation. It is important to note that community participation was extremely low. These exercises helped these agencies to refine the plan and identify some potential weak points. As described above, the wildland map book provides tools that may significantly speed up notification and evacuations. The success of the evacuation plan depends significantly on the Town of Vail's emergency services departments as well as significant support from nearly every department within the Town. An Emergency Operations plan was developed for the Town of Vail which has been exercised to a limited extent. It is imperative that the plan continue to be updated and exercised to ensure that it can be effectively implemented if needed for a wildfire event.

While significant work has been accomplished in the implementation of evacuations, successful evacuations dependent on a prepared and engaged community. One challenge in the planning area is the transient nature of the community. Each season, and in reality, each day brings a potentially different population to the community. While the community has a strong backbone of full-time residents, many residents are either long term renters or short-term guests. VFES and Vail PD have conducted extensive and ongoing advertising campaigns to ensure residents are signed up for emergency notifications. Notifications systems that do not require registration, such as Reverse 911 and the Integrated Public alert Warning Systems (IPAWS) have also been tested, but the reality is that a large majority of the community is still not registered to receive emergency notifications. In 2018 it was estimated that less than 50% of the residents were signed up to receive emergency notifications through ECAlert, the countywide emergency notification system.

While full time residents and long-term renters are challenging to reach, even more challenging is attempting to notify the short-term rental population. Short term renters are any guest staying in the area from 1-30 days in length. It is estimated that Vail contains almost 2500 short term rental units housing potentially 14,000 people. In the event of an emergency, this group may be very challenging to reach since they are not likely to be subscribers of the county emergency notification system. To

address this type of issue, several redundant systems could be deployed including the use of the IPAWS system which is similar to the Amber Alert system and does not require signup. In 2019 the Town of Vail purchased a long-range acoustic devise (LRAD), the device has the capabilities to broadcast a message over a long distance (1/4 mile) and be heard inside vehicles or buildings. Use of this device may speed up traditional door to door evacuation processes.

Notification of the community is only one part of evacuation. The citizens and guests also need to be prepared ahead of time. VFES and Vail PD have worked together to develop several preparedness documents and videos. Preparedness education is also delivered at several community events each year. While no official measure of individual preparedness is currently available, the general sense is that the majority of the community is not prepared for an evacuation.

Evacuation continues to be a topic of significant interest to the community. The stakeholders of this plan should continue to develop and implement programs that build preparedness within the community.

Business Community Preparedness

The business community is the economic driver within the region. Most of the businesses within the community are tourism based, with the majority being in the lodging and hospitality sectors. Wildfire has the potential to significantly impact these businesses. The 2018 wildfire season demonstrated the potential impacts on the business community. Smoke from wildfires in Western Eagle County and Garfield County filled the Vail Valley for weeks at a time during the busy summer months. While the fires themselves did not impact the community, the smoke caused a noticeable downtick in tourism.

The Lake Christine Fire, which burned near the Town of Basalt provided a first-hand lesson for the Roaring Folk Community. The fire started on July 3rd and burned actively throughout the entire summer. The fire was finally fully contained as the first snows started to fall in late October. During that time businesses were first disrupted by the actual fire through either evacuation of the business or employees not coming to work because they were evacuated. There were also disruptions in supply chain from road closures and power outages. The evacuations, road closures and power outages were lifted in the first few weeks of the fire, but the impacts did not end there. The smoke and media coverage of the fire caused tourists to seek out alternative locations for their travels to avoid the smoke or perceived dangers from the fire. Even after the smoke has cleared and the fire was declared controlled, the impacts persist. The area in the national forest where the fire burned was declared closed for at least 6 months to ensure the public was not endangered by falling trees and burned out stump holes left behind by the fire. The area is a popular with the local community and tourists alike due to the abundant motorized and non-motorized recreation trails.

While no official report was generated on the economic impacts of the Lake Christine fire, nearly every business owner in the Roaring Folk Valley can provide anecdotal evidence of the impacts on their business. Many of the businesses in that community were not prepared for that kind of event. Like the Roaring Fork Valley, many businesses within the Vail Valley are not prepared for a disaster. Large businesses such as Vail Resorts and the major hotel chains are better prepared than many of the small and medium sized businesses.

Every business within the community should be prepared for wildfire as well as other likely natural disasters. FEMA and the Small Business Administration has resources and suggestions for business preparedness and continuity planning. These types of programs should be presented to and supported for the business community within the Vail Valley.

Reduction of Structural Ignitability

Reducing risk to life and property is the highest priority of this plan. Because of the shape and orientation of the community in relation to the surrounding wildlands, all structures, residential and commercial, within the planning area are at risk from wildfire. Because of this risk, it is incumbent upon all property owners to take appropriate measures to reduce their individual hazards.

In 1966 when the Vail Town Charter was signed, wildland fire was not a recognized threat to the community. Much of the current development that exists within the valley was built without regard to the potential risks from wildfire. Because of the lack of awareness, building practices such as the use of dense landscaping and hazardous construction materials such as wood shake roofs were required for many structures. Additionally, because of the limited space within the community, high density development dominates many of the parcels. This combination of factors has led to an at-risk community with the potential for significant loss of property and life.

Over the past 20 years the scientific community has conducted substantial research with the goal of developing a better understanding of structural ignition during wildland fires. This research has led to an ever-growing body of knowledge on best practices for preventing structure ignition from wildfire. The most basic but important understanding is what causes structures to ignite. Research shows that structures ignite in one of three way during a wildfire: direct flame contact from burning vegetation, ignition from embers, and radiant and convective heat from nearby structures burning. Of the three ignition sources, ember ignition is by far the most common ignition source. Because of the density of buildings, the risk of structure to structure ignition or conflagration is higher in Vail than many other communities. Each one of these methods of ignition are different and require different but compatible types of mitigation to reduce the hazard.

Retired USFS researcher Dr. Jack Cohen coined the term “Wildland Urban Disaster” to describe a type of event that is growing in intensity and frequency across the Western U.S. A Wildland Urban Disaster is an event where more than 100 structures burn during a wildfire event, typically in a single day or short time period. The wildland fire causes a single building or possibly multiple buildings to ignite (typically ember caused). Once the building is on fire a combination of factors including radiant and convective heat, embers from the burning building, proximity of adjacent structures and lack of firefighting resources cause the fire to spread from building to building. Fires such as the 2012 Waldo Canyon Fire in Colorado Springs and the 2018 Camp Fire in Paradise, CA demonstrate the potential of these types of events. Of note in both of these cases, is the fact that the fire burned in a relatively densely populated urban/ sub-urban environment. Years of research by Dr. Cohen has identified that to prevent this type of disaster from occurring does not require the control of extreme wildfire, it requires the control of the elements within the community such as preventing the first building from igniting and preventing building to building ignition.

The identified best practices for reducing structure ignition include a combination of home hardening and vegetation management to create an environment near the home that does not support the ignition or spread of fire. Home hardening techniques include the use of non-combustible and ignition resistant building materials and construction techniques that reduce the number of gaps or intersections where embers may be able to ignite flammable building materials. Vegetation within 100 feet of the structure should be installed and maintained in a fashion that resists ignition and if ignited does not support high intensity fire or rapid fire spread.

Vail Fire has worked extensively within the town and with its partners to develop outreach materials and programs to empower property owners to mitigate the hazards within the community. Programs such as Ready, Set, Go and the Curbside Wildfire Hazard Evaluations aim to help community members identify specific hazards on their property. In 2003 Eagle County adopted its first land use regulations relating to wildfire. These regulations require developers to incorporate home hardening and defensible space into new construction and additions in unincorporated Eagle County. In 2019 the Vail Town Council adopted similar regulations for all properties within the town boundary. These types of codes are imperative to ensure that new homes built within the community incorporate best practices. In addition to these codes it is critical that the partners of this plan continue to develop and implement programs that support the mitigation and on-going maintenance of the buildings and vegetation within the community.

Community Education

Education of the community about the risks and mitigations of wildfire has been a cornerstone of the risk reduction program for more than a decade. Nearly every member of the stakeholder group of this plan has provided or participated in community education. The outreach has been focused on creation of defensible space/ ignition resistant landscaping, home hardening, community evacuation, and family preparedness. A variety of different programs and delivery methods have been used within the community. Some examples of past outreach efforts include: Ready, Set, Go community workshops; booths at community events such as the Vail Community picnics; presentations to homeowner associations; presentations to professional groups such as landscapers and community association managers; and one on one meetings with community members.

The Town of Vail and Vail Fire strongly believe in informing all community members of the risk from wildfire. To accomplish this task, Vail Fire began a community-wide curbside risk evaluation process in 2017. This risk evaluation process will evaluate the specific risk to each individual parcel within the community over a 5-year cycle. The intention of this risk evaluation includes; informing each property owner of their specific risks, providing mitigation suggestions, offering additional technical assistance with parcel specific mitigation actions, and measuring change over time. The overall goal of the program is to empower community members to reduce wildfire hazards on their own property thereby reducing the overall hazards within the community.

Community Wildfire Risk Assessment

The Risk Assessment for this CWPP utilizes data from a variety of sources including the USDA Forest Service, Colorado State Forest Service, State of Colorado, Eagle County, Town of Vail and various other partners to this plan. The risk assessment is broken down into several different separate but interconnected components of risk and hazard. The components of the assessment are; intensity and probability of fire, community value at risk directly related to a wildfire event, and potential post fire impacts. A graphical depiction of each component is found in the maps below:

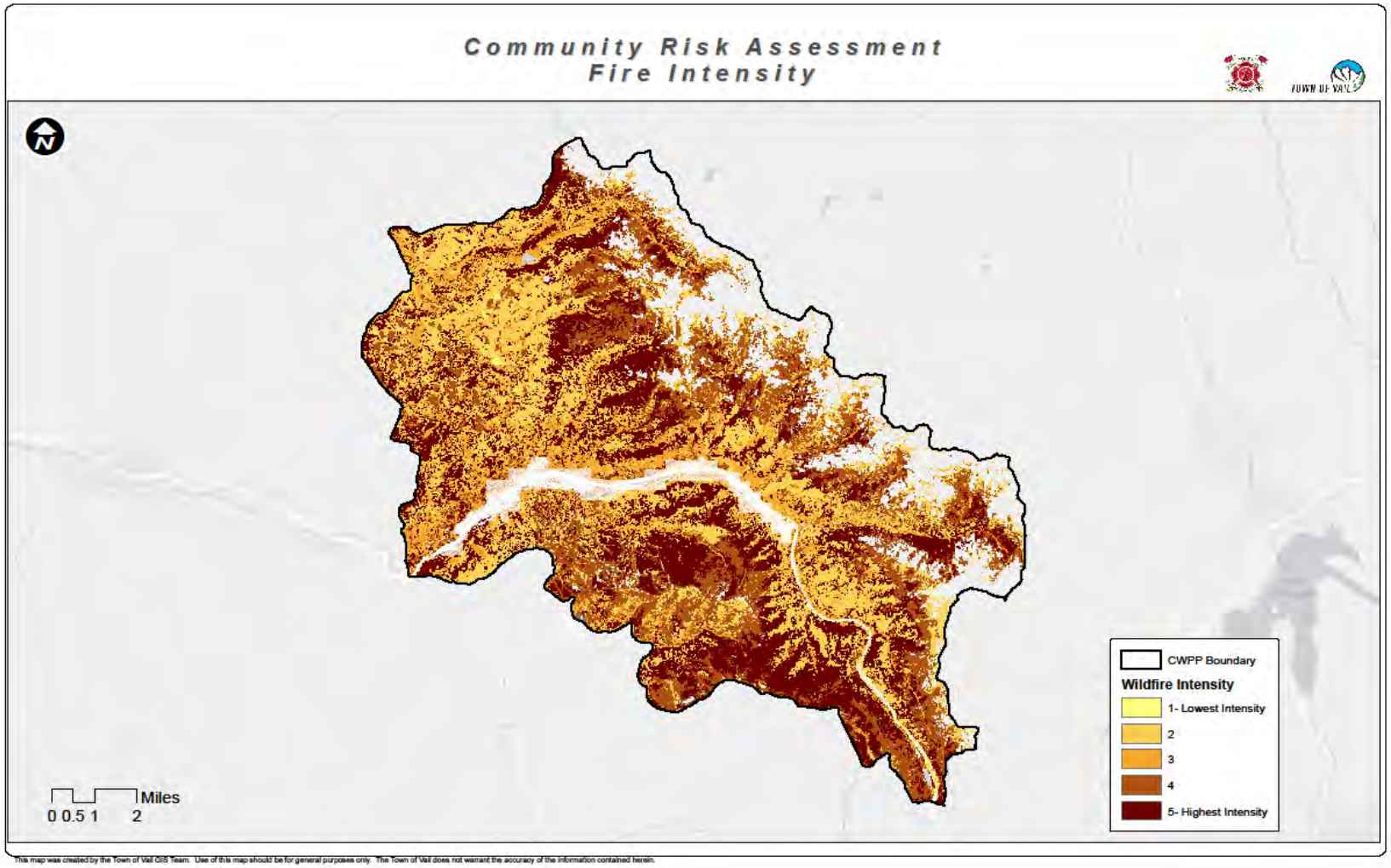


Figure 6- Fire Intensity Map

The fire intensity map shows the potential fire behavior across the planning area. The data is derived from the Colorado Wildfire Risk Assessment Portal (CO-WRAP).

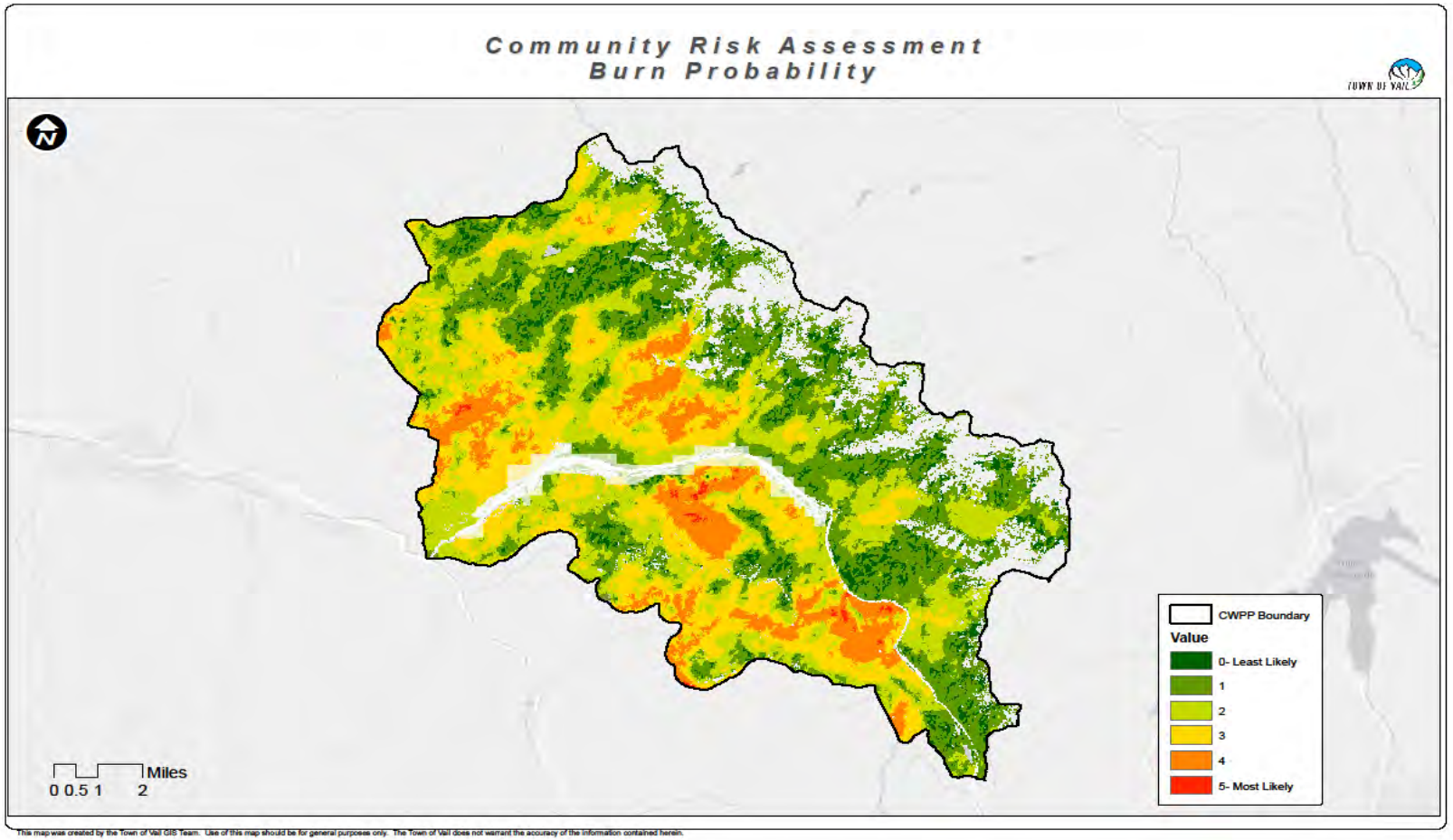


Figure 7- Burn Probability Map

The burn probability map shows the likelihood of a fire once ignited to burn across the planning area. The data is derived from the Colorado Wildfire Risk Assessment Portal (CO-WRAP)

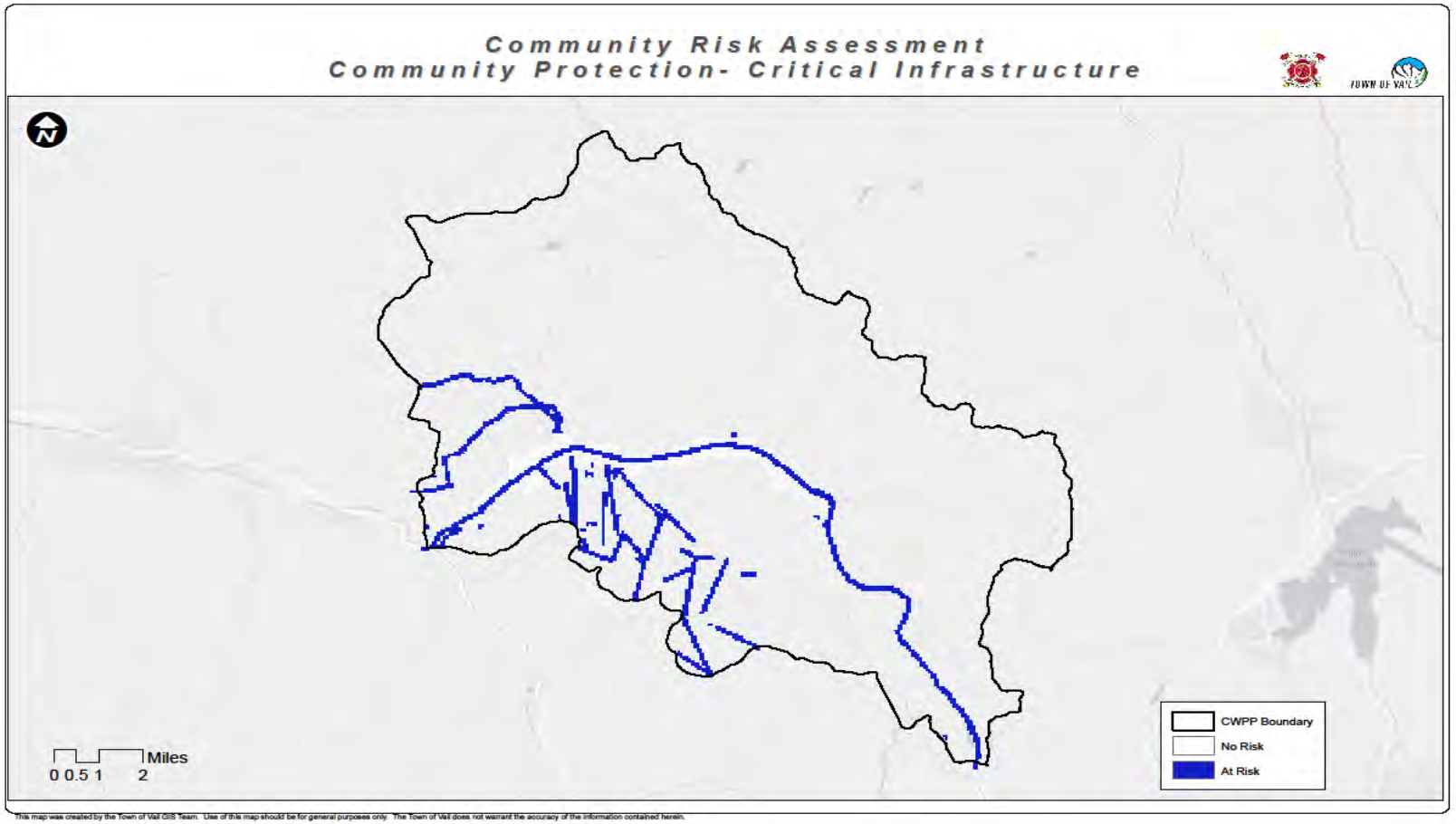


Figure 8- Critical Infrastructure Map

The Critical Infrastructure map shows the infrastructure corridors that would be negatively impacted by wildfire. This layer includes utility corridors, Vail mountain Infrastructure and major transportation routes.

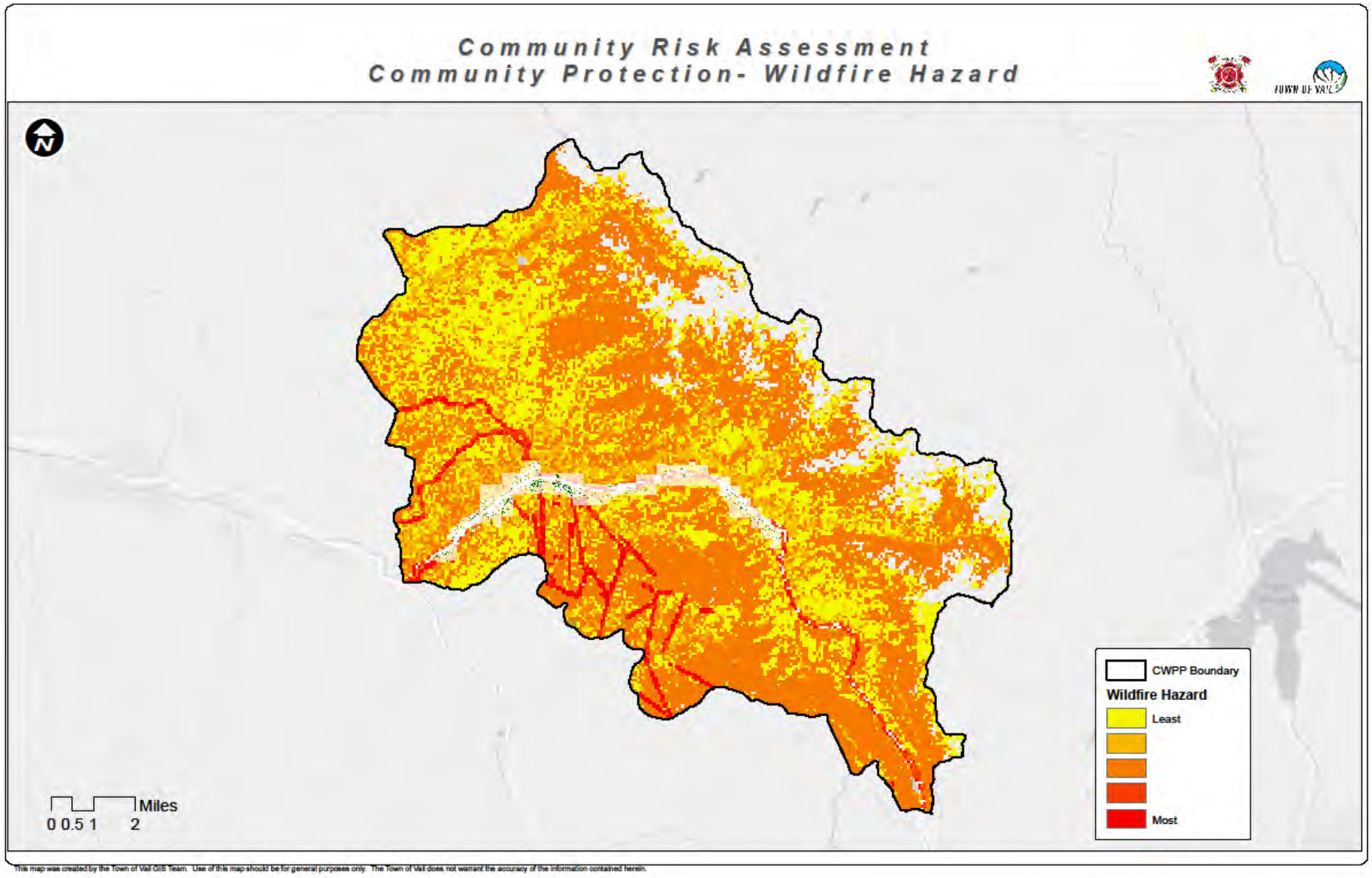


Figure 9- Wildfire Hazard Map

The Wildfire Hazard map overlays critical infrastructure and fire intensity. Areas of overlap have a higher hazard of loss from wildfire.

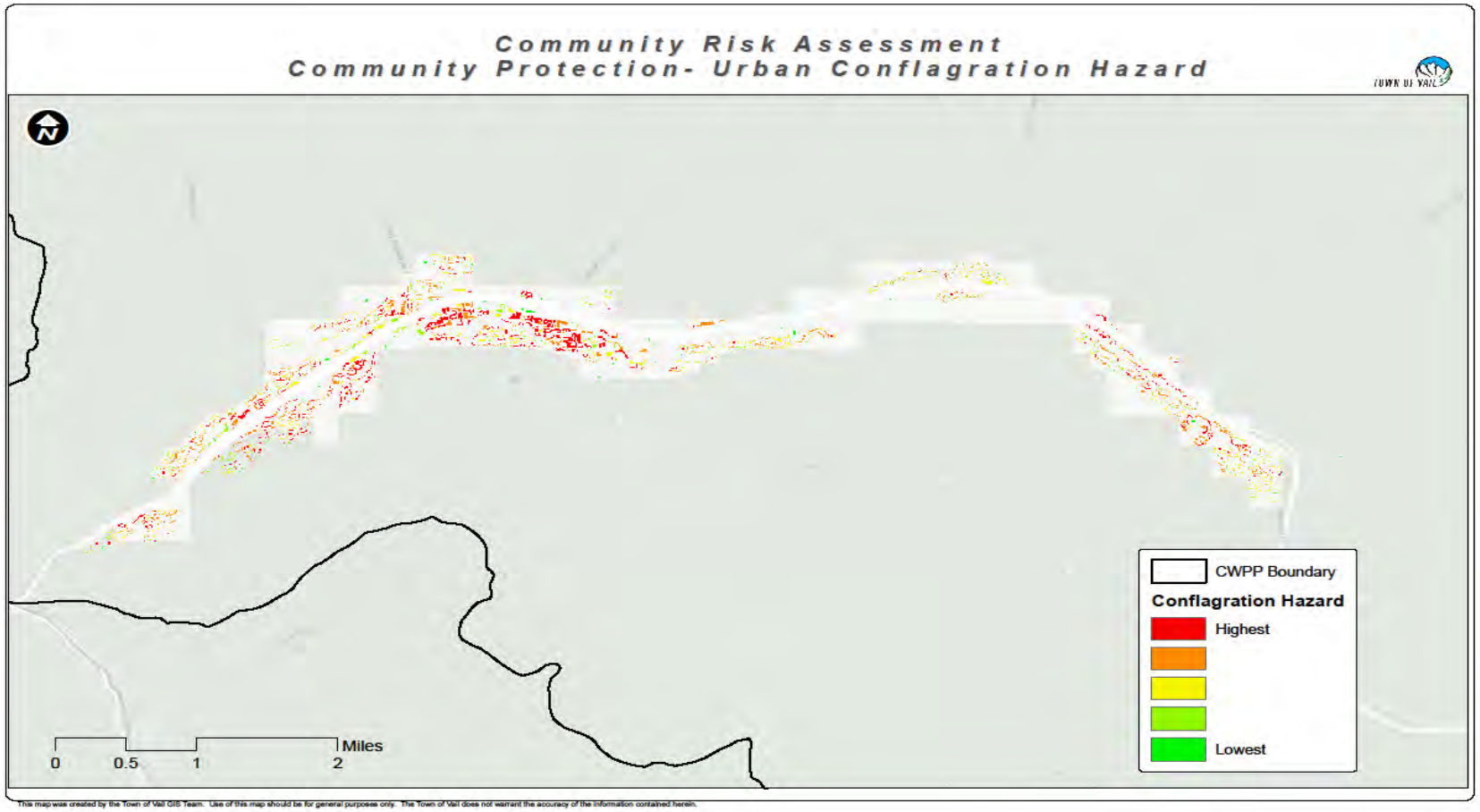


Figure 10- Urban Conflagration Hazard Map

Urban Conflagration hazard is the hazard of structure to structure ignition. The hazard ranting is based on proximity of structures. Structures closer together have a higher hazard. Structures built with type two or better construction had their hazard rating reduced. This hazard is separate from wildfire hazard since structure to structure ignition is dependent on a different set of factors than wildfire hazard.

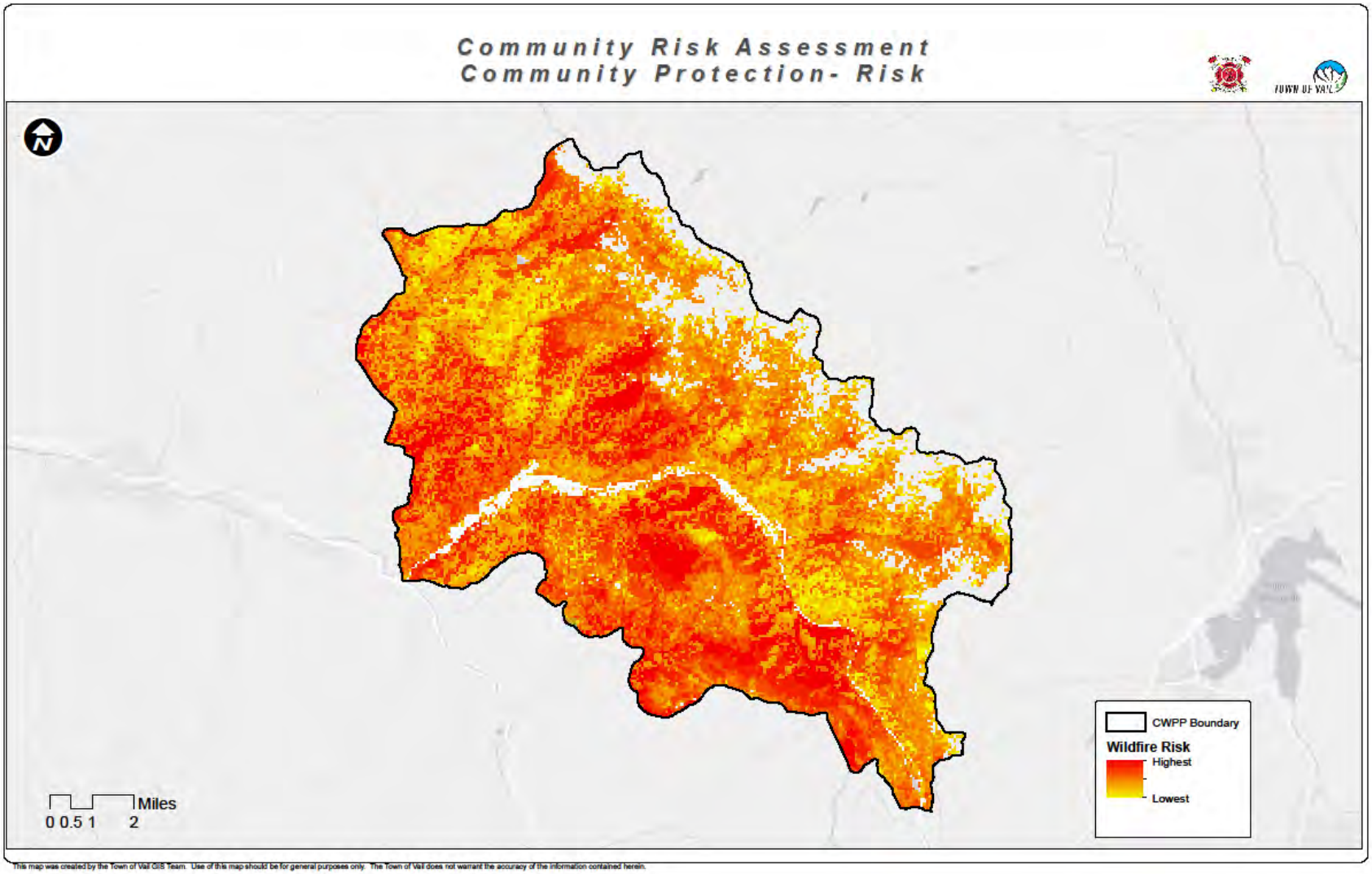


Figure 11- Wildfire Risk Map

The Risk Map overlays the Wildfire Hazard Map with the Burn Probability Map to give a likelihood of loss in hazard areas.

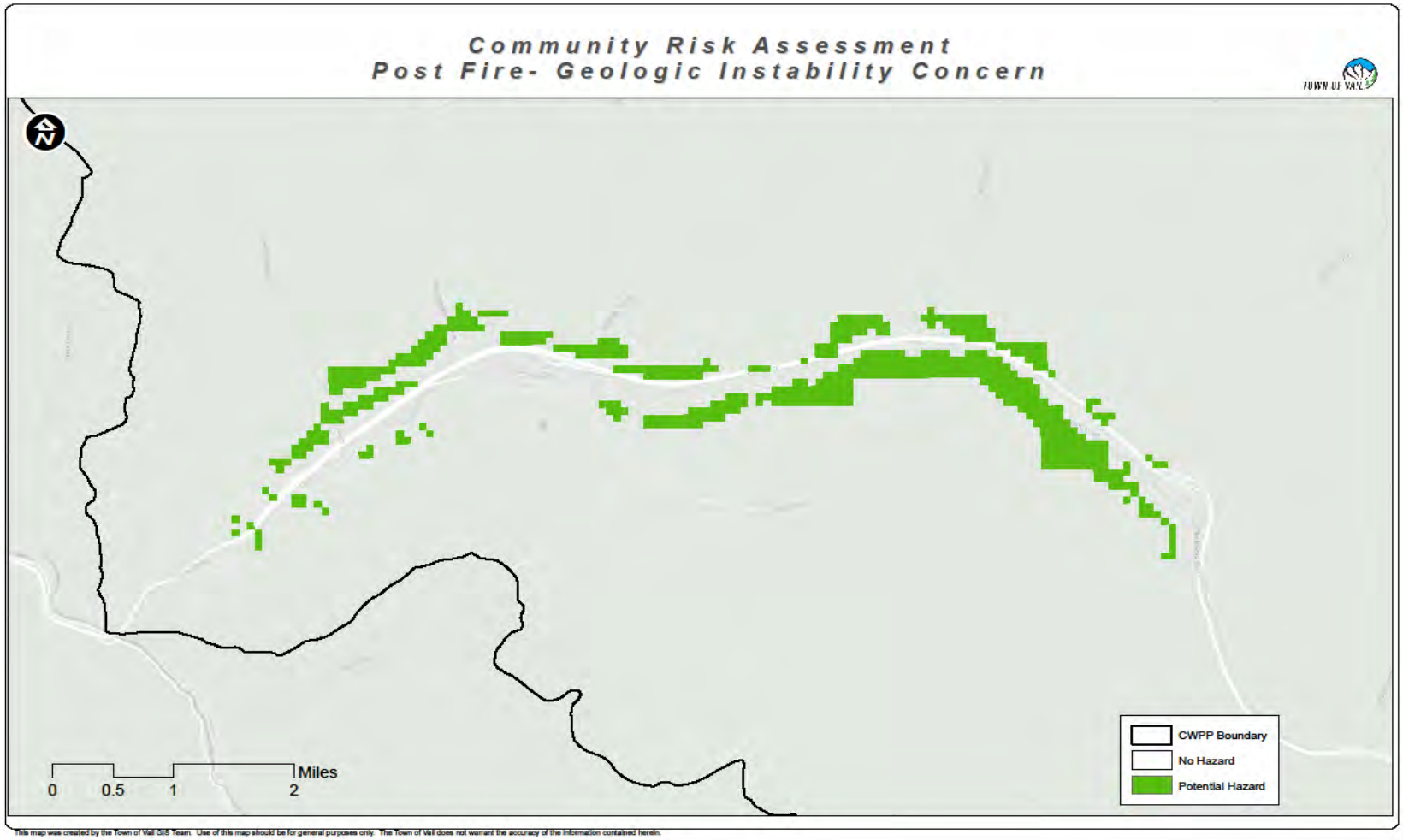


Figure 12- Geologic Instability Map

The Post Fire- Geologic Instability Concern Map shows areas of potential hazard post fire. These areas have pre-existing instability concerns and fire impacts may elevate the risks in these areas.

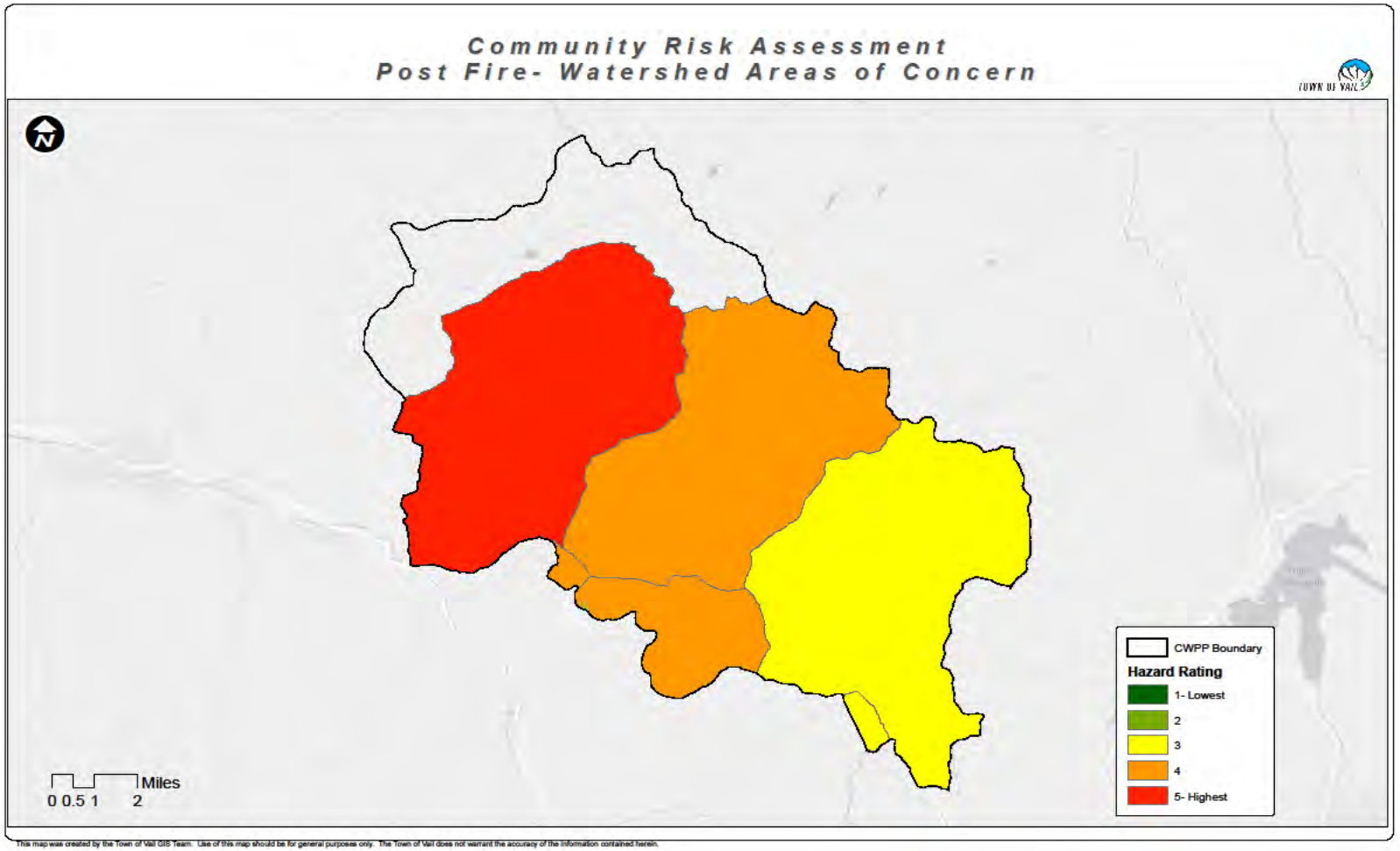


Figure 13- Watershed Areas of Concern

Post Fire Watersheds of Concern map is derived from the 2010 spatial analysis of the vulnerability of watersheds to wildfire. Factors assessed in the analysis include fire behavior, soil stability and roughness. The hazard scale is relative to other sub-watersheds within the Eagle River Watershed.

Wildfire Preparedness Strategies

I. Goal 1: Reduce the risk of a Wildland Urban Disaster within the Town

a. Strategy 1- Build and maintain structures and their surrounding vegetation in a manner that resists ignition from wildfire or when ignited does not rapidly spread the fire.

Discussion: Community protection starts with all structures in the community being resistant to ignition from wildfire. The building itself and the near building vegetation are the greatest determinate of survival during a wildfire.

Actions:

i. Implement planning and building codes to require projects to incorporate ignition resistant building materials and landscaping into the project design.
ii. Work with commissions and boards to ensure that landscape designs incorporate appropriate spacing of shrubs and trees from structures and from each other. Landscape designs and plant spacing should anticipate the growth and maturation of those plants.
iii. Support existing and develop additional programs that empower community members to implement wildfire hazard mitigation on their own property.
iv. Maintain and build upon the community wide curbside hazard evaluation program to inform all property owners of the specific risks and mitigation.

b. Strategy 2- Implement fuels reduction projects immediately adjacent to the community to minimize fire behavior within 100 feet of structures.

Discussion: Research and post fire investigation have shown that structure survivability is high when high intensity fire behavior is kept at least 100 feet from the structure. Projects should be targeted to reducing flame length to 4 feet or less within 100 feet of each structure.

Actions:

i. Prioritize and incentivize fuels reduction treatments immediately adjacent to community.

c. Strategy 3- Ensure consistency among community codes and ordinances is provided for in a manner which supports best practices and existing ordinances regarding structural ignitability.

Discussion: It is critical that all codes and ordinances are consistent in intent and application. Public safety shall be a priority in all codes and ordinances.

Actions:

i. Building, planning and fire codes and ordinances should be reviewed during each code adoption cycle to ensure currency and consistency.

d. Strategy 4- Integrate wildfire risk reduction and planning efforts with other town(s), county, state and federal environmental and sustainability planning goals and activities.

Discussion: Many different environmental, planning and building efforts occur within the CWPP planning area boundary. All plans should consider the impacts of wildfire on specific plans and projects.

Actions:

i. Include provisions or consideration for wildfire risk into planning and environmental projects proposed and developed within the CWPP boundary.
ii. Actively work with boards, commissions, elected officials and land management agencies to ensure that land use practices do not create obstacles to fire suppression and the implementation of projects designed to protect public safety or the community.

II. Goal 2: Decrease the probability of landscape scale high severity wildfire events

a. Strategy 5- Create resilient landscapes that promote diversity of species, ages and condition classes.

Discussion: Landscapes that contain a high level of diversity are more resilient to drought, insect and disease activity and wildfire. Additionally, these types of ecosystems provide high quality habitat for a larger variety of wildlife.

Actions:

i. Develop and implement forest management and fuels reduction projects, prioritizing high hazard areas as identified in the community risk assessment and further described in the implementation section of this plan.

b. Strategy 6- Create compartmentalization across the planning area where unplanned wildfire can be managed for multiple resource benefits.

Discussion: Successful management of a large wildfire event is contingent upon utilization of natural or manmade control features. If these features are not already present fire managers will spend considerable time and effort to create control features in the wildfire area. Understanding where existing control features are and creating additional features ahead of a fire event will increase community and firefighter safety by increasing firefighting efficiency.

Actions:

i. Strategically implement fuels reduction projects described in the implementation section of this plan to maximize wildfire response efficiency.
ii. Explore opportunities to preplan incident response within the CWPP planning area.
iii. Ensure fire management plans are consistent with identified communities' values at risk.

c. Strategy 7- Ensure community has appropriate response resources for wildfire management.

Discussion: When a wildfire event occurs within the planning area it is critical that local response resources are capable of locating and managing the fire for public safety, community protection and resource benefit.

Actions:

i. Support and develop tools to increase effectiveness of response.
    1. Engage in the development of fire plans that use Potential Operational Delineations (POD's) or similar tools.
ii. Continue to support the operation of regional resource mobilization such as the Mountain Area Mutual Aid program.
iii. Support efforts to develop a statewide mutual aid plan as well as a statewide resource mobilization plan.
iv. Improve response capabilities through continued training in WUI and wildland fire response and support of wildland fire resource deployments.
v. Continue to refine and exercise the Town of Vail and Eagle County Emergency Operations Plans to ensure efficient implementation when needed.
vi. Develop and implement operational plans with Vail Resorts to ensure access to emergency water across the ski area through stored water and snow making equipment.

d. Strategy 8- Identify high hazard watersheds and infrastructure and implement mitigation projects that reduce post fire flooding and debris flow.

Discussion: Watersheds burned during a largescale wildfire have an increased potential to produce flash floods, significant debris flows and decrease water quality. Work before, during and after a wildfire can minimize the short- and long-term effects of the fire on the community.

Actions:

i. Conduct rapid post fire risk assessments of burn area and downstream community and infrastructure including all lands and jurisdictions.
ii. Assign personnel to lead recovery and mitigation efforts.
iii. Ensure adequate warning systems are in place to provide advance warning of flash flooding.
iv. Identify infrastructure which may be damaged by significant increases in stream or debris flow.

III. Goal 3: Build business community resiliency to wildfire disasters
   a. Strategy 9- Promote and provide tools to businesses to implement and improve business continuity best practices.

      Discussion: The business community provides the backbone of the community. A wildfire in or near the planning area could cause irreversible harm to the business community thereby crippling the community's ability to generate revenue. A failure of the business community would likely lead to an overall failure of the community.

      Actions:

      i. Develop and implement tools to support businesses in the development of preparedness and continuity plans as well as marketing strategies.
      ii. Develop a continuity of operations plan for local government for use during a large-scale emergency such as a wildfire.
      iii. Ensure critical infrastructure has adequate protection to resist damage from wildfire and that resilient infrastructure is developed for the community.
      iv. Consider ways to integrate local businesses into the Town of Vail Emergency Operations Plan to support response and recovery.

IV. Goal 4: Citizen engagement and preparedness
   a. Strategy 10- Develop and support programs to educate and empower residents to prepare for evacuation.

      Discussion: It is critical that the community be prepared for an evacuation at any time. A wildfire which starts in or near the community may give only minutes to safely evacuate. Residents, guests and businesses must be prepared to leave quickly and be gone for several days and/or weeks.

      Actions:

      i. Develop programs and systems that facilitate the rapid notification of short-term occupancies.

ii. Support and develop additional programs and systems that facilitate rapid notification of community.
iii. Identify and engage community members with access and functional needs to ensure effective response.
iv. The stakeholders of this plan should continue to develop and implement programs that build and measure preparedness within the community.

b. Strategy 11- Improve the public's understanding of existing community fire protection infrastructure and limitations.

Discussion: The response capabilities of the local resources is limited by the number of responders and apparatus as well as the distance between population centers in the mountains. It is important that the community understands these limitations and prepares their homes and businesses to maximize the efforts of the limited resources.

Actions:

i. Incorporate community fire protection infrastructure and limitations into educational materials and presentations emphasizing the need for community preparedness.
ii. Explore the designation of neighborhood safe refuge areas for use when evacuation is not possible.
iii. Ensure Vail Public Safety Communication Center incorporates best practices for emergency communications with public including protocols for worst case scenarios such as trapped by fire.

V. Goal 5: Support the utilization of forest products.

Discussion: Management of forested lands to promote forest health and reduce the hazard of wildfire is expensive. Markets for logs and biomass would significantly reduce costs.

Actions:

i. Work with the U.S. Forest Service and Colorado State Forest Service to support the use of wood products within the town and state.
ii. Provide technical support and guidance for any business utilizing forest products in and around the Town of Vail.

Implementation

Linked and Individual Structure Defensible Space

- Many structures throughout the planning area abut undeveloped land managed by the U.S. Forest Service and Town of Vail. Due to the size and arrangement of the lots throughout the community many of these property owners must modify vegetation on the adjoining public lands to create adequate defensible space. The USFS and Town of Vail should develop standard prescriptions and procedures to allow interested property owners to modify the adjoining vegetation. These prescriptions should follow the Colorado State Forest Services most recent guidelines for the creation of defensible space and current best practices. Priority: High

Lower Gore Creek

Project Area Description:

The lower Gore Creek treatment area includes the area from the ridge line north of Dowd Junction east to FS road 700. Interstate 70 and the developed private property from the southeast or downhill boundary and uphill boundary is the lower extent of previous treatments off FS rd. 700 and FS rd. 734. Primary ownership within this treatment area is USFS; however, portions of the treatment area are private and state ownership. The treatment area contains several areas of critical infrastructure including transmission powerlines and communications towers.

Treatment Objective:

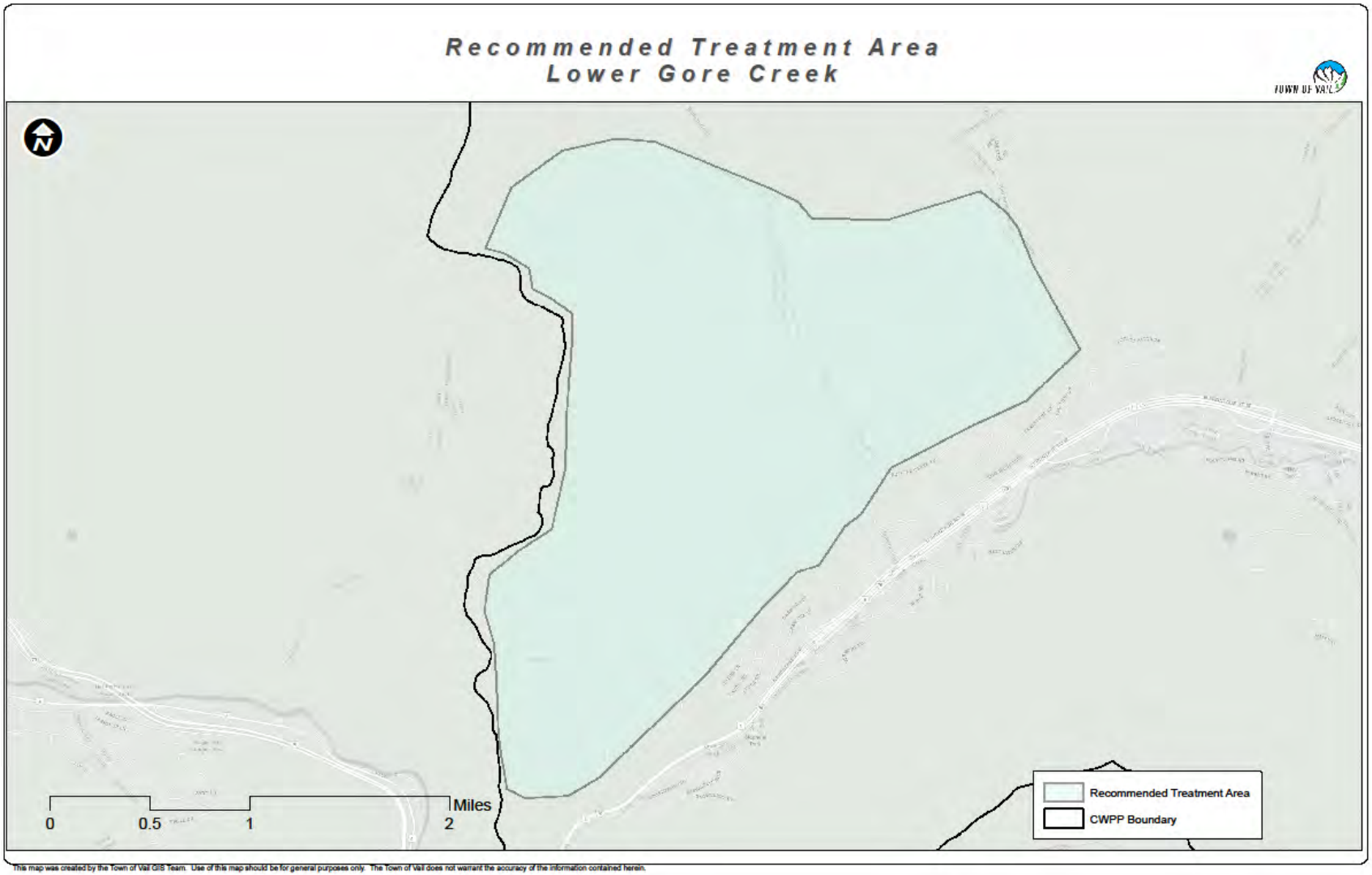
The objectives of this treatment area are:

1. Return ecosystem to historic fire regime
2. Protect critical infrastructure from high intensity wildfire
3. Create compartmentalization on landscape

Preferred Treatment Method:

Multiple treatment methods will be necessary to accomplish the stated objectives. Below are the preferred treatment methods:

1. Use hand treatments to create linked defensible space for all structures along the downhill boundary of the treatment area. These treatments should extend from the structure to an area at least 100 feet wide. Priority: High
2. Use a combination of hand treatments and mechanical harvest to implement point protection for critical infrastructure. Specific prescriptions for point protection should decrease potential fire behavior below thresholds that would damage infrastructure (i.e. flame length less than 3 feet within 100 feet of the infrastructure). Priority: Moderate
3. Reintroduce fire onto the landscape through the use of prescribed fire. Priority: Moderate


Recommended Treatment Area
Lower Gore Creek
TOWN OF VAIL
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Miles
Recommended Treatment Area
CWPP Boundary
This map was created by the Town of Vail GIS Team. Use of this map should be for general purposes only. The Town of Vail does not warrant the accuracy of the information contained herein.

Middle Gore Creek

Project Area Description:

The Middle Gore Creek treatment area includes the area from FS road 700 to the Pitkin Creek Drainage. Interstate 70 and the developed private property form the southern or downhill boundary. The treatment area covers the lower reaches of the Middle Creek, Spraddle Creek, Booth Creek and Pitkin Creek drainages. Primary ownership within this treatment area is USFS however portions of the treatment area are private and municipal ownership. The eastern portion of the treatment area overlaps with the boundary of the Eagles Nest Wilderness Area. The treatment area contains several areas of critical infrastructure including transmission powerlines and communications towers.

Treatment Objective:

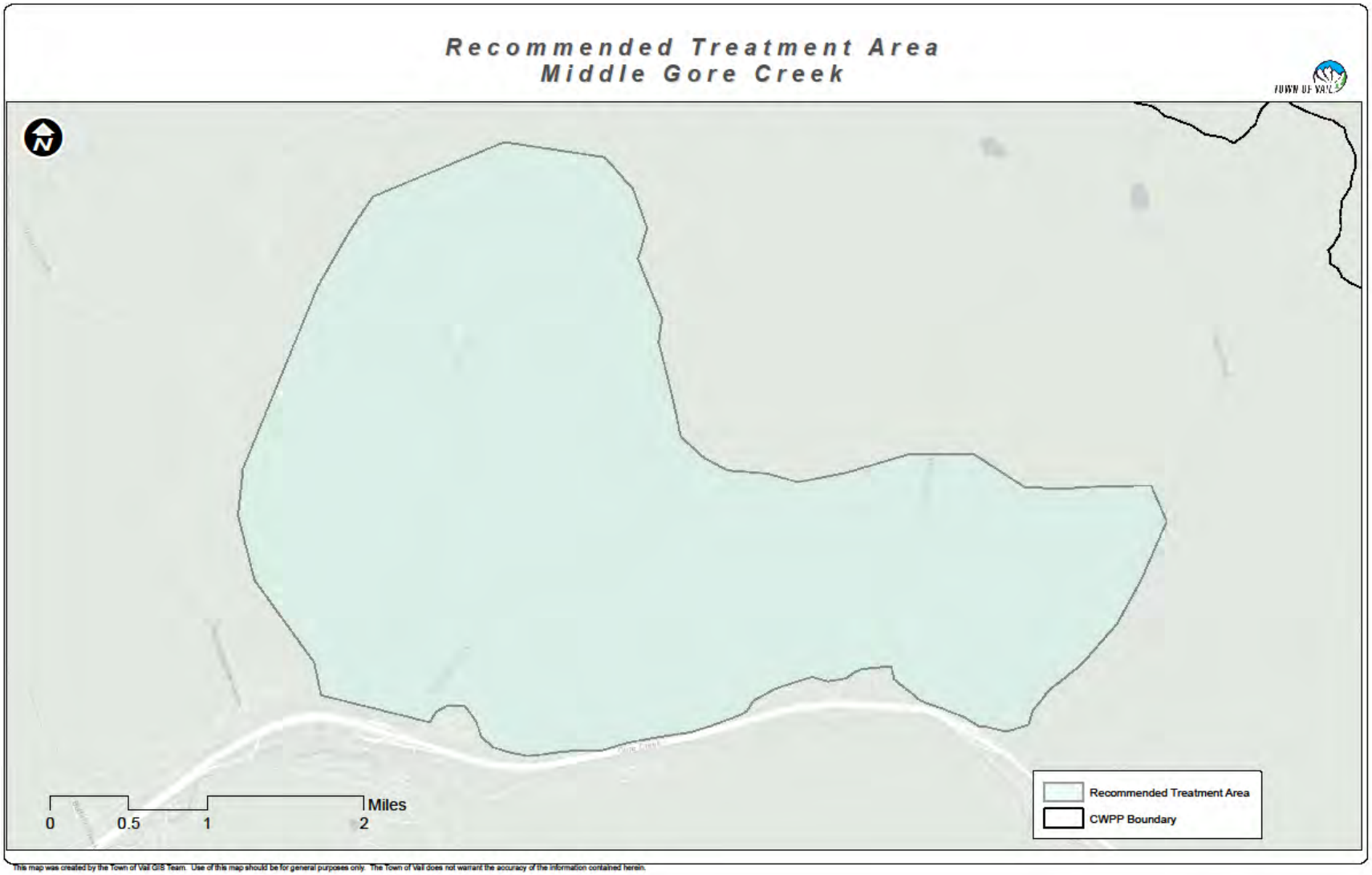
The objectives of this treatment area are:

1. Reduce high intensity fire behavior within 100 feet of structures
2. Return ecosystem to historic fire regime
3. Create compartmentalization on landscape
4. Decrease potential ignition sources by improving existing power infrastructure

Preferred Treatment Method:

Multiple treatment methods will be necessary to accomplish the stated objectives. Below are the preferred treatment methods:

1. Use hand treatments to create linked defensible space for all structures along the downhill boundary of the treatment area. These treatments should extend from the structure to an area at least 100 feet wide. Priority: High
2. Reintroduce fire onto the landscape through the use of prescribed fire. Priority: Moderate
3. Prioritize the undergrounding of above ground power distribution lines between the Spraddle Creek subdivision and Bald Mountain Road. Priority: High


Recommended Treatment Area
Middle Gore Creek
TOWN OF VAIL
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Recommended Treatment Area
CWPP Boundary
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Benchmark/ Mushroom Bowl

Project Area Description:

The Benchmark/ Mushroom Bowl treatment area includes all the area in the upper reaches of the Mill Creek Drainage. The area is commonly referred to as Benchmark or the Mushroom Bowl. The area is accessed via Benchmark Road. Primary ownership within this treatment area is USFS.

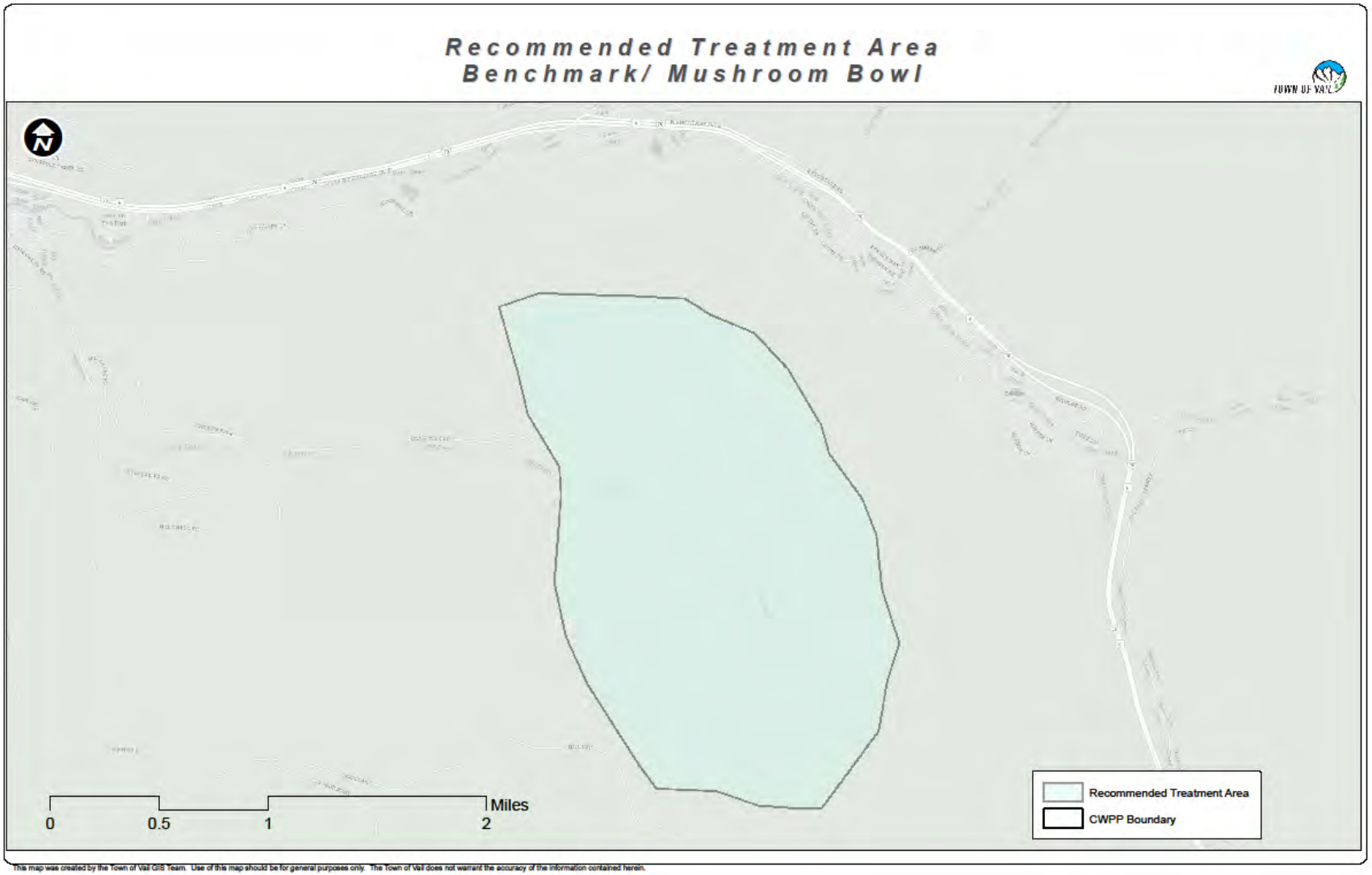
Treatment Objective:

The objectives of this treatment area are:

1. Create operational delineations on the landscape to decrease resistance to control for fires burning within Benchmark or the East Vail Chutes
2. Reduce high intensity fire behavior along the ridgeline between Benchmark and the East Vail Chutes

Preferred Treatment Method:

1. Use a combination of commercial timber harvest and hand treatments and prescribed fire to create and maintain openings along the Northern or Eastern treatment area boundaries. Pockets of dead or diseased trees should be removed throughout the treatment area to decrease fire intensity and create potential operational delineations for fire suppression. Priority: Moderate


Recommended Treatment Area
Benchmark/ Mushroom Bowl
TOWN OF VAIL
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Recommended Treatment Area
CWPP Boundary
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Eagles Nest/ Lower Game Creek

Project Area Description:

The Eagles Nest/ Lower Game Creek treatment area includes the area west of the Vail Ski Area Boundary from the Cascade Lift on the north over the top of the ridge to the drainage below the Game Creek Bowl. Primary ownership within this treatment area is USFS. The treatment area contains several areas of critical infrastructure including recreational ski infrastructure and communications sites. The area immediately east of the treatment area is a highly used developed recreation site for summer recreation activities. The Eagle Bahn Gondola which runs along the eastern edge of the treatment area is the primary evacuation method for moving guests from the mountain to safety in the village.

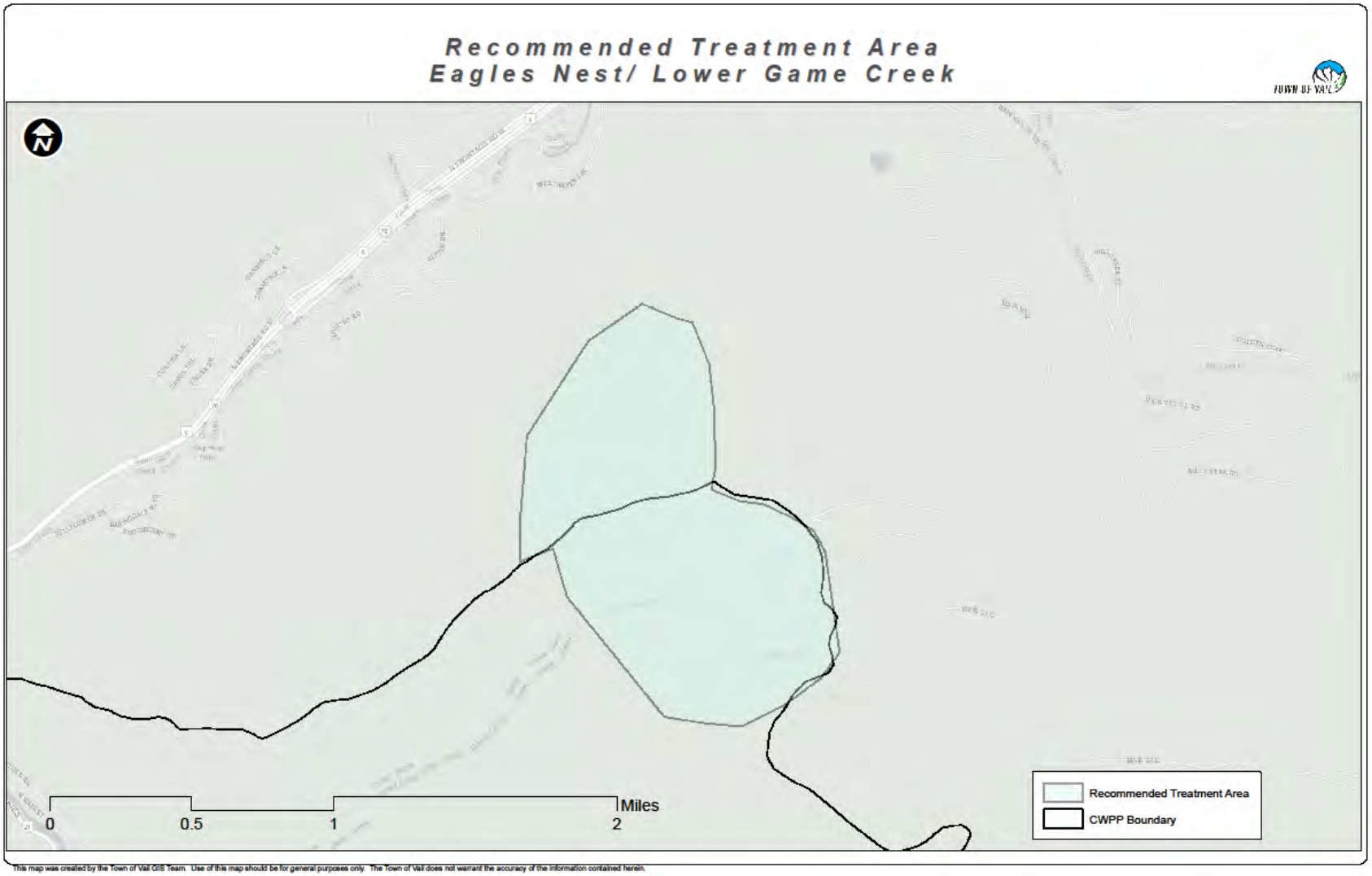
Treatment Objective:

The objectives of this treatment area are:

1. Protect critical infrastructure and recreational facilities from high intensity wildfire
2. Create compartmentalization on landscape
3. Protect primary evacuation route

Preferred Treatment Method:

1. Use a combination of commercial timber harvest and hand treatments to create and maintain openings throughout the treatment area boundaries. Priority: High
2. Use a combination of hand treatments and mechanical harvest to implement point protection for critical infrastructure. Specific prescriptions for point protection should decrease potential fire behavior below thresholds that would damage infrastructure (i.e. flame length less than 3 feet within 100 feet of the infrastructure). Priority: High


Recommended Treatment Area
Eagles Nest/ Lower Game Creek
TOWN OF VAIL
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Miles
Recommended Treatment Area
CWPP Boundary
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Lower Vail Mountain

Project Area Description:

The Lower Vail Mountain treatment area includes the lower portions of Vail Ski Area Boundary from the Cascade Lift on the west to the Vail Golf Course on the East. Primary ownership within this treatment area is USFS however a large portion of the northern boundary is private ownership. The treatment area contains several areas of recreational ski infrastructure. Fires within this area have the potential to threaten the densely populated core of the Vail Villages.

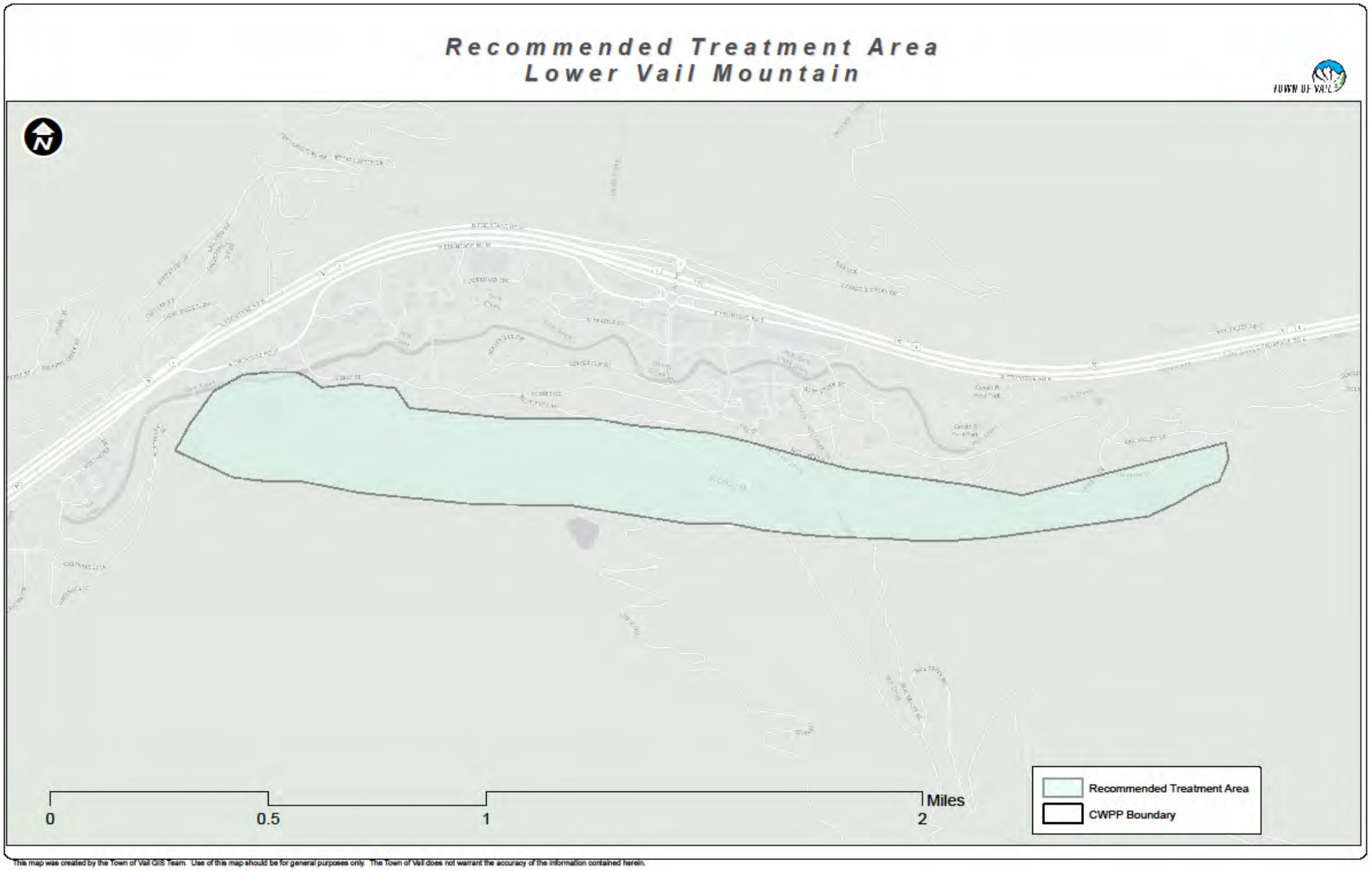
Treatment Objective:

The objectives of this treatment area are:

1. Reduce potential fire behavior to low intensity fire within 1000 feet of structures

Preferred Treatment Method:

1. Use hand treatments to create linked defensible space for all structures along the downhill boundary of the treatment area. These treatments should extend from the structure to an area at least 100 feet wide. Priority: High
2. Underground distribution powerlines within 1000 feet of all structures Priority: High
3. Use a combination of hand treatments and mechanical harvest to implement point protection for critical infrastructure. Specific prescriptions for treatment area should decrease potential fire behavior to low intensity surface fire. Priority: Low


Recommended Treatment Area
Lower Vail Mountain
TOWN OF VAIL
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Recommended Treatment Area
CWPP Boundary
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Deer Underpass/ Bell Flower

Project Area Description:

The Deer Underpass/ Bell Flower treatment area includes the Deer Underpass State Wildfire Area and Private Property at the West End of Bell Flower and Basingdale Blvd. Ownership within this treatment area is state and private property.

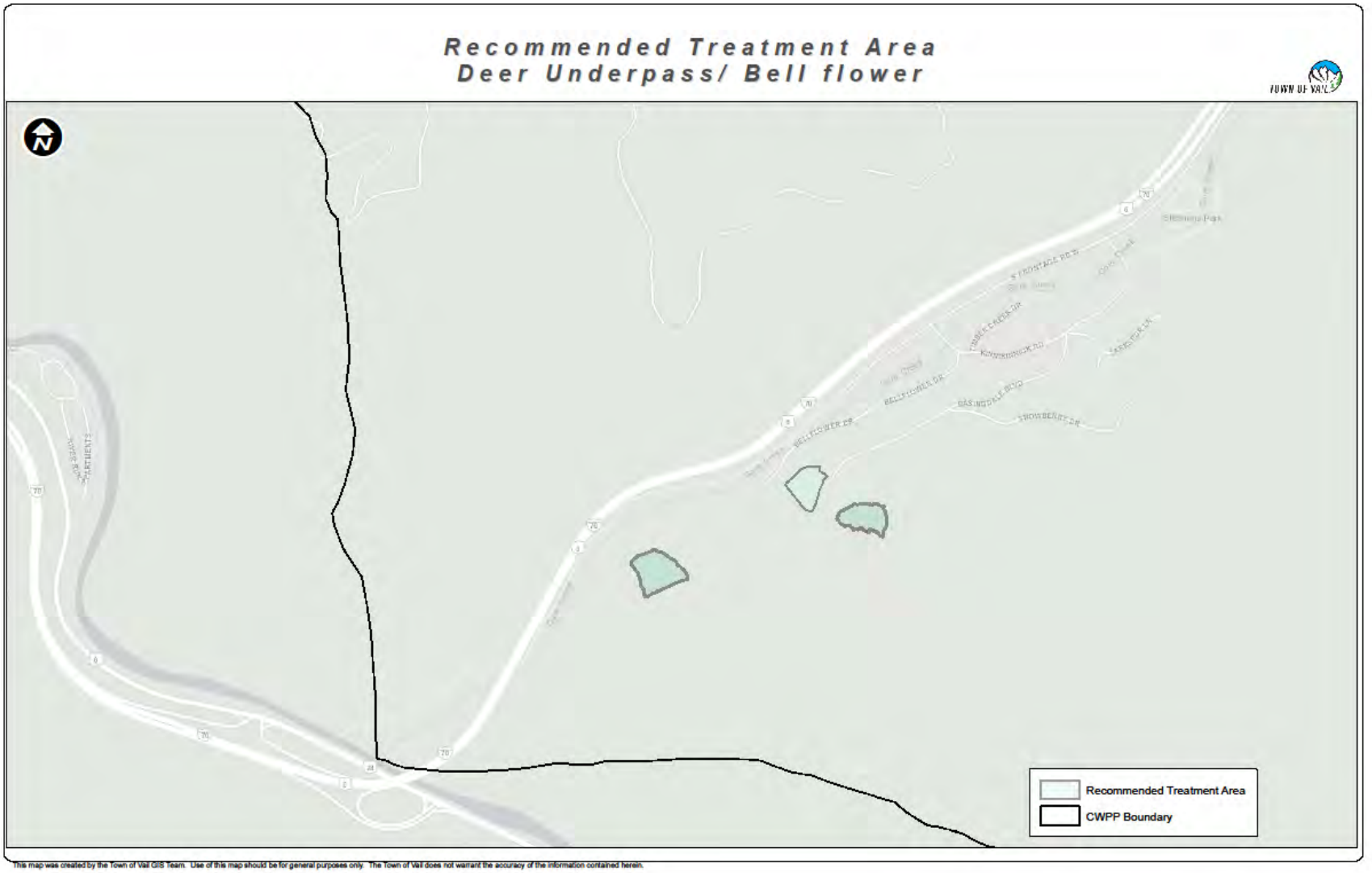
Treatment Objective:

The objectives of this treatment area are:

1. Reduce potential fire behavior to low intensity fire within 1000 feet of structures and throughout the neighborhood
2. Decrease potential ignition sources by improving existing power infrastructure

Preferred Treatment Method:

1. Use hand treatments to reduce potential fire behavior to low intensity surface fire throughout the treatment areas. Priority: High
2. Prioritize the undergrounding of above ground power distribution lines between the throughout Intermountain. Priority: High


Recommended Treatment Area
Deer Underpass/ Bell flower
TOWN OF VAIL
Recommended Treatment Area
CWPP Boundary
This map was created by the Town of Vail GIS Team. Use of this map should be for general purposes only. The Town of Vail does not warrant the accuracy of the information contained herein.

Elliott Ranch

Project Area Description:

The Elliott Ranch treatment area includes the private property within the Elliott Ranch and Highland Meadows communities of West Vail. Ownership within this treatment area is private property.

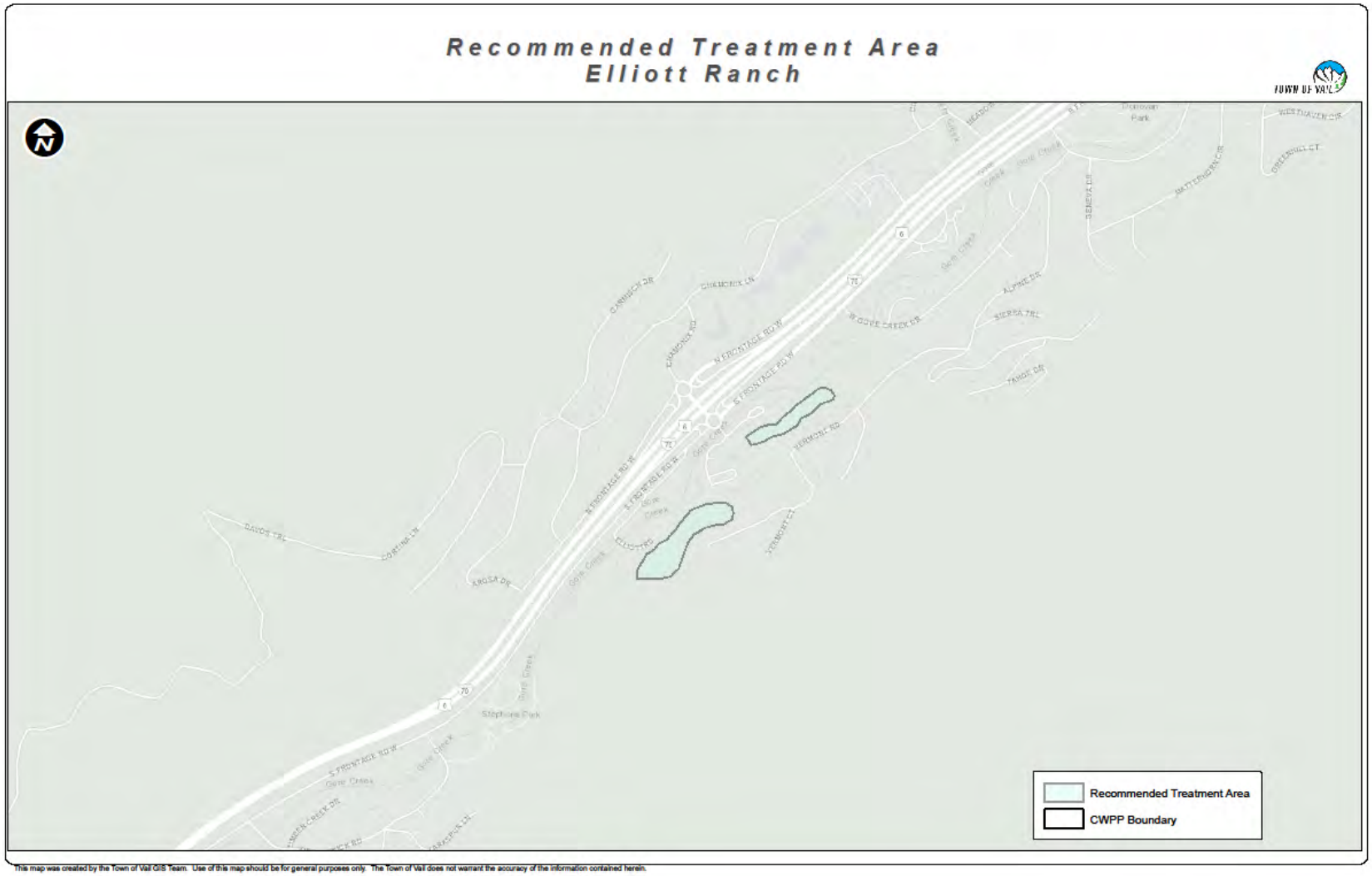
Treatment Objective:

The objectives of this treatment area are:

1. Reduce potential fire behavior to low intensity fire within 1000 feet of structures and throughout the neighborhood

Preferred Treatment Method:

3. Use hand treatments to reduce potential fire behavior to low intensity surface fire throughout the treatment areas. Priority: High


Recommended Treatment Area
Elliott Ranch
TOWN OF VAIL
Recommended Treatment Area
CWPP Boundary
This map was created by the Town of Vail GIS Team. Use of this map should be for general purposes only. The Town of Vail does not warrant the accuracy of the information contained herein.

Previously Completed Wildfire Risk Reduction Projects

The stakeholders to this plan have been engaging in wildfire risk reduction and working towards creating a fire adapted community for nearly 20 years. In this time the group have implemented: educational programs; large- and small-scale fuels reduction projects; adopted and amended building and planning codes; and made strides towards more affective wildfire response. A summary of some of the selected activities are below.

- Education
    - Ready, Set, Go- Engaged community members in workshop type format based on the International Association of Fire Chiefs Ready, Set, Go education program. Workshop focused on pre-fire mitigation, family preparedness and evacuation.
    - Public forums (community picnic, etc.)- Vail Fire and Police, Eagle County and UCR regularly participate in public forums to promote ignition resistant homes and landscaping, personal preparedness and evacuation.
    - Landscaping guides- In 2016 Vail Fire created a Vail specific Fire-Resistant Landscaping guide to provide technical information and encourage property owners to install and maintain fire resistant landscaping in the near home environment.
    - Plant guide- In 2019 Vail Community Development, Environmental Sustainability, Fire and Public works co-developed the Fire-Resistant Landscaping Plant Recommendation Guide as a supplement to the larger Fire-Resistant Landscaping guide. The intention of the supplement is to preserve and enhance the natural landscape character while protecting your home from wildfire.
    - Presentations to professional groups- The stakeholders of this plan periodically get the opportunity to present wildfire related materials to local, statewide and national professional groups. Past interactions include: Landscapers, property and community association manager, builders and architects and the real estate community. The Vail Board of Realtors have become an excellent partner in wildfire education.
    - Curbside Assessments- Vail Fire has completed several town-wide wildfire hazard assessments since 2000. In 2016 Vail Fire initiated the latest round of wildfire hazard assessments with the stated goal of informing every property owner of the specific hazards of their property. As part of the program the department created the webpage www.vailwildfire.com which acts as the public portal to the community information. Between 2016 and 2021 the department will collect wildfire hazard information on all parcels within the department's response area. In 2022 data collection will begin again in hopes of tracking change over time.
    - RealFire- The RealFire program is an in-depth wildfire hazard assessment program which provides property owners the ability to receive recognition for completing all recommended hazard reduction activities. RealFire was co-developed with the Vail Board of Realtors and Eagle County Wildfire Mitigation. The program is administered by Eagle County Wildfire Mitigation and supported by Vail Fire.

- Fuels
    - Between 1988 and 2019 the stakeholders of this plan completed over 3,100 acres of fuels reduction and hazard tree removal project within the planning area. Below is a breakdown of the acres treated by ownership. Most if not all projects shown below were accomplished through partnerships between the many stakeholders of this plan. A map showing project area boundaries, year completed, and treatment type can be found on the Town of Vail GIS portal. www.maps.vailgov.com
        - USFS- 2,880.4 acres
        - Town of Vail- 37.8 Acres
        - Colorado Parks and Wildlife- 6.5 Acres
        - Eagle River Water and Sanitation District- 18.6 Acres
        - Denver Water Board- 17.5 Acres
        - Private- 164.6 Acres
    - Community Chipping- Vail Fire and Emergency Services has operated a curbside chipping service since 2007. Since the inception of the program the department has chipped hundreds of tons of trees and slash to aid property owners in the creation of defensible space. Between 2015 and 2019 the department averaged 116 calls for service per season and provided services to all portions of the response area. The program provides a safe and efficient way for property owners to dispose of slash and is very popular with community.

- Planning
    - Opens lands plan- In 2018 the Community Development Department completed an update to the previously approved open lands plan. The open lands plan is the guiding planning document for the development and management of non-developed Town owned lands. Recommendations of the plan include considering impacts of wildfire when making future land management and planning decisions and a recommendation to develop natural resource management plans for all open space designated town owned parcels.
    - WUI Code Amendments- The community has legacy building code issues relating to wildfire hazard that will take time to correct. These issues include the use of highly flammable building materials and overly dense planted landscaping. In 2004 Eagle County Adopted its first building resolution requiring wildfire mitigation to be incorporated into new construction. Since that time the resolution has been amended to incorporate the latest best practices. In 2007 Vail Town Council took its first step towards hazard reduction by banning wood roof coverings for new construction and replacement. In 2016 Council amended the design guidelines to encourage use of ignition resistant building materials and fire-resistant landscaping. 2019 saw the further amendment of the design guidelines and building codes to require the use of ignition resistant building materials and fire-resistant landscaping for new construction and significant additions. In all, the jurisdictions having authority in the planning area have

taken measured steps to create more fire-resistant structures throughout the community.

- Operations
    - Wildland Map Book- In 2016 Vail Fire created the first wildfire response map book for the Vail Valley. The intention of the map product was to provide rapid situational awareness for responders. Additional benefits of the map product included preplanning of evacuation areas. In 2018 the map book was expanded to include all of Eagle County. The map product is available in both paper and electronic versions an is designed to be shareable on commonly used platforms of the wildland response community.
    - Full Scale Exercises- Vail has hosted a number of full-scale wildfire response exercises, the two most recent were in 2016 and 2017. The intention of the exercises was to practice strategic command and wildland urban interface tactics in a real-world environment. Community evacuation was a large part of both recent exercises. All agencies involved in the exercises learned valuable lessons on operations within the community.
    - Seasonal wildland firefighter program- Since 2007 Vail Fire has employed a seasonal wildland fire program. In 2014 the Department hired the first full time program manager to oversee all components of wildfire in the department. The original intention of the program was to provide a workforce to complete mitigation projects within the Town. While this is still the central mission of the program, Wildland Division staff now engage in wildfire suppression, education, technical rescue and special event support.
    - Closest unit dispatching- Closest unit dispatching is a term used for dispatching the closest resource regardless of jurisdiction. This type of dispatching provides the highest level of service to the community and ensures the quickest response. As stated in the Eagle County Wildfire Annual Operating Plan, the closest unit will be dispatched regardless of jurisdiction for all wildland fire. In 2019 Eagle River Fire and Vail Fire agreed to make this uniform across all call types.
    - Mountain Area Mutual Aid- Expanding wildland fires and/or multiple wildfires rapidly overwhelm local response capabilities within the planning area. Systems are in place to order additional firefighting resources, but time lags of 24-48 hours are common. In 2018 the fire chiefs in the Mountain Region worked together to develop a rapid mobilization system to fill the gap between local resources being exhausted and ordered resources arriving. Nine deployments in 2018 and one in 2019 showed the effectiveness of the program by providing responders in the critical early hours of an incident.