


# Community Wildfire Protection Plan 2015 Update For Grand Lake Fire Protection District


A collaborative planning and implementation effort coordinated with:



SIGNATURE PAGE


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## **Introduction**

In 2006, the Grand Lake Fire Protection District (GLFPD) completed a Community Wildfire Protection Plan (CWPP). That plan provided insight into the potential issues being created by the extensive Mountain Pine Beetle (MPB) infestation affecting Grand Lake and how residents, adjacent federal land managers and GLFPD should prepare for wildland fire. Since 2006, the MPB infestation has caused mortality in over 90% of large diameter Lodgepole pine in and around Grand Lake Fire Protection District. Residents have responded with the removal of dead trees and the treatment of hazardous fuels to a higher degree than might have been anticipated in the original CWPP. Chief Long continues to promote advance preparedness, resident education and readiness in our fire adapted ecosystem along with the maintenance of treatments to keep our community resilient from wildfire. Working off the CWPP 2013 Update draft developed by Paul Mintier of PMC Wildland Fire, LLC, Grand Lake Fire Protection District is proceeding with this CWPP 2015 Update. A CWPP is truly a collaborative effort and public input is critical. We would like to thank the citizens and stakeholders who provided input at our initial meetings, our most recent meetings as well as important feedback throughout the project development.

We recognize and appreciate the input and support from the following:

Grand Lake Fire Protection District Board of Directors	Fred Schroeder, President Jason Allen, Vice President Chris Ruske, Secretary Larry Goscha, Treasurer David Craig
Sue Valente	Bureau of Land Management, Natural Resource Specialist, GIS and NEPA Coordination
Paul Mintier	Grand Lake Fire Protection District

## **Background on Community Wildfire Protection Plans**

Colorado State Forest Service (CSFS) provides the following description and purpose for CWPPs:

*Community Wildfire Protection Plans are authorized and defined in Title I of the Healthy Forests Restoration Act (HFRA) passed by Congress on November 21, 2003, and signed into law by President Bush on December 3, 2003.*

*The Healthy Forests Restoration Act places renewed emphasis on community planning by extending a variety of benefits to communities with a wildfire protection plan in place. Critical among these benefits is the option of establishing a localized definition and boundary for the wildland-urban interface (WUI), and the opportunity to help shape fuels treatment priorities for surrounding federal and non-federal lands.*

*The CWPP, as described in the Act, brings together diverse local interests to discuss their mutual concerns for public safety, community sustainability and natural resources. It offers a positive, solution-oriented environment in which to address challenges such as local firefighting capability, the need for defensible space around homes and subdivisions, and where and how to prioritize land management on both federal and non-federal land.<sup>1</sup>*

### **Purpose**

As described by HFRA, a CWPP shall provide:

- A description of the community's wildland-urban interface (WUI) problem areas, preferably with a map and narrative
- Information on the community's preparedness to respond to a wildland fire
- A community risk analysis that considers, at a minimum, fuel hazards, risk of wildfire occurrence, and community values to be protected both in the immediate vicinity and the surrounding zone where potential fire spread poses a realistic threat
- Identification of fuels treatment priorities on the ground and methods of treatment
- Ways to reduce structural ignitability
- An implementation plan

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<sup>1</sup> <http://csfs.colostate.edu/wildfire-mitigation/community-wildfire-protection-plans/>

With the above guidance the following goals have been established:

- 1) Provide residents with appropriate tools and education for response to wildfire
- 2) Establish current hazard and risk levels
- 3) Identify actions to be taken to mitigate adverse impacts of wildfire
- 4) Describe the multi-agency response to wildfire in the community

## **Grand Lake Fire Protection District Summary and Update**

The Grand Lake Fire Protection District completed a CWPP in 2006, and this 2015 update is building upon that CWPP. The fire district has not changed boundaries; however, for the purpose of addressing more specific concerns, this CWPP update has divided the fire district into five zones. This 2015 update utilizes the revised minimum standards for the development of CWPPs established by the Colorado State Forest Service (CSFS) as required by the Healthy Forests Restoration Act of 2003 and per Colorado Senate Bill 09-001.

## **Collaborative Efforts**

### **Interagency Process**

Wildfire mitigation must be a collaborative effort between various local agencies and the community in order to be successful. The Fire District will have the greatest responsibility for developing the mitigation action plan and promoting the recommended actions within the fire district. Key to the success is to ensure appropriate state and federal agencies, as well as private land management agencies and residents participate in the project to address any issues regarding boundaries.

### **Community Involvement**

Community engagement is vital to the completion of a comprehensive Community Wildfire Protection Plan. Grand Lake Fire Protection District developed a core team of community members as well as interagency representatives from whom we solicited feedback and information. The core team of representatives involved with the development of Grand Lake Fire Protection District's CWPP is listed in Table 1.

**Table 1: Stakeholders/Collaborators**

<b>Name</b>	<b>Organization</b>	<b>Role/Responsibility</b>
Cheryl Dale	Public Information Officer, Grand Lake Fire Protection District	Project Manager for CWPP document development. Coordination with stakeholders and community
Mike Long	Fire Chief, Grand Lake Fire Protection District	Approver; Fire expertise; risk assessment of community; community outreach
Darren Zunno	Captain, Grand Lake Fire Protection District	Fire expertise; risk assessment of community; community outreach
Lynn Barclay	Northwest Colorado Fire Management Unit; Mitigation/Ed/Prevention/PIO US Bureau of Land Management	Approver; Mitigation and Education Specialist; projects on federal lands adjacent to CWPP zones; input and expertise
Todd Camm	USDA Forest Service, Arapaho National Forest-Sulphur District Fire Management Officer	District fire behavior and fuels expertise
Ron Cousineau	District Forester, Colorado State Forest Service	Approval of CWPP
Nowell Curran	EMS Deputy Chief / Emergency Manager, Grand County	Key participant and plan review
Jerry Gibbens	Project Manager/Water Resources Engineer, Northern Colorado Water Conservancy District	Key participant and plan review
Neilie Goodwin	Vegetation Management Specialist, Western Area Power Administration	Key participant and plan review
Mike Lewelling	Fire Management Officer, Rocky Mountain National Park	Fire behavior and fuels on National Park lands
Pat McCusker	Natural Resource Specialist Eastern Colorado Area Office US Bureau of Reclamation	Fire behavior and fuels expertise
Colt Mortenson	Northwest Colorado Fire Management Unit, US Bureau of Land Management	Fire behavior and fuels expertise
Schelly Olson	Grand County Wildfire Council/ GLFPD Resident	Approver; Key participant and plan review
Brett Schroetlin	Sheriff, Grand County	Approver; Key participant and plan review
Jennifer Scott	Foreman, Grand County (GC) Division of Natural Resources (representing GC Road and Bridge)	Key participant and plan review
Jay Smith	Xcel Energy	Contributor
Jim Struble	Emergency Management, Northern Colorado Water Conservancy District	Key participant and plan review
Ron Turley	Western Area Power Administration	Key participant and plan review
Bruce Van Bockern	Mountain Parks Electric	Key participant and plan review
Jim White	Town Manager, Grand Lake	Key participant and plan review
William Adams	GLFPD Resident	Reviewer/ Contributor
Dave Binkley	GLFPD Resident	Reviewer/ Contributor
Marilyn Binkley	GLFPD Resident	Reviewer/ Contributor



<b>Name</b>	<b>Organization</b>	<b>Role/Responsibility</b>
Beth Chambers	GLFPD Resident	Reviewer/ Contributor
Yvonne Clark	GLFPD Resident	Reviewer/ Contributor
Jim Cunningham	GLFPD Resident	Reviewer/ Contributor
Sam Eberly	GLFPD Resident	Reviewer/ Contributor
Marti Edwards	GLFPD Resident	Reviewer/ Contributor
Lucinda Hites	GLFPD Resident	Reviewer/ Contributor
Sylvia Hites (& Jim)	GLFPD Resident	Reviewer/ Contributor
Stephany Holt	GLFPD Resident	Reviewer/ Contributor
Bob Jackson	GLFPD Resident	Reviewer/ Contributor
Jan Jackson	GLFPD Resident	Reviewer/ Contributor
Terry Jonason	GLFPD Resident	Reviewer/ Contributor
Dennis McNulty	GLFPD Resident	Reviewer/ Contributor
Jennifer Mikkelson	GLFPD Resident	Reviewer/ Contributor
Kris Mikkelson	GLFPD Resident	Reviewer/ Contributor
Pat Person	GLFPD Resident	Reviewer/ Contributor
Ed Peterson	GLFPD Resident	Reviewer/ Contributor
Sharon Peterson	GLFPD Resident	Reviewer/ Contributor
Ann Romshek	GLFPD Resident	Reviewer/ Contributor
Dick Romshek	GLFPD Resident	Reviewer/ Contributor
Janet Swandby	GLFPD Resident	Reviewer/ Contributor
Bob Toof	GLFPD Resident	Reviewer/ Contributor
Mike Winterscheidt	GLFPD Resident	Reviewer/ Contributor

## **Meetings**

On June 8, 2015, Grand Lake Fire Protection District convened a meeting of key agency stakeholders. At this meeting the extent and status of the MPB epidemic was discussed as well as mitigation projects, values at risk (watershed, power lines, road and bridges, and historical values), and residual mitigation hazards; more specifically, residual slash was discussed in detail. Several themes were identified; first, the removal of most of the dead standing timber within the district has reduced the potential for broad scale crown fires; second, there is a residual hazardous fuel loading (slash) from mitigation work, and third, maintenance of fuel treatments is critical to control Lodgepole pine regeneration as well as grass and shrub growth. Patches of standing dead timber remain that may create isolated problems during a wildfire and though pile burning and other treatments have removed hazardous fuels in many areas, there remains a light to moderate loading that should be addressed. Solutions for mitigation of the slash piles were discussed, including a public chipping program, local mills accepting MPB timber, and curtain burners. Grand County Wildfire Council discussed their pursuit of funding to develop a program that would assist district residents with neighborhood lots that need mitigation. Primary topics discussed in the meeting indicated the CWPP update should focus on promoting continued



mitigation, primarily of surface fuels vegetation; maintenance activities, and to the greatest extent possible, education and preparation of citizens for wildland fire.



Wildfire risk to watershed was discussed in detail. The recommendation from the stakeholders is for Incident Command to engage with Northern Colorado Water Conservancy District (Northern Water) early in the incident to help mitigate risks to the Colorado-Big Thompson (C-BT) Project watershed.

Northern Water participated in the Grand County Multi-Hazard Mitigation Plan as jurisdiction, and is currently preparing a wildfire management plan and anticipates having it finalized by the end of 2015.

Community meetings were held on June 14<sup>th</sup>, June 21<sup>st</sup>, and June 28<sup>th</sup> for each of the five zones. At these meetings, the public was re-introduced to the CWPP project process. With significant fuel mitigation already completed, focus was on smaller, site specific locations scattered throughout the project area. Discussions focused on: residual fuels, concerns



about slash piles, neighbors who have not completed defensible space or mitigation work, especially where these locations seemed to endanger others, and what would occur in a large fire event, specifically regarding notification and evacuation. Grand Lake Fire Protection District discussed the potential for large fire events causing ember showers and the importance of

preparing structures, properties, and families, including having defensible space around homes

and being prepared to evacuate. Residents were made aware of the free defensible space site surveys offered by Grand Lake Fire Protection District. The topic of cancellation of homeowners' insurance policies was discussed. Residents were advised to contact Chief Long for assistance with insurance companies if they receive a cancellation letter. Programs including Ready-Set-Go, Firewise, and Fire Adapted Communities were presented and brochures with additional information were provided. Residents were encouraged sign up for CodeRED® emergency notifications and to update their house address signs with 4" reflective numbers/letters. Residents were



also informed about programs in development by the Grand County Wildfire Council to assist with slash cleanup/removal and unattended lots. Information about the Colorado Tax Credit for



wildfire mitigation was also provided. Residents participated in reviewing zone maps and were encouraged to identify areas of concern. Resident feedback included identifying specific areas of mitigation concern. Results from the public meeting aligned with those discussed at the agency partners meeting suggesting that Grand Lake Fire Protection District was on the correct

path to help our community prepare and respond to wildfire.

A follow-up meeting, which included stakeholders and residents, was held on July 13, 2015 at the fire station to review the draft of the Community Wildfire Protection Plan for direct feedback



and to identify any gaps. Residents and stakeholders provided excellent feedback including a request to update the evacuation plan map to indicate directional points that will be manned, questions about disposal of existing slash and new growth mitigation, and clarity on Grand County Wildfire Council's proposed chipper program. Residents voiced concerns about trees near power lines along US Highway

34 at Mile Marker 13/14, trees near houses on County Road 6451, and hazard trees and fuels around the communications tower located on County Road 466. The WAPA Vegetation Management Specialist at the meeting explained in great detail WAPA's responsibility and liability related to hazards in their right of way, which include Federal fines imposed if power outages are related to tree hazards. WAPA's power line right-of-way is a high priority for on-going maintenance and removal of hazards. However, the power companies only have jurisdiction to remove hazards within their right-of-way. Any hazards that may be leaning into the right-of-way need the landowner's permission to remove.

Residents voiced concern over not having a fire code in the District. Chief Long explained in detail the process for passing a fire code and challenges with getting one approved.

The lack of homeowner associations in certain areas of the district was discussed, especially where residents have concern about existing hazard trees and fuels. Residents were encouraged to form a neighborhood group in their area to discuss concerns.



Building codes were discussed;

residents were referred to Grand County Division of Building and Planning.

## **Designation of Wildland Urban Interface (WUI) and Community Zones**

The Wildland Urban Interface or WUI is the area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel<sup>2</sup>, which may include critical watersheds.

For the purpose of this plan the WUI is defined as 1½ miles from the Fire District boundary as well as areas along County Roads 4, 451 and 452. A map of the CWPP Project Area with zones is below.

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<sup>2</sup> [http://www.usfa.fema.gov/downloads/pdf/coffee-break/cr/cr\\_2014\\_3.pdf](http://www.usfa.fema.gov/downloads/pdf/coffee-break/cr/cr_2014_3.pdf)



## Grand Lake Fire Protection District – CWPP Project Area map

### GLFPD CWPP - Showing Federal - State Project Areas

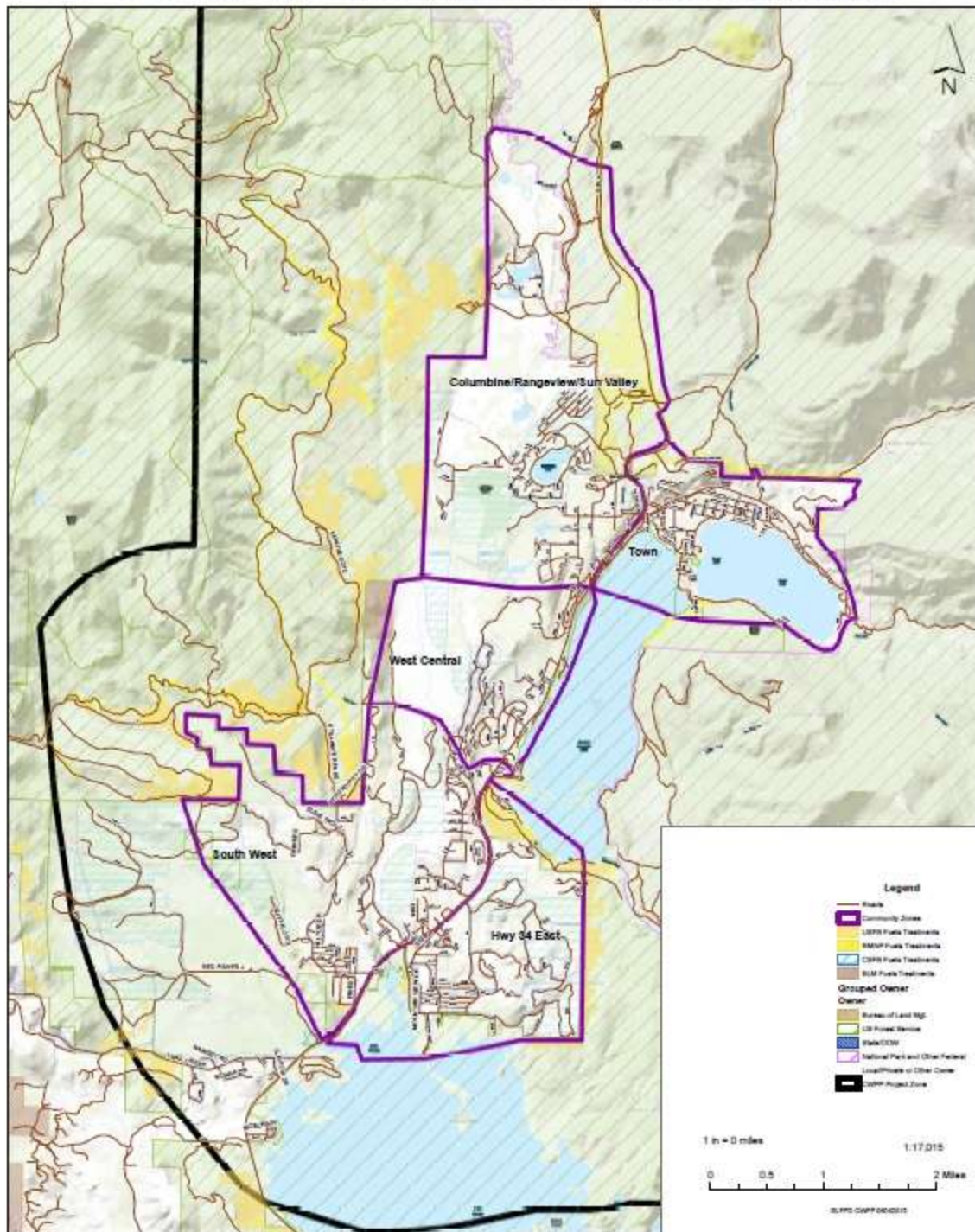


Image: GLFPD CWPP Project Area – Showing Federal and State Projects

Available on-line at: <http://www.grandlakefire.org/53.html>

## **Community Preparedness and Protection Capability**

In 2003, the Grand Lake Fire Protection District had an ISO (Insurance Service Offices) fire protection rating of 6 in hydranted areas and 9 in non-hydranted areas. Through an exhaustive, 3 day audit the Grand Lake Fire Department was able to earn an unprecedented ISO Class 4, district wide, no exceptions. Evolutions and drills were performed to show that the fire department had the ability to fight fire aggressively and set up and maintain a predetermined fire flow measured in gallons per minute over a 30 minute time period. As a direct result of the positive outcome of the audit, homeowners have reported savings of up to 45% in their insurance premiums, provided they are insured by an insurance carrier who uses the ISO rating in their underwriting criteria.

The Grand Lake Fire Protection District is approximately 105 square miles and serves over 100 businesses and approximately 100 subdivisions, which includes thousands of private residences, townhome developments, and condominium buildings. There are 4,870 registered homeowners (Grand County Assessor Data, 2015) within the Fire District boundary. This number does not include outbuildings such as sheds, barns etc., for which it is very difficult to account. Grand Lake Fire Protection District

Grand Lake Fire Protection District has instituted numerous programs to assist our citizens in a better understanding of defensible space and fire mitigation. Home site inspections to address defensible space are offered at no charge, and more recently the Fire Department and Fire Chief have provided assistance with insurance company evaluations. GLFPD holds annual wildfire prevention meetings, and throughout the year, presents to HOAs and various community groups providing wildfire preparation and prevention information. With these programs, the Fire Department makes every effort to reach both our full-time residents, our second homeowners, and visitors.

The Grand Lake Fire Protection District has five full-time career firefighters and 20 volunteers. Currently 15 members hold incident qualification cards for FFT2 (Wildland Firefighter Type 2) with two members qualified as Task Force Leader/Incident Commander Type (ICT) 4 and two members as ICT5. All members receive annual NWCG wildland refresher training and engine

refresher classes. Currently, the fire protection district handles the Initial Attack responsibilities for the west side of Rocky Mountain National Park working in conjunction with the National Park Service. Grand Lake Fire Protection District continues to advance wildland training for members and acquire equipment to enhance their capacity to respond.

The following is a list of available apparatus:

- 3 - Type 1 Engines (Includes 75' Aerial)
- 1 - Type 3 Engine
- 2 - Type 6 Engines
- 1 - Type 7 Engine
- 2 - Type 2 Tactical Water Tenders
- 1 - Type 3 Water Tender
- 1 - Type 3 Fire Boat

Mutual aid response from Grand Fire Protection District is available on short notice with equipment and a significant number of wildland firefighters. Additional assistance from other Grand County fire districts and Federal resources can be requested.

A map book used by GLFPD has many wildfire suppression attributes such as pressurized and draft hydrant locations, bridge locations and ratings, travel way restrictions and evacuation routes, etc. This map book will be made available to incident management personnel.

See Appendix D for table of hydrants, bridge locations and ratings.

## **Evacuation Plans**

In preparation for a major wildfire event, GLFPD and affiliated agencies have developed a plan to coordinate the evacuation of the Town of Grand Lake and its surrounding communities. The plan includes Discussion Initiation Points, identified evacuation zones, resources and personnel. Agencies aim for as much advance notice as possible, which is dependent on many factors including fire behavior, time of day, weather, and wind direction. However, it could be no notice or a notice of only a few minutes if fire behavior is close in proximity to the resident or becomes extreme. At any time, if a resident is not comfortable with a potentially hazardous situation, they are encouraged to leave the area and not wait for an official notice to evacuate.



Using the model of Ready-Set-Go wildfire preparedness program, residents should prepare in advance to be ready to evacuate.

See Appendix E for Evacuation Plan and Evacuation Routes.

### **Hazard and Risk Analysis**

Catastrophic wildfire fed by excessive woody debris (e.g. slash or fuels), continued drought conditions, and devastating insect infestation threatens a myriad of community values. These values may include scenic views, cultural resources, emotional and spiritual attachments, watershed values, historical sites, wildlife habitat, recreational opportunities, public health, firefighter safety, structures, road and bridges, cell towers, power lines and other infrastructure.

While the 2006 CWPP identifies the district values at risk, we have identified several critical infrastructures to include in this update:

<i><b>Facility</b></i>	<i><b>Significance</b></i>	<i><b>CWPP Zone</b></i>	<i><b>Lat</b></i>	<i><b>Long</b></i>	<i><b>Mitigation Needs</b></i>
ATT Cell Tower	Communications	Columbine/ Range View/ Sun Valley	N40° 14.839'	W105° 50.738'	Nothing required
Verizon Cell Tower	Communications	Columbine/ Range View/ Sun Valley	N40° 15.506'	W105° 49.518'	Reduce fuels out 30 feet
C-BT Farr Pumping Plant	Water Supply	Hwy 34 East	N40° 10.995'	W105° 52.237'	Nothing required
C-BT – West Portal	Water Supply	Town	N40° 24.240'	W105° 80.212'	Reduce adjacent fuels
McKenzie substation	Power	Columbine/ Range View/ Sun Valley	N40° 14.839'	W105° 50.738'	Nothing required
GLFPD St 1	ICP	Town	N40° 15.084'	W105° 49.998'	Nothing required
Water Supply - Town	Water Supply	Town	N40° 15.506'	W105° 49.518'	Reduce fuels w/in 30 feet
Water Supply - Columbine	Water Supply	Columbine/ Range View/ Sun Valley	N40° 15.111'	W105° 51.272'	Remove vegetation w/in 10 feet
Century Link Communications	Communications	Town	N40° 15.124'	W105° 49.589'	Nothing required

<i>Facility</i>	<i>Significance</i>	<i>CWPP Zone</i>	<i>Lat</i>	<i>Long</i>	<i>Mitigation Needs</i>
Water Treatment Plant	Water Supply	Town	N40° 15.380'	W105° 48.996'	Remove vegetation w/in 10 feet
Town Hall	Legal / Documents	Town	N40° 15.130'	W105° 49.121'	Nothing required
West Portal Bridge	Evacuation	Town	N40° 15.183'	W105° 49.725'	Nothing required
SH34 Bridge	Evacuation	South West	N40° 13.171'	W105° 51.516'	Nothing required
Jericho Bridge	Evacuation	Town	N40° 14.761'	W105° 51.516'	Maintain grasses / continuity of fuels
US Bureau of Reclamation Cell/Radio Tower CR 466	Communications	West Central	N40° 14.180'	W105° 51.364'	Hazardous fuels mitigation
WAPA / MPEI Power Lines	Power	All			Ongoing maintenance

Xcel Energy has reported they have no values at risk in GLFPD district.

The following statistics are for fire responses in GLFPD from 2006 to May of 2015:

Total Wildland Fires	58
Human, Slash Pile	21
Human other (campfire, etc.)	18
Trees in Power Lines	9
Lightning	2
Mutual Aid Response	12 (outside of district)

Humans remain the primary cause of wildland fires. In Grand Lake Fire Protection District, unattended or reckless slash pile burning and unattended campfires have been the primary and secondary causes of wildland fires. Trees falling into power lines are presently ranked as the third leading cause for wildfire. This may increase as the trees continue to decay and are exposed to greater winds. However, MPEI and WAPA have significantly reduced the risk to their lines; both agencies have mitigated their right of ways and are maintaining as needed.

Under a delegation of authority from the Colorado Department of Public Health and Environment, Grand County allows large-scale open burning during the winter months only and only during favorable air quality conditions. The opening and closing of burn season depends

upon weather and the presence of sufficient, permanent snow pack throughout most of the county. As a result, start and end dates vary from year to year, but generally the burn season runs from late November through March. Grand County Division of Natural Resources begins issuing open burn permits in mid-October of the following year.<sup>3</sup>

Historically, a small number of wildfires are ignited annually by lightning on adjacent USFS and NPS lands. These incidents are historically suppressed at less than 1 acre and will become more difficult to act on as dead timber adds not only to the fuel loading but also will present a very unsafe environment for firefighters. As these future wildfires may become larger the importance of mitigation treatments within the WUI and boundaries will be a significant factor to fire control.

To initiate the analysis of hazard and risk, the project area was divided into five community zones and then evaluated for hazard and risk.

The assessment tool used was the Colorado State Forest Service Form 175, CSFS Wildfire Hazard Rating – Subdivision. Each community zone was assessed using this form to achieve a numerical rating. A copy of the assessment sheet is in Appendix A. A GIS analysis of slope and aspect to define steeper slopes and the warmer aspects where fire behavior is generally greatest was added to the above analysis for a final rating. There is a minor duplication of slope input as this is an element in the CSFS form. This duplication does not hinder but may enhance the final hazard rating regarding fire behavior.

### **C-BT Headwaters Partnership:**

A new partnership has formed around the headwaters of the Colorado-Big Thompson (C-BT) Project. The U.S. Forest Service, Bureau of Reclamation, Colorado State Forest Service and Northern Water signed a memorandum of understanding, Dec. 12, 2012, to proactively improve the health and resiliency of forests and watersheds in areas critical for providing and delivering water supplies and hydroelectric power to northern Colorado communities. Other agencies, including WAPA, RMNP and the Bureau of Land Management are also actively involved in the partnership.

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<sup>3</sup> <http://co.grand.co.us/142/Open-Burning>

The C-BT Headwaters Partnership is working to establish a joint program to treat hazardous fuels on public and private lands near the C-BT system's headwaters and to preplan wildfire response actions around tributaries and reservoirs that comprise the C-BT collection system.

The C-BT Project delivers water to approximately 860,000 people within eight Colorado counties (Boulder, Broomfield, Larimer, Logan, Morgan, Sedgwick, Washington and Weld) and more than 640,000 acres of irrigated cropland. It also generates enough electricity to power 58,300 homes annually. The C-BT Project collects surface water from the headwaters of the Upper Colorado River watershed, stores it in reservoirs in Grand County and diverts it to storage and delivery facilities along the northern Front Range.

The Bureau of Reclamation and Northern Water share ownership, operation and maintenance responsibilities of the C-BT Project. Northern Water operates and maintains C-BT diversion and storage facilities on the West Slope in Grand County, including Willow Creek Reservoir, Lake Granby and Shadow Mountain Reservoir. Reclamation delivers this water to East Slope storage reservoirs via the Alva B. Adams tunnel, which has its West Portal in Grand Lake, and a series of penstocks and hydroelectric power plants. Northern Water then delivers this water to water users in northeastern Colorado. The U.S. Forest Service manages the Arapaho National Recreation Area, which provides recreational opportunities in Colorado's "Three Lakes" Region in Grand County, and manages National Forest System lands surrounding C-BT conveyance and storage facilities in Grand County and on the Front Range. Colorado State Forest Service is the lead state agency for providing forest stewardship, fuels reduction and wildfire mitigation assistance to private landowners.

The partnership is currently developing a long-term plan for identifying and implementing potential hazardous fuels treatments and infrastructure protection for the C-BT Project, including projects in the Three Lakes Region in Grand County. The partnership has implemented or is in the process of implementing several projects in Grand County, including a timber sale and fuels reduction project near Willow Creek Reservoir, forest service, and private land treatments west of Shadow Mountain Reservoir, and a treatment at the West Portal.<sup>4</sup> The partnership continues to seek implementation and funding partners in Grand County, including landscape-level projects

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<sup>4</sup> <http://www.fs.usda.gov/detail/arp/news-events/?cid=STELPRDB5414247>

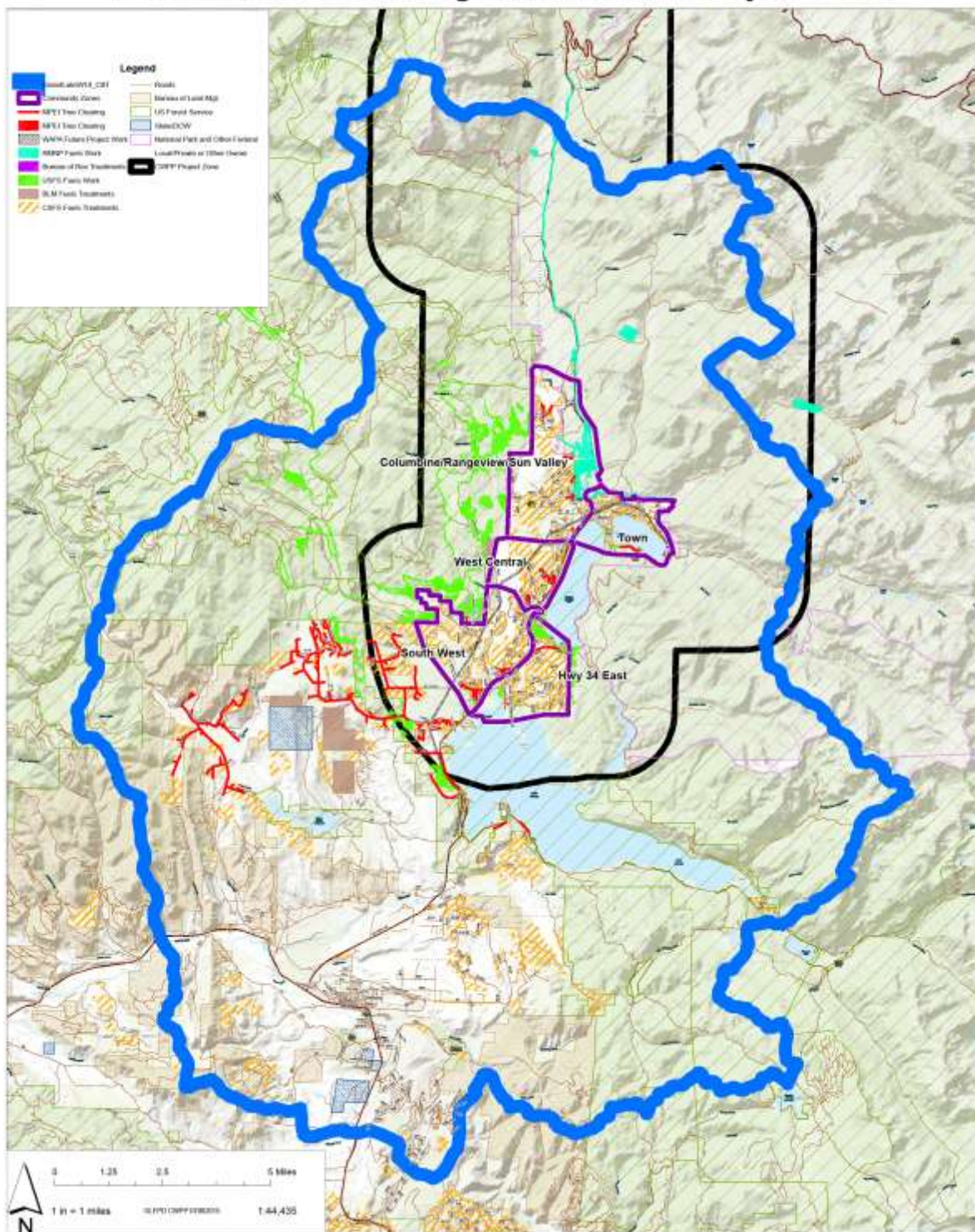
on public and private land, that fit the priorities and treatment prescriptions that benefit C-BT watersheds and water supply identified in the partnership's planning documents.

Northern Water is currently developing a wildfire readiness, response and recovery plan and anticipates having it completed by the end of 2015.



### Map: GLFPD CWPP Project Zone Showing C-BT Watershed Impact Area

**GLFPD CWPP - Showing Federal - State Project Areas**



## **Community Zones: Hazard Rating**

Five community zones in Grand Lake Fire Protection District have been identified. The zones are, for the most part, isolated regions with one or more primary access routes with either no road or a limited use road linking any two zones. In some instances topographic features such as the Colorado River, as between Columbine/Range View/Sun Valley and West Central Zones, define the boundaries. Community Zone Maps are included in each zone section.

The community zones were found to be very close in numerical rating primarily because of the extensive dead tree removal and hazardous fuels treatments. Differences come in access, hydrant availability and steep slopes with south and southwest aspects. On the ground, review of each community zone was conducted, then the GIS slope/aspect (potential affects to fire behavior) information was used to identify if the hazard level needed adjustment. It should be noted that weather is a critical input into fire behavior affects and for this analysis a warm, low humidity, moderately windy weather pattern is assumed.

<b>Community</b>	<b>Initial Hazard Rating</b>	<b>Aspect/Slope Rating</b>	<b>Final Hazard Rating</b>
Columbine/Range View/Sun Valley	Moderate	Moderate	Moderate
Town	Moderate	Moderate	Moderate
West Central	Moderate	High	High
South West	Moderate	Moderate	Moderate
Hwy 34 East	Moderate	High	High

**Table 2: Community Zone Hazard Rating**

As mentioned earlier, the general theme across CWPP areas is that a majority of the dead timber has been removed and a majority of surface fuels have been mitigated. This applies to all communities, however, any specific problems or suggested treatments will be outlined in the community descriptions and maps that follow. Each community will need to implement treatment items listed. Home Owner Associations (HOAs) must take the lead in their communities. Where an HOA is not established, residents should consider forming an HOA or organize in some way to address wildfire preparedness. Fire Councils can be a method to bring residents together generally on a larger scale such as the entire CWPP project area or smaller



scale, one or two zones. See <http://www.firesafecouncil.org/> for information on Fire Councils. Grand Lake Fire Protection District staff members are available to work with these communities.

### **Community Zone Descriptions, Concerns, Recommendations, and Maps**

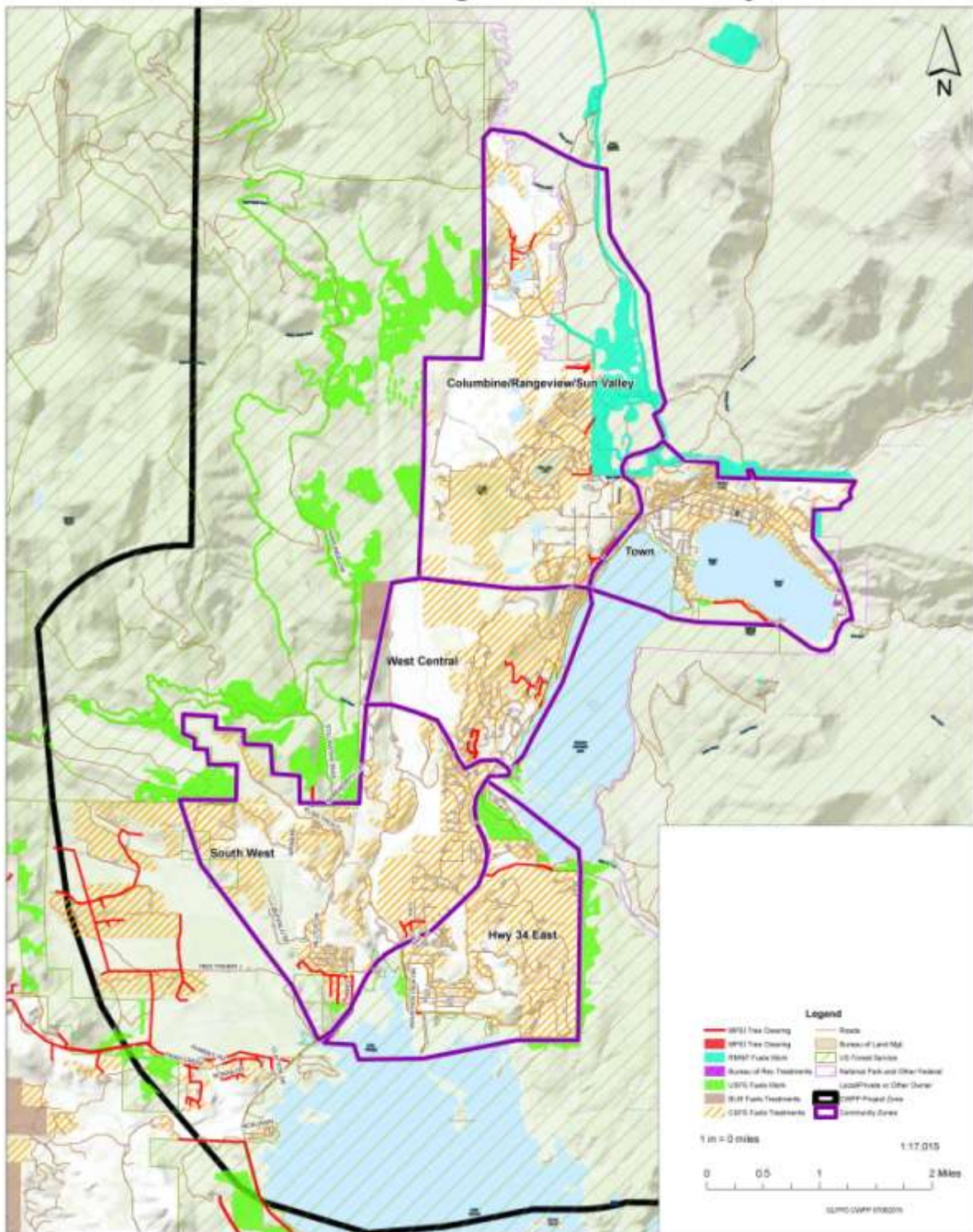
Zone maps fuels treatments areas. These areas can have negative impact to homes and other infrastructure during a wildfire incident if not mitigated. Homes needing individual defensible space were not included because they were too small to map. As HOAs or other associations work with GLFPD, other specific treatments may be discovered.

Recommended standards for all Zones:

- Ensure at least 100 foot radius of defensible space around home.
- Removal of all slash (fuels) from ½ inch to 3 inches in diameter in home defense zone, out to 100-200 feet from structures where possible.
- Material greater than 3 inches should be removed or utilized as firewood with proper storage at least 30 feet from structures.
- Mow grass regularly to less than 4 inch height in home defense zone.
- Follow RSG and Firewise® guidance on defensible space of the “home ignition zone”.
- Structure addressing: 4” reflective numbers clearly visible from the road.
- Suggested road signage: 6”x 18” green reflective sign with 3” numbers (kits are available through hardware stores) Order signs from <http://www.bewildfireready.org/>

## Topographical Map: GLFPD CWPP Project Zone Showing Fuels Treatments

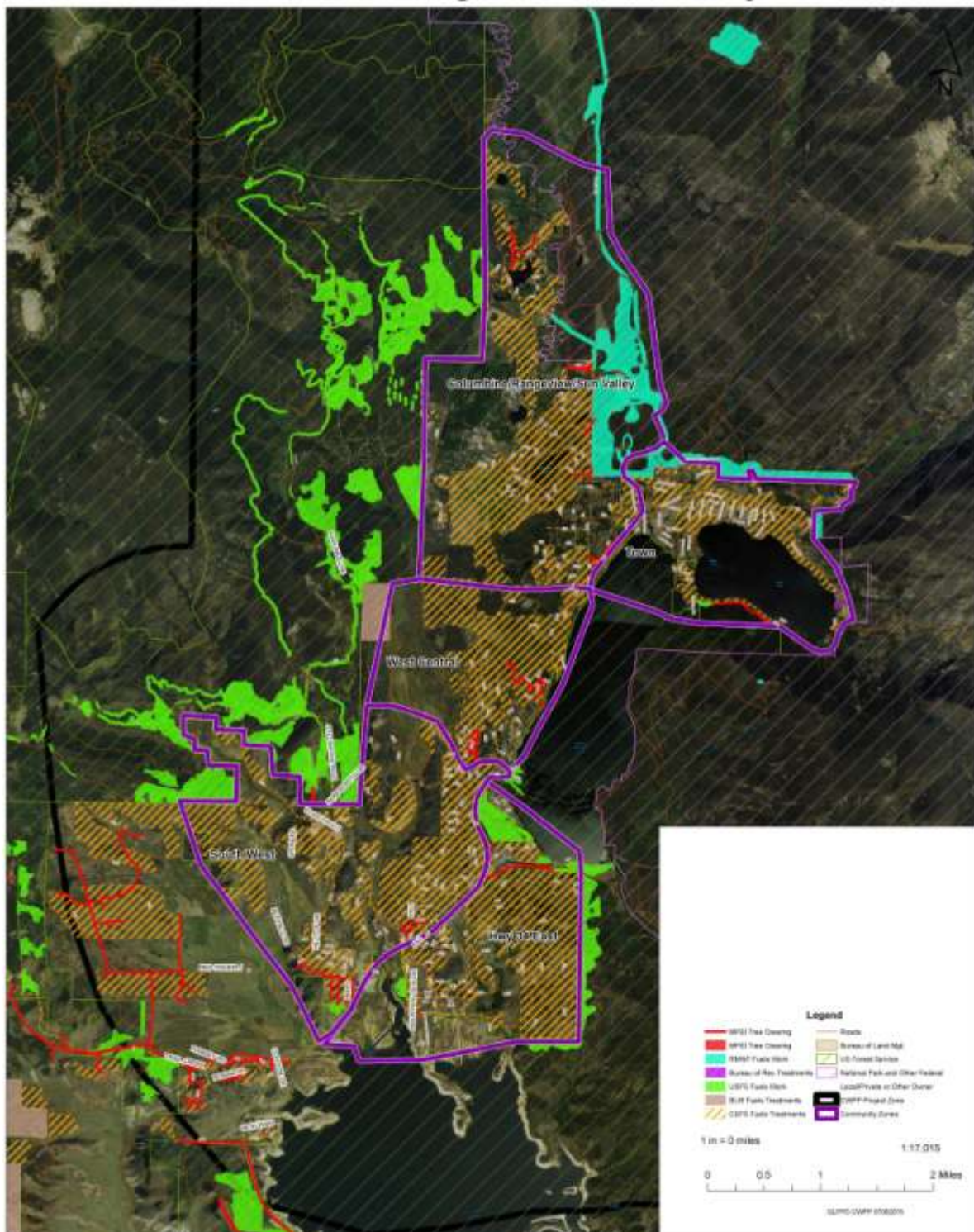
### GLFPD CWPP - Showing Federal - State Project Areas





## Satellite Map: GLFPD CWPP Project Zone Showing Fuels Treatments

### GLFPD CWPP - Showing Federal - State Project Areas



### **Columbine/Range View and Sun Valley Zone:**

- Access: County Road 491, 49, 48 and 47 (from north to south).
- Fuels: light to moderate Lodgepole pine slash from mitigation, patches of dead and heavier fuels.
- Water Supply: Many pressurized hydrants in Columbine area and RMNP housing; two draft hydrants in Sun Valley and a draft hydrant at the Colorado River. Opportunities to draft from lakes exist. Water tender shuttle would also be used.
- Structure construction materials vary with wood siding predominate.

This zone takes in the above mentioned subdivisions and RMNP administrative and residential structures. Lodgepole pine slash (fuels) have been removed for the most part; however treatment of remaining slash is needed.

Columbine has seen the greatest removal of over-story Lodgepole pine however housing density is high. There are homes with poor defensible space and/or poor fire resistant construction. A survey of Columbine should be completed to identify specific properties that require improvement.

The Range View area has maintained a moderately dense green over-story of Lodgepole pine. The lots are moderate sized with spacing between homes averaging 75 feet. Timber patches and surface fuels between homes may allow fire spread over the gross area. Many homes need improved defensible space.

There are small patches of dead timber that may only impact the adjacent homes by supporting fire. Ember production and fire intensity however could increase difficulty in suppression actions throughout the entire zone.

Sun Valley has a lower density of homes and again a few homes have poor defensible space and/or construction. Untreated timber patches and pockets of untreated surface fuels exist. Access is good and local water supply is adequate.





The County Road 492 area, adjacent to USFS boundary, has many untreated standing dead Lodgepole stands and associated surface fuel issues.



Boundaries adjacent to unmaintained roads such as along CR 4741 have many untreated standing dead Lodgepole stands and associated surface fuel issues.

New construction is being done with defensible space, however many existing homes need improvement. With thick forested lands to the west this area could be a conduit for fire spread to the east. This community could be heavily impacted by ember showers and fire spread from wildfire on adjacent national forest.

The following aerial views of the Columbine Lake area are an example of mitigation work affects; the view on left is from 2006 and the view on the right is from 2010 where significant timber removal can be seen. Notice the number of structures visible in 2010.



**2006**



**2010**

**Columbine, Range View and Sun Valley Recommendations**  
**Fuel Treatment Projects**

<b>Project or Activity</b>	<b>Responsible Party</b>	<b>Priority Level</b>
Range View should work with CSFS to develop treatment objectives for identified locations and smaller scale issues	Residents, CSFS	High
County Road 492 right of way needs further hazard tree removal and slash treatment	Residents, Grand County	High
County Road 4741 right of way needs further hazard tree removal	Residents, landowners	High
Boundary fuels mitigation	USFS and contractors	High
Maintenance of completed power line hazard treatments and continued analysis and monitoring for future treatments	MPEI, WAPA	High
Resident actions to address untreated parcels	Residents, HOAs	High
Continued analysis by USFS and NPS in the 1 ½ mile WUI buffer for treatments	USFS, NPS	High

**Projects to Reduce Structural Ignitability**

<b>Project or Activity</b>	<b>Responsible Party</b>	<b>Priority Level</b>
Create and maintain defensible space and reduce fire hazards on private property	Private landowners and contractors	High
Evaluate defensibility of private property	GLFPD and private landowners	High
Maintain hazard reduction work to electrical service lines to homes	Private landowners	High
Educate community about Ready-Set-Go, Firewise®	GLFPD, home owner groups, residents	High

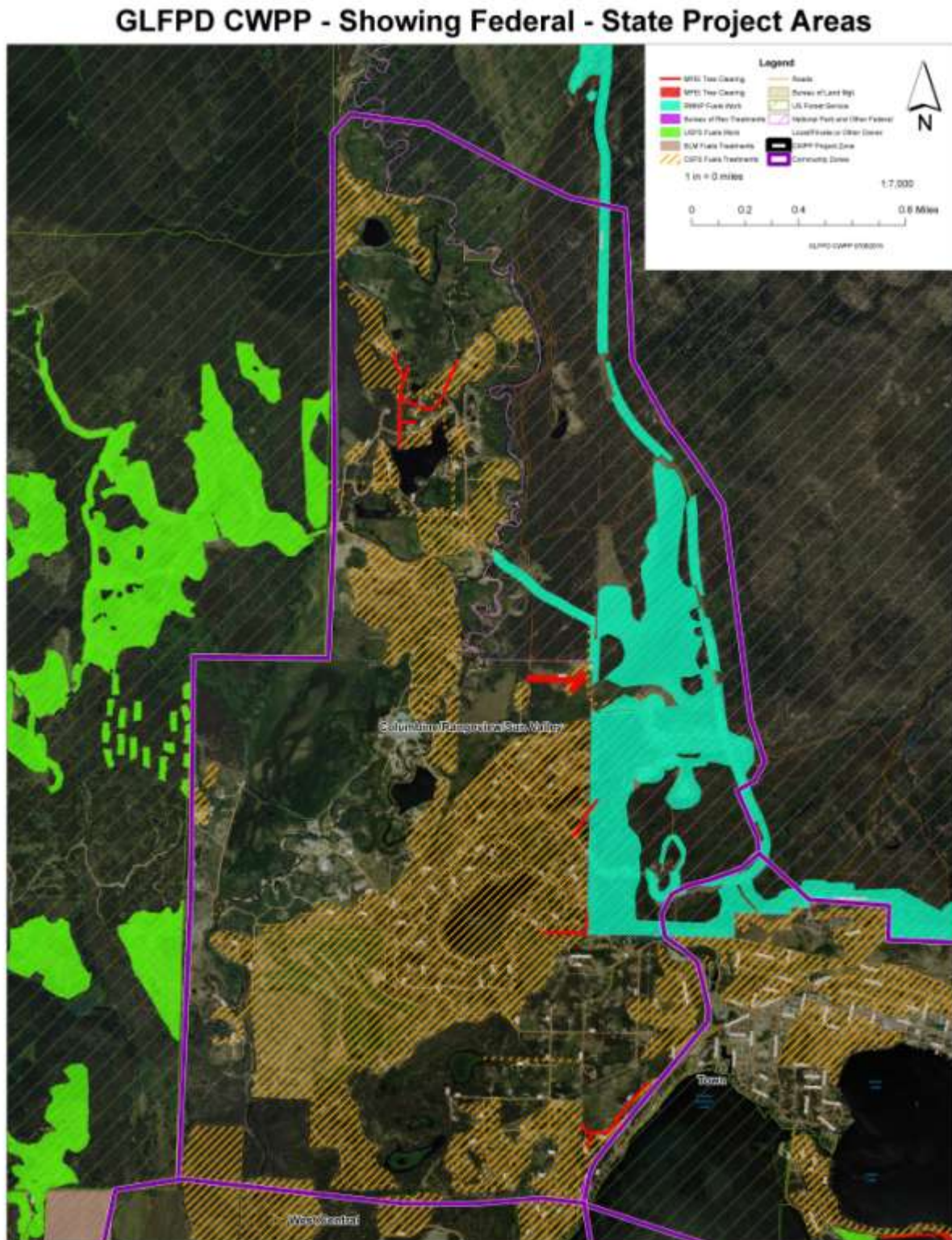
**Projects to Increase Emergency Preparedness**

<b>Project or Activity</b>	<b>Responsible Party</b>	<b>Priority Level</b>
Post standardized reflective address signs	Private landowners. Education by GLFPD and <a href="http://www.bewildfireready.org/">http://www.bewildfireready.org/</a>	High
Educate residents on evacuation plans	GLFPD, Grand County OEM	High
Properly maintain road signage	Grand County Road and Bridge	High





## Satellite Map: GLFPD CWPP Columbine/Range View/Sun Valley Zone Fuels Treatments



### **Town Zone:**

- Access: West Portal Road off Highway 34; Grand Lake Lodge Road, two miles north.
- Fuels: light to moderate Lodgepole pine slash from mitigation, patches of dead and heavier fuels.
- Water Supply: Pressurized hydrants in town and at Grand Lake Lodge. Possible drafting from Grand and Shadow Mountain lakes. Water tender shuttle would also be used.
- Structure construction materials vary with wood siding predominate.

This zone includes the Town of Grand Lake proper from Highway 34 east to West Portal area, Jericho Road and the higher elevation area of Grand Lake Lodge. The West Portal of the Alva B. Adams Tunnel is located on the eastern end of Grand Lake. Access is by West Portal Road to the town and the entrance road to the Grand Lake Lodge.

The downtown area is generally free of hazardous fuels but would be at risk to ember showers, which could create fire spread from structure to structure. Grand Avenue and the adjacent residential area have a high number of historical buildings of poor fire resistant construction at high risk of ignition during an ember shower.

Properties along West Portal Road and in the Grand Lake Lodge area have been significantly mitigated by the removal of standing dead and the moderate amount of surface fuel clean-up. The National Park Service has completed a fuel break on the northern boundary of zone on NPS lands. The Bureau of Reclamation and U.S. Forest Service will be completing a

fuels reduction project just east of Portal Road and west of the Park boundary immediately above the West Portal.







**WAPA transmission line right-of-way West Portal Road**

Fuel reduction maintenance treatments of along West Portal Road by WAPA are on-going.

With a single ingress/egress on West Portal Road or the Grand Lake Lodge, road evacuation implementation must be timely. Surface fuels are still a significant concern as continuity throughout would allow fire

spread with few or no barriers.

A significant wind event would create high rate of fire spread together with steep slopes making suppression actions difficult. Jericho Road is narrow with limited turn around areas. This will limit access to smaller fire suppression equipment. Traffic constriction is also an issue. This is a narrow strip of private land sandwiched between the steep slopes of USFS and NPS lands at the east end of Grand Lake.



**MPEI contractor tree removal Jericho Road**

## Town Zone Recommendations

### Fuel Treatment Projects

Project or Activity	Responsible Party	Priority Level
Maintenance and further improvement of Jericho Road boundary fuel treatment	USFS and contractors	High
Maintenance of completed NPS hazard mitigation boundary treatments, north boundary of zone	NPS and contractors	High
Analysis of NPS lands on eastern boundary of Town Zone for possibility of treatments	NPS and landowners	Moderate
West Portal Fuel Reduction Project	C-BT Headwaters Partnership	High
Hazard treatment on private lands at eastern zone boundary, from approximately Adams Falls parking lot north to Tonahutu Drive	Private land owners	High
Maintenance of completed power line hazard treatments and continued analysis and monitoring for future treatments	MPEI, WAPA	High
Resident actions to address untreated parcels	Residents, HOA's	High
Continued analysis by USFS and NPS in the 1 ½ mile WUI buffer for appropriate treatments or on-going maintenance	USFS, NPS	Other

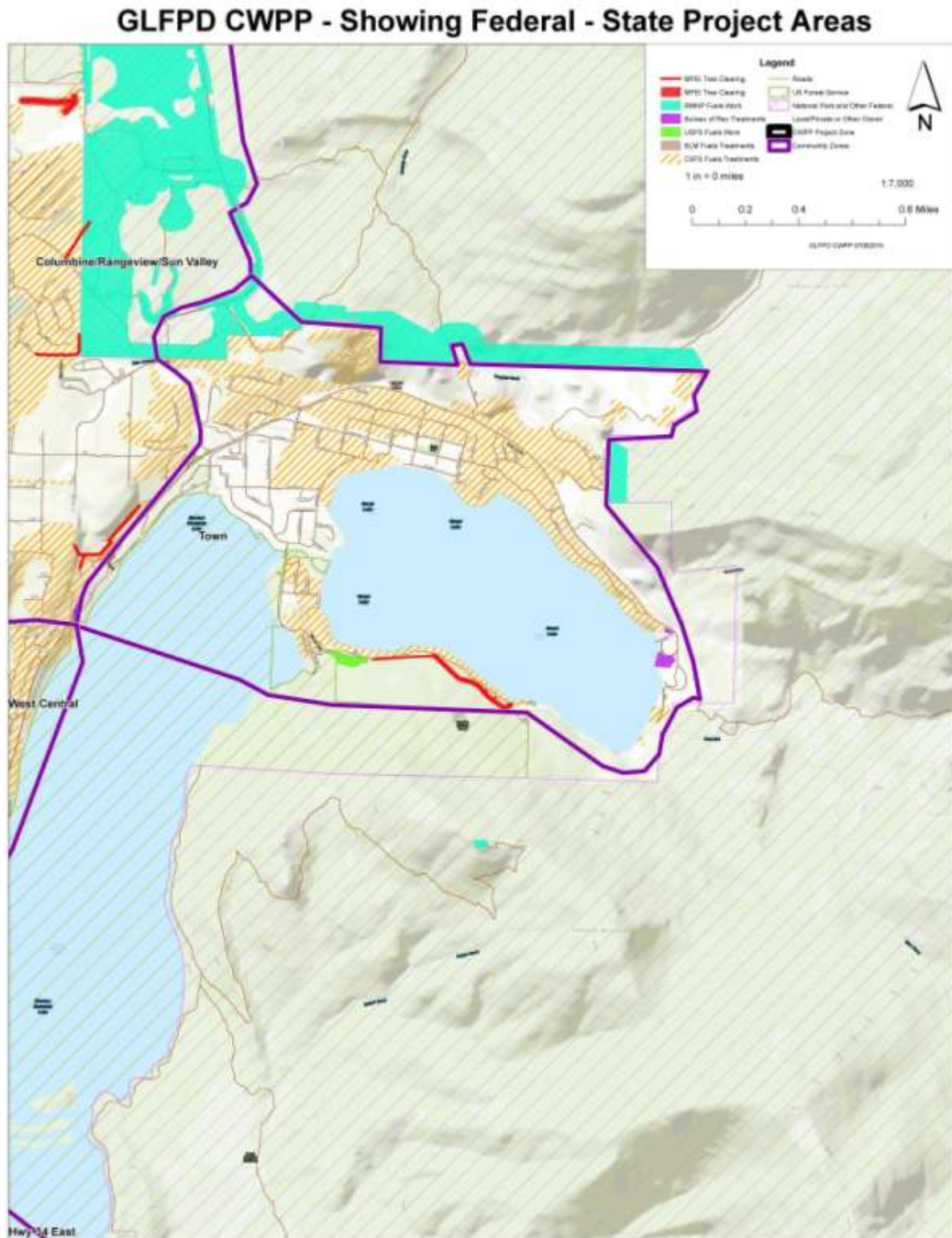
### Projects to Reduce Structural Ignitability

Project or Activity	Responsible Party	Priority Level
Create and maintain defensible space and reduce fire hazards on private property	Private landowners and contractors	High
Mitigate risks of historical structures including creating defensible space and using flame resistive building materials whenever possible.	Private landowners	High
Evaluate defensibility of private property	GLFPD and private landowners	High
Maintain service line to homes hazard reduction work, treat fuels created from this activity	Private landowners	High
Educate community about Ready-Set-Go, Firewise®	GLFPD and home owner groups	Other

### Projects to Increase Emergency Preparedness

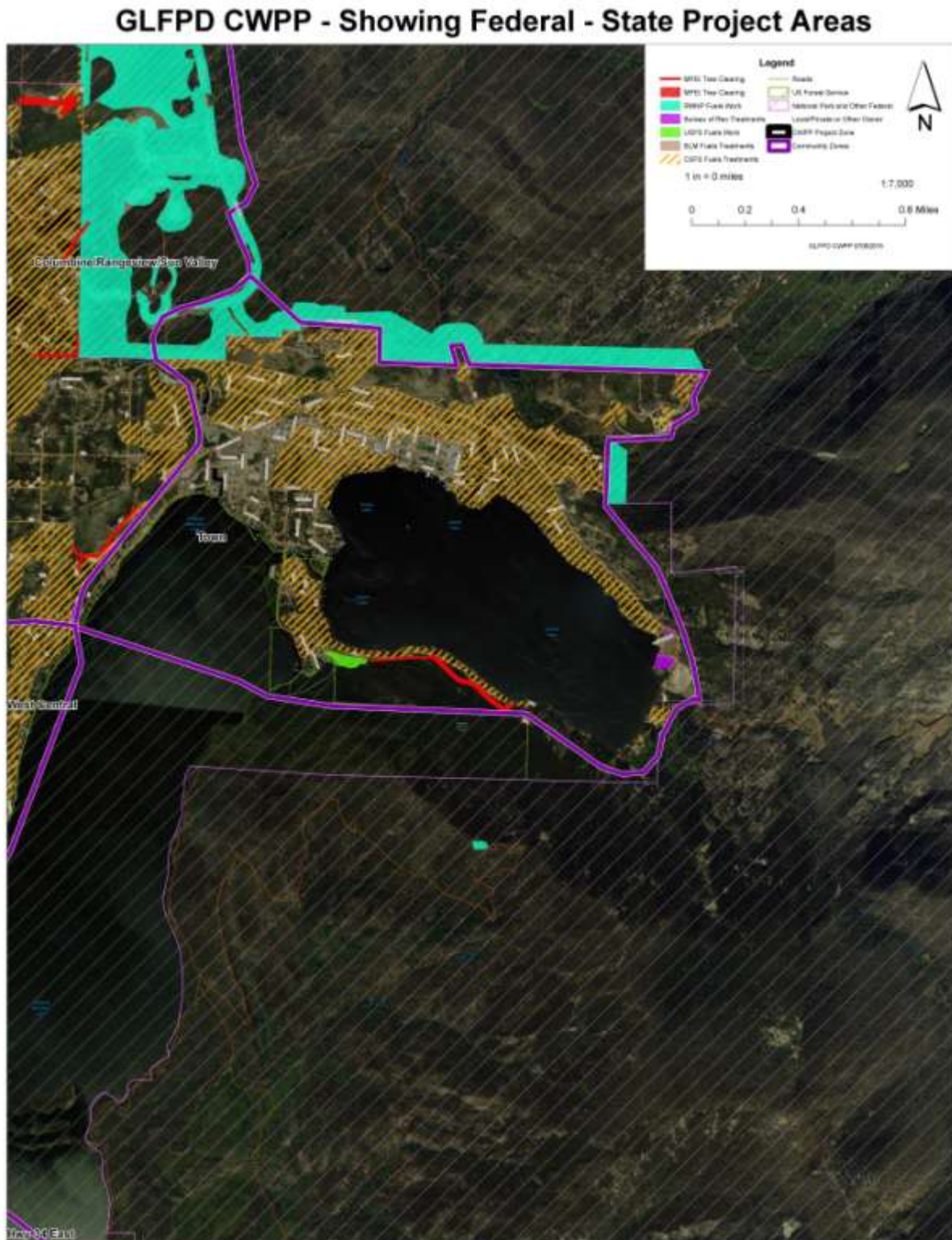
Project or Activity	Responsible Party	Priority Level
Post standardized reflective address signs	Private landowners. Education by GLFPD and <a href="http://www.bewildfireready.org/">http://www.bewildfireready.org/</a>	High
Educate residents on evacuation plans	GLFPD, Grand County OEM	High
Properly maintain road signage	Grand County Road and Bridge, Town of Grand Lake	Other

## Topographical Map: GLFPD CWPP Town Zone Showing Fuels Treatments





## Satellite Map: GLFPD CWPP Town Zone Showing Fuels Treatments



### **West Central Zone:**

- Access: County roads 466, 4655 and 4650
- Fuels: light to moderate Lodgepole pine slash from mitigation, patches of dead and heavier fuels.
- Water Supply: Two pressurized hydrants on Hwy 34 across from County Rd 465; Water tender shuttle primary for most of zone.
- Infrastructure construction materials vary with wood siding predominate

This community contains a few large stands of untreated pine mortality. A fire spreading from the west could use this corridor to move into residential areas to the east. It should be noted that the untreated parcel contains wetlands, limiting treatment options. As seen in other community zones, defensible space and Firewise® construction improvements are needed in scattered homes. Surface fuels need treatment in many areas and a few patches of standing dead Lodgepole exist throughout the community that should also be removed or addressed. The steeper topography in this area will allow fire rate of spreads to be higher especially when aligned with high winds and temperatures. Though there are many dead end roads, road width and availability of driveways provide sufficient turn around locations for fire equipment





## West Central Zone Recommendations

### Fuel Treatment Projects

Project or Activity	Responsible Party	Priority Level
Resident actions to address untreated parcels and surface fuels including new growth	Residents, HOAs	High
Maintenance of completed power line hazard treatments and continued analysis and monitoring for future treatments	MPEI, WAPA	High
Hazard fuels mitigation around Communications tower on CR 466	C-BT Headwaters Partnership	High
Continued analysis by USFS in the 1½ mile WUI buffer to the west for appropriate treatments	USFS	High

### Projects to Reduce Structural Ignitability

Project or Activity	Responsible Party	Priority Level
Create and maintain defensible space and reduce fire hazards on private property	Private landowners and contractors	High
Evaluate defensibility of private property	GLFPD and private landowners	High
Maintain service line to homes hazard reduction work, treat fuels created from this activity	Private landowners	High
Educate community about Ready-Set-Go, Firewise®	GLFPD and home owner groups	High

### Projects to Increase Emergency Preparedness

Project or Activity	Responsible Party	Priority Level
Post standardized reflective address signs	Private landowners. Education by GLFPD and <a href="http://www.bewildfireready.org/">http://www.bewildfireready.org/</a>	High
Educate residents on evacuation plans	GLFPD, Grand County OEM	High
Properly maintain road signage	Grand County Road & Bridge	High

GLFPD CWPP - Showing Federal - State Project Areas





### Satellite Map: GLFPD CWPP West Central Zone Showing Fuels Treatments



**South West Zone:**

- Access: County Roads 46, 443, 442, 4, 451, and 452. The Colorado River divides this zone from West Central
- Fuels: light to moderate Lodgepole pine slash from mitigation, patches of dead and heavier fuels
- Water Supply: Water tender shuttle would be primary method
- Infrastructure construction materials vary with wood siding predominate

This community has large areas of open space to the west, some timbered, others are riparian areas associated with the Colorado River. There are scattered homes with defensible space and Firewise® construction issues. Surface fuel treatment should be addressed in many locations. The steeper topography in this area will allow fire rates of spread to be higher especially when aligned with high winds. Access is good with turnarounds available on dead end spurs.



## South West Zone Recommendations

### Fuel Treatment Projects

Project or Activity	Responsible Party	Priority Level
Resident actions to address untreated parcels	Residents, HOAs	High
Maintenance of completed power line hazard treatments and continued analysis and monitoring for future treatments	MPEI, WAPA	High
Continued analysis by USFS in the 1 ½ mile WUI buffer to the west for appropriate treatments	USFS	High

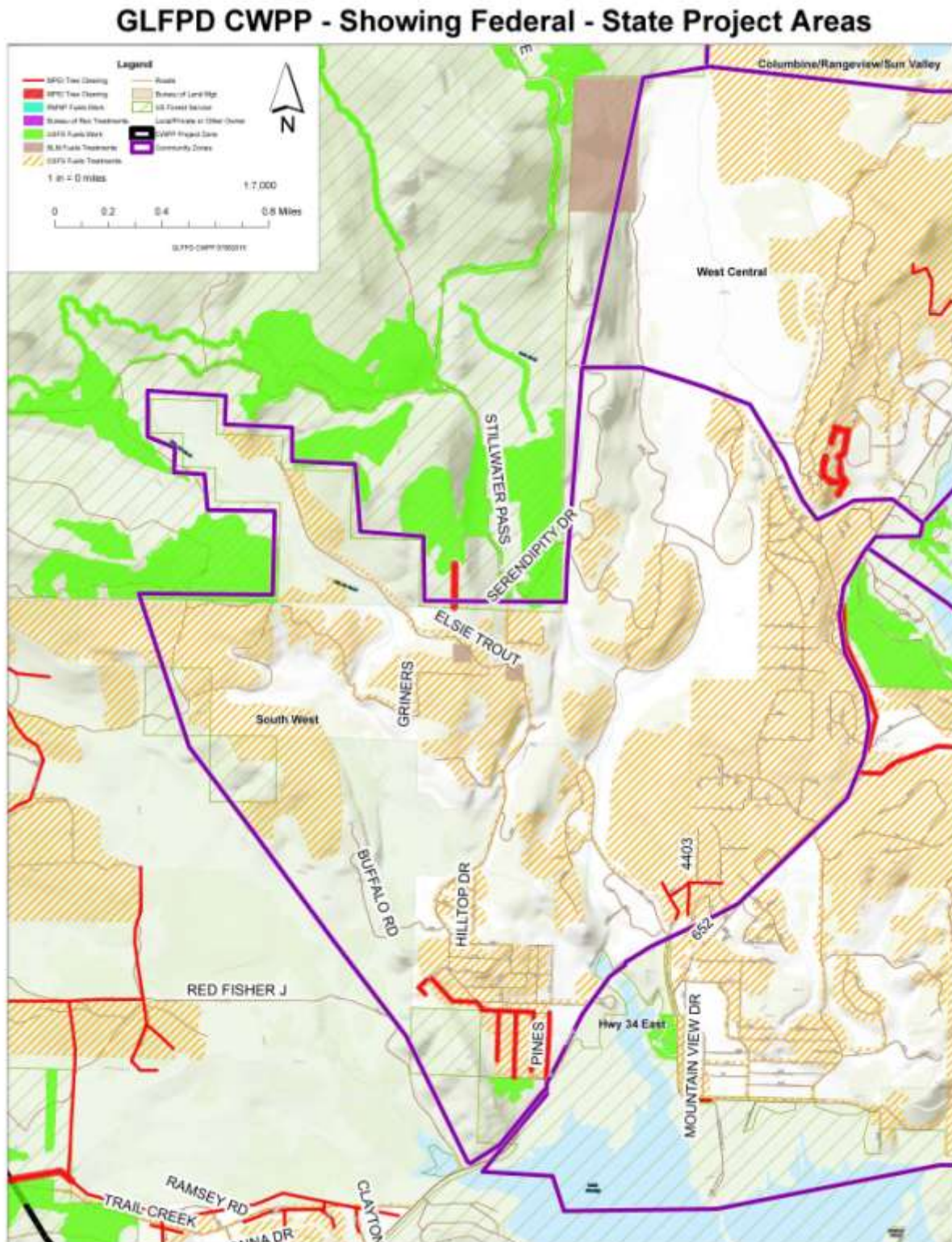
### Projects to Reduce Structural Ignitability

Project or Activity	Responsible Party	Priority Level
Create and maintain defensible space and reduce fire hazards on private property	Private landowners and contractors	High
Evaluate defensibility of private property	GLFPD and private landowners	High
Maintain service line to homes hazard reduction work, treat fuels created from this activity.	Private landowners	High
Educate community about Ready-Set-Go, Firewise®	GLFPD, home owner groups, residents	On-going

### Projects to Increase Emergency Preparedness

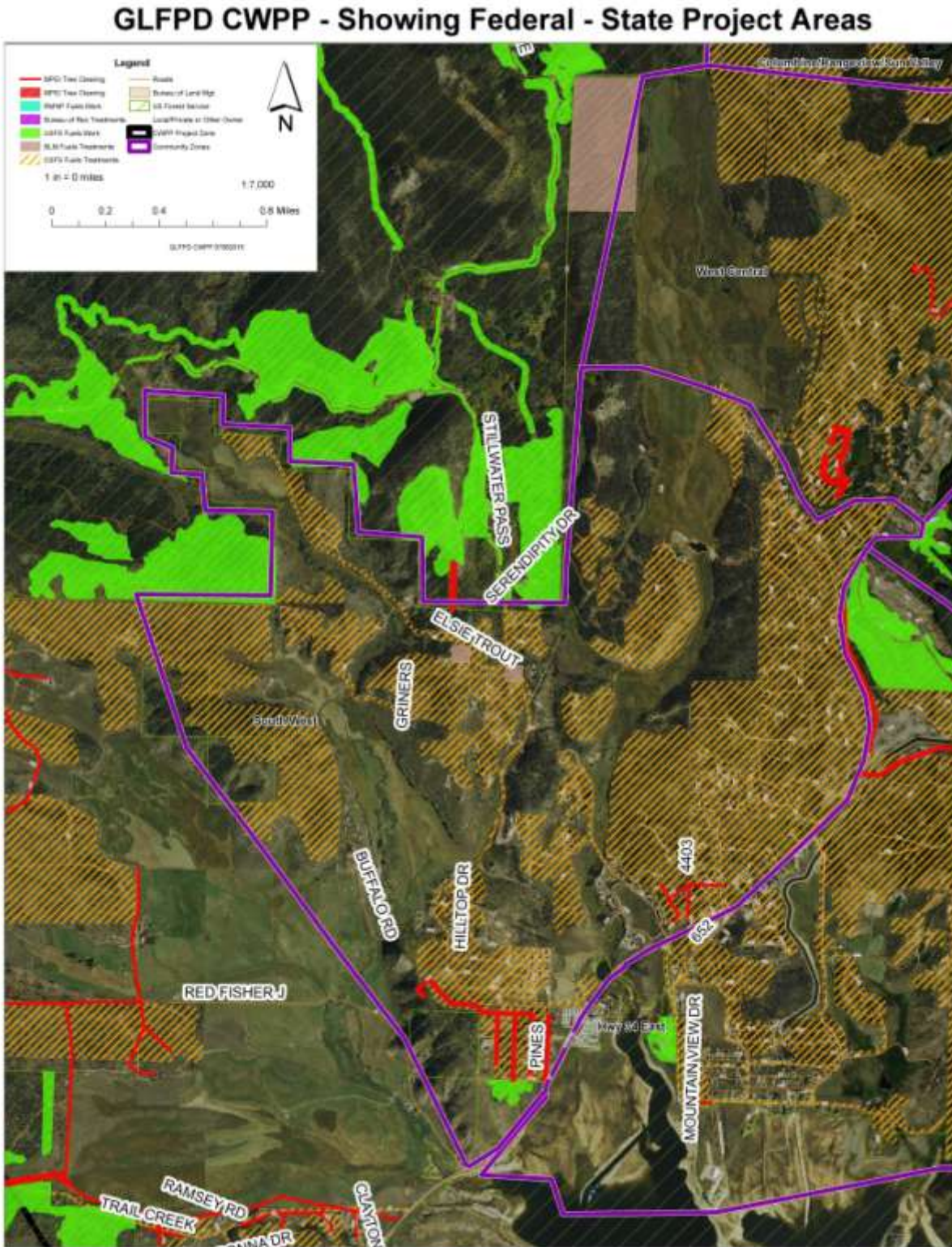
Project or Activity	Responsible Party	Priority Level
Post standardized reflective address signs	Private landowners. Education by GLFPD and <a href="http://www.bewildfireready.org/">http://www.bewildfireready.org/</a>	High
Educate residents on evacuation plans	GLFPD, Grand County OEM	High
Properly maintain road signage	Grand County Road & Bridge	On-going

## Topographical Map: GLFPD CWPP South West Zone Showing Fuels Treatments





### Satellite Map: GLFPD CWPP South West Zone Showing Fuels Treatments



### **Highway 34 East Zone:**

- Access: County Roads 66 and 64
- Fuels: light to moderate Lodgepole pine slash from mitigation, patches of dead and heavier fuels
- Water Supply: Pressurized hydrants in Shores of Shadow Mountain, Mountain Shadow Estates, and USFS Shadow Mountain Village and on County Road 64 in southeast corner of zone.
- Infrastructure construction materials vary with wood siding predominate

This zone includes Shores of Shadow Mountain, Mountain Shadow Estates, Lake Forest/North Shore, Granby Pump Canal (C-BT), and the Farr Pumping Plant. The Lake Forest/North Shore housing density is the greatest, leading to concerns of structure-to-structure fire spread if a wildland fire impacts the area. As seen elsewhere, scattered homes need improved defensible space and Firewise® construction. Untreated vacant



properties are locations where embers can easily ignite and cause suppression problems. There are several of these problem areas east/southeast of Highway 34 toward the canal. Steeper slopes in Mountain Shadow Estates will accelerate fire rate of spread carried in the grasses which have grown since dead timber was removed. Access throughout is good with some narrower roads in the Lake Forest/North Shore area. Cisterns in Mountain Shadow Estates provide water, shortening travel time for fire trucks.



## Highway 34 East Zone Recommendations

### Fuel Treatment Projects

Project or Activity	Responsible Party	Priority Level
Maintenance of hazard treatments on east and southern zone boundary with USFS	USFS, CSFS	High
Resident actions to address untreated parcels	Residents, HOAs	High
Maintenance of completed power line hazard treatments and continued analysis and monitoring for future treatments	MPEI, WAPA	High

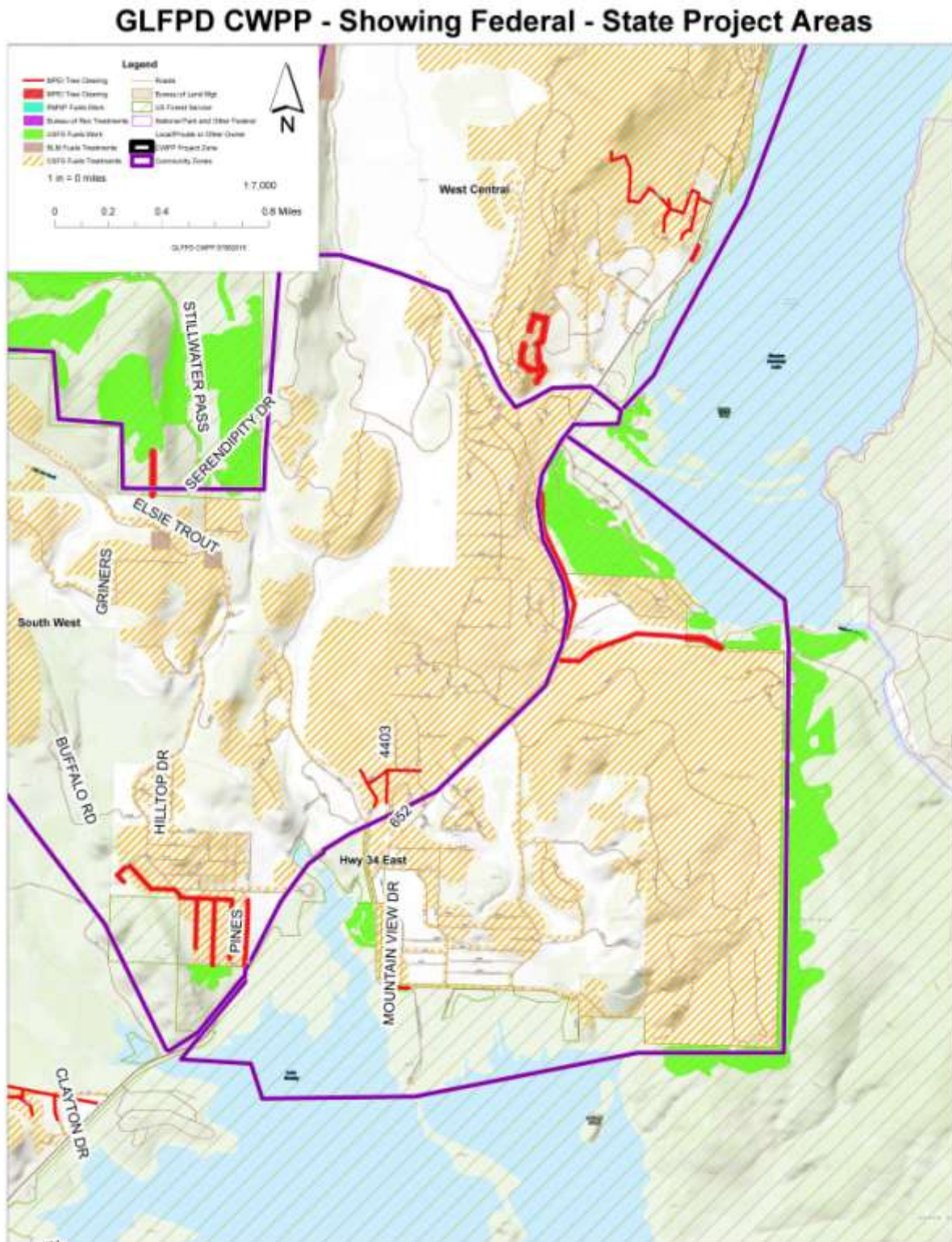
### Projects to Reduce Structural Ignitability

Project or Activity	Responsible Party	Priority Level
Create and maintain defensible space and reduce fire hazards on private property	Private landowners and contractors	High
Evaluate defensibility of private property	GLFPD and private landowners	High
Maintain service line to homes hazard reduction work, treat fuels created from this activity	Private landowners	High
Educate community about Ready-Set-Go, Firewise®	GLFPD, home owner groups, and residents	Other

### Projects to Increase Emergency Preparedness

Project or Activity	Responsible Party	Priority Level
Post standardized reflective address signs	Private landowners. Education by GLFPD and <a href="http://www.bewildfireready.org/">http://www.bewildfireready.org/</a>	High
Name change to road not updated by residents	Residents	High
Educate residents on evacuation plans	GLFPD, Grand County OEM	High
Properly maintain road signage	Grand County Road & Bridge	Other

## Topographical Map: GLFPD CWPP Hwy 34 East Zone Fuels Treatments





**GLFPD CWPP - Showing Federal - State Project Areas**



## **Fire Behavior**

Fire behavior is an expression of how fire moves through the fire environment considering the type of vegetation, live and dead; fuel moisture of the live and dead component, topography and weather. A common concern in Lodgepole pine is the potential for crown fire. Fire occurrence historically in Lodgepole pine is marked by 100-150+ year cycle of high intensity crown fire and low frequency or annual low number of small less intense surface fires. The MPB infestation and subsequent removal of over-story dead timber has greatly reduced the potential for crown fire. Crown fire may yet be seen in the isolated untreated patches of timber although with time the dead needles drop, limbs break off and all crown structure



is lost. With the loss of standing trees, wind has a greater effect on surface conditions exposing surface fuels to drying and the acceleration of fire spread. Without the shading once provide by trees, solar heating dries the surface fuels more rapidly both daily and seasonally. As the timber has died, surface vegetation has changed. Grasses, forbs and various shrubs have greatly increased in percentage of cover. The primary concern is grasses which when dead dry quickly ignite easily and can have a high rate of spread. Ember showers from large wildfires to the west are of great concern to the community. The burning embers can initiate multiple small fires stressing available firefighting resources. In addition, the number of dead falling trees is increasing rapidly bringing a high level or loading of large fuels to the surface in untreated patches. This is a bigger issue in the National Forest and National Park. Larger fuels contribute to the intensity of a wildfire. During hot, dry and windy weather rate of spread and intensity creates fire conditions very difficult to control. With primary interest in rapid suppression of wildland ignitions, the amount and condition of surface fuels and grass should be the focus of mitigation actions. Breaking the continuity of the surface fuels by piling and burning or other removal is important. New growth and regeneration of Lodgepole pine must be managed to maintain a low density. This will assure future fuel loadings and continuity of fuels does not return to high hazard levels.



A GIS analysis of slope and aspect was completed to provide enhanced fire environment information. Slope affects the rate or spread of a wildfire. Through preheating by convective heat energy and direct flame contact fuels ahead of a wildfire on steeper terrain ignite easily. Aspect is directly related to solar heating affecting the dryness of fuels and ambient air temperature. South facing slopes receive direct solar heating causing them to be much drier and warmer than north facing slopes. Wind is also a critical element bending flames to create a slope like effect of pre-heating and increase in rate of spread. Real time and date inputs are needed to assess fire behavior during a wildfire. The simplified approach of using slope and aspect to suggest potential fire behavior is used to highlight the overlap with areas requiring treatment. Priority treatments would fall into this area of overlap. See Appendix B: Potential Effect of Slope and Aspect on Fire Behavior Map.

### **Treatment of Structural Ignitability**

Throughout all community zones there are homes lacking defensible space and not meeting Firewise® building construction. Ignitability of homes with wooden decks, firewood piles against outside walls or vegetation not cleared can be problematic.

Jack Cohen, researcher in wildland fire and home ignitability has concluded that, “*Homes with low ignitability can survive high-intensity wildland fires, whereas highly ignitable homes can be destroyed during lower-intensity fires.*” (Cohen, Jack; *Preventing Disaster, Home Ignitability in the Wildland-Urban Interface*). (Also see: Jack Cohen, Saveland Jim, Structure Ignition Assessment Can Help Reduce Fire Damages in the WUI)

Implementing measures to reduce fire risk and improve community protection are not restricted to federal or state lands; they must occur on private property. The property owner must understand that he or she is the responsible party. More information is available through [www.firewise.org](http://www.firewise.org), [www.bewildfireready.org](http://www.bewildfireready.org), or Grand Lake Fire Protection District.

If we consider the specific needs of interface structures, we can combine design elements and construction materials to build more fire resistive structures. Our goal is to create buildings that can either resist fire on their own, or at least make protecting structures safer.

The Firewise® standards below should be used to develop defensible properties and neighborhoods.

### 1. Development Standards –

When given the opportunity, GLFPD will work with Planning Departments, developers and property owners to incorporate Firewise® techniques prior to construction to significantly reduce fire threat and improve public safety.

### 2. Fire Resistive Materials and Construction Techniques –

Incorporate the following items into the design and construction phases of a building project to directly improve structure survivability.

Examples include:

- Roof material: Class A = Brick, etc.; Class B = metal, composite shingles
- Fire resistive deck construction
- Limited combustible walls and siding
- Enclosed eaves and soffits
- Screened roof, crawl space vents and chimney with minimum of 1/8 inch wire screen
- Double pane windows

### 3. Hazard Fuel Reduction –

Treatment of the entire property is essential. Start with the easiest and least expensive actions. Begin the work closest to the structure and move outward. The goal is to keep fire intensity low, keep the fire on the ground and limit flame exposure to structures. This can be done by:

- Reducing excess fuel accumulations
- Removing dead and diseased trees
- Eliminate low hanging branches and other material 100' from structures which allows a ground fire to climb into trees (ladder fuels)
- Eliminate combustible materials (needles, firewood etc.) to a distance of at least 30 feet from structures
- Clean needles and other combustibles from roof.
- Maintain siding if combustible

- Remove tree limbs which overhang fireplace chimneys
- Clear vegetation from around propane tanks

## **Defensible Space**

Two factors have emerged as the primary determinants of a home's ability to survive wildfire. These are the home's roofing material and the quality of the "defensible space" surrounding it. Defensible space is an area around the structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to the surrounding forest. Defensible space provides room for firefighters to do their jobs and provides a margin for safety. A house is more likely to withstand a fire if grasses, brush, trees and other common forest fuels are managed to reduce a fire's intensity. The actual design and development of defensible space depends on several factors: the size and shape of buildings; building materials; the slope of the ground where the structure is built; topography; and the size and type of vegetation on the property. Additional guidance and/or suggestions may be requested from Grand Lake Fire Protection District.

## **Implementation Plan**

*To address the issues outlined in the Community Zone Descriptions (pages 11-17) and to appropriately react to potential fire behavior and fire suppression needs, the following should be implemented.*

- 1) Increase resident education on Firewise® construction, Ready-Set-Go principles and other fire preparedness methods. This will be done through presentations of the Ready-Set-Go (RSG) program annually in early summer when greatest numbers of seasonal residents are available. Fire preparedness information will be available on GLFPD website year round. GLFPD and Town of Grand Lake newsletters will provide fire readiness information in early summer editions. Fire preparedness articles will be prepared for publication in Sky-Hi newspaper. Outreach will be made to HOAs and other groups for fire department personnel to make presentations. Publications on RSG, Firewise® and other preparedness information will be available at GLFPD, Town Hall and Visitors Center.

Time Frame: On going

- 2) Encourage HOAs and other community groups to work within their areas to promote completion of hazardous fuels treatments and defensible space where needed. GLFPD is available to provide additional guidance.

Time Frame: 1 to 3 years

- 3) GLFPD will continue to work with federal partners on issues identified by residents on public lands.

Time Frame: Immediate notification with implementation per agency planning time frames.

- 4) Primary and secondary egress routes require maintenance where right-of-way clearance has been completed. Coordinated with Grand County Road and Bridge or the appropriate landowners, as needed.

Time Frame: 1 to 3 years

- 5) GLFPD should continue to contact and encourage landowners to clear standing dead trees, remove slash on their property, and perform on-going maintenance of new growth.

Time Frame: On going

- 6) GLFPD should continue to work with collaborative groups, including the C-BT Headwaters Partnership, to implement landscape-level fuels reduction projects that have multiple benefits to landowners and watersheds within the WUI boundary.

Time Frame: On going



## **Resources and References:**

- Grand Lake Fire Protection District, <http://grandlakefire.org>
  - GLFPD CWPP 2006 <http://www.grandlakefire.org/52.html>
- Firewise® Communities Program, <http://www.firewise.org/>
- Ready-Set-Go Program, <http://www.wildlandfirersg.org/>
- Fire Adapted Communities, <http://www.fireadapted.org/>
- Be Wildfire Ready.org, <http://www.bewildfireready.org/ready-set-go/>
- Colorado State Forest Service, <http://csfs.colostate.edu/>
- Bureau of Land Management, [www.blm.gov](http://www.blm.gov)
- Grand County Office of Emergency Management, [www.gcemergency.com](http://www.gcemergency.com)
- Western Area Power Administration,  
<https://www.wapa.gov/transmission/EnvironmentalReviewNEPA/Pages/vegetation-management.aspx>
- Middle Park Electric Inc., <http://www.mpei.com/default.htm>
- Colorado landowners with property located in a wildland-urban interface area may qualify to receive a tax exemption for the costs of wildfire mitigation work. For information, go to:  
[http://www.leg.state.co.us/clics/clics2013a/csl.nsf/fsbillcont/1384C4AC0C3740D287257A8E0073CB66?Open&file=1012\\_01.pdf](http://www.leg.state.co.us/clics/clics2013a/csl.nsf/fsbillcont/1384C4AC0C3740D287257A8E0073CB66?Open&file=1012_01.pdf).
- “Federal Agency Implementation Guidance for the Healthy Forest Initiative and the Healthy Forest Restoration Act (HFRA)”: ([www.fs.fed.us/projects/hfi/field-guide](http://www.fs.fed.us/projects/hfi/field-guide))
- Jefferson County Community Wildfire Protection Plan  
<http://jeffco.us/sheriff/wildfire/wildfire-protection-plans/community-wildfire-protection-plans/>
- Fire Safe Councils: ([www.firesafecouncil.org](http://www.firesafecouncil.org))
- Western Governors Association: [www.westgov.org](http://www.westgov.org)
- National Interagency Fire Center: [www.nifc.gov](http://www.nifc.gov)
- C-BT Headwaters Partnership:  
<http://www.northernwater.org/WaterQuality/HeadwatersPartnership.aspx>

For recommendation regarding defensible space site treatments and/or Firewise® information, contact:

Grand Lake Fire Protection District      970-627-8428 or [admin@grandlakefire.org](mailto:admin@grandlakefire.org)

## **Glossary of Terms**

**Adaptive Management:** A type of natural resource management in which, decisions are made as part of an ongoing process. Adaptive management combines implementing, monitoring, researching, evaluating, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify future management methods and policy.

**Apparatus:** A fire engine or other firefighting piece of equipment or grouping of such equipment.

**Available Fuel:** The portion of the total fuel that would actually burn under various environmental conditions.

**Available Resources:** Resources assigned to an incident and available for assignment.

**C-BT:** Colorado-Big Thompson Project

**Community Protection:** Actions or programs undertaken for the purpose of protecting human lives, property and infrastructure.

**Community Assessment:** An analysis designed to identify factors that increase the potential and/or severity of undesirable fire outcomes in the Wildland Urban Interface.

**Condition of Vegetation:** Stage of growth or degree of flammability of the vegetation that forms part of a fuel complex.

**Crown Fire:** A fire that travels from one tree top to another in dense stands of trees.

**Defensible Space:** An area around a structure where fuels and vegetation are modified, cleared or reduced to slow the spread of wildfire toward or away from a structure. The design and distance of the defensible space is based on fuels, topography, and the design/materials used in the construction of the structure. Defensible space provides room for the firefighters to do their jobs.

**Embers, Ember Shower:** Material ignited in a wildfire that is carried upwards in a convection column and transported by wind. These materials create new ignitions (spot fires) enhancing the spread of fire.

**Fire Frequency:** How often fire burns a given area; often expressed in terms of fire return interval.

**Fire Behavior Potential:** The expected severity of a wildland fire expressed as the rate of spread, the level of crown fire activity, and flame length. Derived from the fire behavior



modeling programs utilizing the following inputs: fuels, canopy cover, historical weather averages, elevation, slope and aspect.

**Fire Mitigation:** Any action designed to decrease the likelihood of ignition, reduce fire behavior potential, or to protect property from the impact of undesirable outcomes.

**Fuel Break:** A natural or constructed discontinuity in a fuel profile utilized to isolate, stop or reduce the spread of fire. Fuel breaks in the Wildland Urban Interface are designed to limit the spread and intensity of crown fire activity.

**Forest Ecosystem Health:** A condition where the parts and functions of an ecosystem are sustained over time and where the system's capacity to self-repair is maintained, allowing goals for users, values, and services of the ecosystem to be met.

**GIS:** Geographic Information Systems

**Hazardous Fuel:** Excessive live or dead trees and other vegetation and organic debris that increase the potential for intense wildland fire and decrease the capability to protect life, property, and natural resources.

**Hazard Reduction:** Any treatment of living and dead fuels that reduces the threat of ignition and spread of fire.

**ICT:** Incident Command Type

**MPB:** Mountain Pine Beetle

**Northern Water:** Northern Colorado Water Conservancy District

**NPS:** National Park Service

**NWCG:** National Wildfire Coordinating Group

**Risk to Communities:** The risk associated with adverse impacts to communities resulting from unwanted wildland fire.

**Slash:** Debris resulting from such natural events as wind, fire or snow breakage; or such human activities as road construction, logging, pruning, thinning, or brush cutting.

**Slash Disposal:** Treatment of slash to reduce fire hazard or for other purposes.

**Surface Fire:** A fire that burns over the forest floor, consuming litter, killing aboveground parts of herbaceous plants and shrubs, and typically scorching the bases and crowns of trees.

**USFS:** United States Forest Service

**Values-at-Risk:** People, property and environmental features within the project area which are susceptible to damage from fire outcomes.

**Wildland Firefighter, Red Carded:** Personnel who have been trained in standardized fire suppression tactics and certified to National Wildfire Coordinating Group training standards.

**Wildland-Urban Interface (WUI):** The area or zone where structures and other human development meet or intermingle with undeveloped Wildland or vegetative fuel and may include critical watersheds.

Some definitions come from “Restoring Fire-Adapted Ecosystems on Federal Lands - A Cohesive Strategy For Protecting People And Sustaining Natural Resources” USDI/USDA pp. 74-78, 12/19/2001. Others come from “Fireline Handbook NWCG”, National Wildfire Coordinating Group, March 2004

Source: Barnes, Burton V., Donald R Zak, Shirley R. Denton. 1997. Forest Ecology (4th edition). John Wiley and Sons, Inc New York, NY p.281

## Appendix A

### CSFS Wildfire Hazard Rating Form: Community Hazard Assessment Form

#### COLORADO STATE FOREST SERVICE WILDFIRE HAZARD RATING FORM -SUBDIVISION -

CSFS#123

NAME OF SUBDIVISION _____	DATE _____	
COUNTY _____	SIZE(AC) _____	#LOTS _____
RATING _____	COMMENTS _____	

#### A. SUBDIVISION DESIGN

1. INGRESS/EGRESS:
  - TWO OR MORE ROADS PRIMARY ROADS 1\_\_
  - ONE ROAD 3\_\_
  - ONE-WAY IN, ONE-WAY OUT 5\_\_
2. WIDTH OF PRIMARY ROAD:
  - 20 FEET OR MORE 1\_\_
  - 20 FEET OR LESS 3\_\_
3. ACCESSIBILITY:
  - ROAD GRADE 5% OR LESS 1\_\_
  - ROAD GRADE 5% OR MORE 3\_\_
4. SECONDARY ROAD TERMINUS:
  - LOOP ROADS, CUL-DE-SACS WITH OUTSIDE TURNING RADIUS OF 45 FEET OR GREATER 1\_\_
  - CUL-DE-SAC TURN-AROUND RADIUS IS LESS THAN 45 FEET 2\_\_
  - DEAD-END ROADS 200 FEET OR LESS IN LENGTH 3\_\_
  - DEAD-END ROADS GREATER THAN 200 FT IN LENGTH 5\_\_
5. AVERAGE LOT SIZE:
  - 10 ACRES OR LARGER 1\_\_
  - LARGER THAN 1 ACRE, BUT LESS THAN 10 ACRES 3\_\_
  - 1 ACRE OR LESS 5\_\_
6. STREET SIGNS:
  - PRESENT 1\_\_
  - NOT PRESENT 5\_\_

#### B. VEGETATION (UWIC DEFINITIONS)

1. FUEL TYPES:
  - LIGHT 1\_\_
  - MEDIUM 5\_\_
  - HEAVY 10\_\_
2. DEFENSIBLE SPACE:
  - 70% OR MORE OF SITE 1\_\_
  - 30% OR MORE, BUT LESS THAN 70% OF SITE 3\_\_
  - LESS THAN 30% OF SITE 5\_\_

#### C. TOPOGRAPHY

1. PREDOMINANT SLOPE:
  - 8% OR LESS 1\_\_
  - MORE THAN 8%, BUT LESS THAN 20% 4\_\_
  - 20% OR MORE, BUT LESS THAN 30% 7\_\_
  - 30% OR MORE 10\_\_

#### D. ROOFING MATERIAL

- CLASS A RATED 1\_\_
- CLASS B RATED 3\_\_
- CLASS C RATED 5\_\_
- NON-RATED 10\_\_

#### E. FIRE PROTECTION - WATER SOURCE

- 500 GPM HYDRANT WITHIN 1000 FEET 1\_\_
- HYDRANT FARTHER THAN 1,000 FEET OR DRAFT SITE 2\_\_
- WATER SOURCE 20 MINUTE OR LESS, ROUND TRIP 5\_\_
- WATER SOURCE FARTHER THAN 20 MINUTES AND 45 MINUTES OR LESS ROUND TRIP 7\_\_
- WATER SOURCE FARTHER THAN 45 MINUTES ROUND TRIP 10\_\_

#### F. EXISTING BUILDING CONSTRUCTION MATERIALS

- NONCOMBUSTIBLE SIDING/DECK 1\_\_
- NONCOMBUSTIBLE SIDING/COMBUSTIBLE DECK 5\_\_
- COMBUSTIBLE SIDING AND DECK 10\_\_

#### G. UTILITIES (GAS AND/OR ELECTRIC)

- ALL UNDERGROUND UTILITIES 1\_\_
- ONE UNDERGROUND, ONE ABOVE GROUND 3\_\_
- ALL ABOVE GROUND 5\_\_

TOTAL FOR SUBDIVISION: \_\_\_\_\_

#### RATING SCALE:

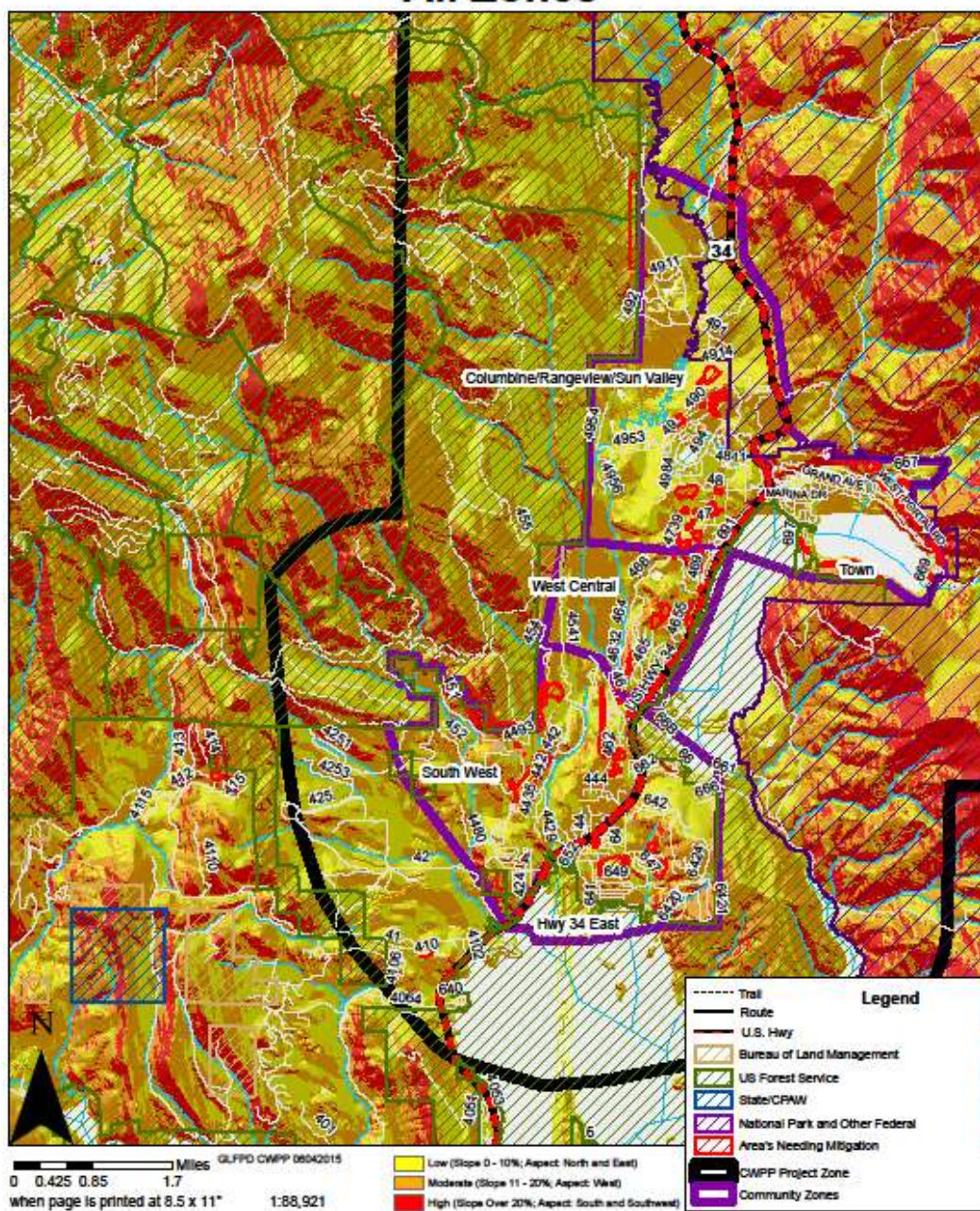
- |                 |         |
|-----------------|---------|
| MODERATE HAZARD | 40 - 59 |
| HIGH HAZARD     | 60 - 74 |
| EXTREME HAZARD  | 75+     |



## Appendix B

Map: [Potential Effect of Slope and Aspect on Fire Behavior for entire CWPP Project Area](#)

### Potential Effect of Slope and Aspect on Fire Behavior with Area's Needing Mitigation All Zones



## Appendix C

### Mitigation Projects Completed, In Process, or Planned since 2006

Agency	Project	Description	Year	Status
C-BT Headwaters Partnership	West Portal Fuel Reduction Project	Clear cut - approximately 15 acres	2014	Contracting
C-BT Headwaters Partnership	WAPA off right-of-way tree hazards	Treatment varies - approximately 5 acres	2015	Completed
Grand County Road and Bridge	Hazard tree removal county road rights-of-way	<p>Grand County removed all “hazard trees” along Grand County owned and maintained county road rights-of way. A hazard tree had been defined as any lodgepole pine 5” dbh or greater within 20’ of the edge of the driving surface, or a standing dead of any other tree species. The project began in 2007 and was completed in 2010. The project spanned from 2007 to 2010 in the Three Lakes area as well. Work was started at the northern most county road, CR 491 and moved south.</p> <p>2007 – CR 491; &lt; 1 mile; 320 trees removed  2008 – CR 49, 48, 47, 471, 469, 466; 5 miles of roads (10 lane miles); 3020 trees removed  2009-2010 remaining county roads in the Three Lakes area— 37 roads; 33 miles (66 lane miles); 1452 properties impacted; 6,275 trees removed</p> <p>Grand County Road and Bridge is continuing on-going tree removal maintenance on county maintained roads as needed.</p>	2007-2010	Completed. On-going maintenance

Agency	Project	Description	Year	Status
MPEI	Grant work	Massive tree clearing around power lines. Treated approximately 200 acres; removed approximately 30,500 trees	2010-2015	Completed
MPEI	Jericho Road Power line	Contracted tree removal service to remove hazardous trees near high voltage power lines on Jericho Road.	2013	Completed
RMNP	Fuel mitigation east side of the Town of Grand Lake just inside the park boundary and deepen and maintain the treatments already established	Fuels reduction activities include; removing large dead logs off the forest floor to potentially shorten the fire duration; removing trees from dense stands to increased crown spacing to lower the potential for tree-top to tree-top fire spread; removing lower limbs and brush from the base of trees to reduce the potential for the trees to torch and generating short range spotting. The treatments also removed many standing dead trees that present a threat of burning at the base and then falling striking firefighters when they are working in the area. Material from these removal activities is piled on site and then burned during the winter when snow and other weather factors are favorable.	2015	Planned
RMNP	Buffer treatments	Over 200 acres of fuels reduction along park boundary with Grand Lake and other adjacent communities on the west side of the park.		Completed
USBR	West Portal Road and boat ramp	Project at the West Portal is currently underway. Mountain Parks Electric has cut the trees near the power and communication lines. USFS crews to complete remainder of work.  It's an 8 acre project to reduce the hazard trees near the road and boat ramp.	2015	In process
WAPA	West Portal Road Granby Pumping Plant-West Portal (GPP-WPL) 69kv transmission line right-of-way	Maintenance project to remove hazard trees in right-of-way along West Portal Road.	2015	In process



## Appendix D

### Cell Tower/Hydrants/Bridges:

<i>Town of Grand Lake</i>		
<u>Hydrant Locations</u>		
Tunnel & Summerland	Jefferson & W Portal	NW Shadow Mtn YC
Tunnel & Bridge	Park & W Portal	SE Shadow Mtn YC
N Inlet & Tunnel	Perry & Park	SW Shadow Mtn YC
Spruce at Aspen	Walden & Mountain Ave	Shoreline Landing - End
N Inlet & Grand	Harmon & Mountain	Shoreline Wy - North
N Inlet (S of Grand)	Perry and Mountain Ave	Gateway E Parking Lot
N Inlet @ River	417 Patterson St.	Gateway W Parking Lot
Lemmon Lodge	Perry & Grand	Pond View
Hancock & Lake	Harmon & Grand	Shadow Park - North
Hancock & Grand	Mountain Food Market	Shadow Park - SE
Rapids Lodge	Lake & Shadow Mtn Dr	Shadow Park - west
Hancock & Mountain Ave	Shadow Mtn & Marina	Mary Dr & Annie Dr
Pitkin & Tunnel	Shadow Mtn & Lakeside	Annie Dr
Pitkin & Park	Jericho - Hilltop Launch	Elk Creek camp ground
Pitkin & Grand	Main & Jericho	CR 48 @ Foxy Lane
Pitkin & Lake	Shoreline Landing	81 Foxy Lane
Garfield & Lake	Point Park	129 Foxy Lane
Garfield & Grand	End of Grand Lake Ln	36 Mad Moose Lane
Garfield & Mountain	Cairns & Grand Lake Ln	Grand Lake Lodge
Ellsworth & Park	Tallaqua & Chipmunk	Water Tank Base
Ellsworth & Grand	612 Cairns @ Marina	Crest of Ridge
Behind Bowling Alley	Daven Haven	Tonahutu Spur 1
Vine & Lake	Center & Marina	Tonahutu Lot 15 -Farview
Vine & Grand	Marina & Sailboat ln	End of Fairview
812 Mountain Ave	312 Lakeside Dr	Tonahutu Lot 6,7
Mountain Ave & Vine	S Grandview Villa's	Tonahutu Lot 13
Mountain & Broadway	Center & W Portal	Tonahutu Lot 9
Broadway & Grand	N Grandview Villa's	Lake Kove
Broadway & Lake	Fire Station	Lake Kove - End
Jefferson & Grand	NE Shadow Mtn YC	Ravenwood @ Grand
		Ravenwood @ Haskell

**Appendix D (cont.)**

<i><b>Shores of Shadow Mountain Hydrant Locations</b></i>	<i><b>Lake Forest / North Shore Hydrant Locations</b></i>	<i><b>Shadow Mtn Village (USFS Complex) Hydrant Locations</b></i>
CR 662 & 34	903 CR 64	101 Shadow Mtn Village
CR 662	1051 CR 64	106 A Shadow Mtn Village
CR 6621 & Cul-de-sac	CR64 & CR642	112 Shadow Mtn Village
CR 6621 & CR 662	CR64 & CR644	71 Shadow Mtn Village
CR 662	CR64 & CR645	68 Shadow Mtn Village
CR 662	CR649	46 Shadow Mtn Village
CR 662 & CR 6622	CR 647	
Cul de sac CR 6662	CR 64 & CR6482	<i><b>Rocky Mtn NP</b></i>
CR 66 & CR 662	1369 CR 649	<u><b>Hydrant Locations</b></u>
CR 66 Lot 12	CR649 & CR6482	462 Housing loop
CR 66 Pump house	92 CR 649	870 Housing loop
	CR641 & CR645	888 Housing loop
<i><b>Shadow Lake Villa's</b></i>	211 CR 645	467 A Housing loop
<u><b>Hydrant Locations</b></u>	321 CR 645	Barn
End of cul de sac	458 CR 645	Maintenance shop
At Hwy 34	433 CR 644	KVC & 34
	339 CR 644	KVC parking lot
	270 CR 644	
	72 CR 6400	
	CR 6400 Middle	
	CR 6400 East end	
	CR 6470 & 647	
	191 CR 6471	
	76 CR 6471	
	343 CR 647	
	487 CR 647	
	526 CR 647	
	932 CR 6482	

### Appendix D (cont.)

<b>Columbine Lake Hydrant Locations</b>	
Kinnikinnick & Deer Dr.	Western Rd. and Kinnikinnick Rd.
Kinnikinnick & Phlox	124 Mustang
Columbine & Kinnikinnick	Columbine Rd. and Aster Ln
Columbine and Holly	Golden Rod Pl. and Kinnikinnick
Holly PL	Columbine Rd. and Deer Dr.
263 Columbine	Columbine Dr. and Laural Ln.
76 Primrose	Laural Ln.
Primrose Cul-de-sac	817 Western Rd.
177 Alpine Cr.	Columbine - West
Alpine Ct. & Alpine Cr	1016 Western Rd.
Western Rd. & Columbine Dr.	Western and Mustang Tr.
Columbine & Beaver Rd.	Marigold Ln
Beaver Rd. & Beaver Ln	258 Kinnikinnick Rd.
272 Beaver Rd.	794 Kinnikinnick Rd.
1148 Columbine	Columbine and Buttercup
Aspen and Columbine	865 Columbine
Western and Elk	94 Columbine
Liris Ln	81 Alpine

<b>Draft Hydrants Locations</b>	
The Harbor	Rangeview
Soda Springs	Soda Springs Old
Soda Springs	Canal CR642
Heidi Hollow	Western Heritage
Town - East Inlet	Wild Acres
Town - Channel	Arapaho- Cistern
CR642 - hockey pond	Mackinaw- Cistern
Sun Valley	Rocky Mtn. Estates



**Appendix D (cont.)**

**District Bridge Apparatus Allowances**

<b><u>Bridge Location</u></b>	<b><u>Weight Limit</u></b>	<b><u>Owner</u></b>
CR 491 at Winding River	No Restrictions	County
Rainbow Bridge/Jericho	No Restrictions	Town
West Portal Rd N. Inlet	No Restrictions	Town
Hwy 34 at Colorado River	No Restrictions	State
CR 66 at Pumping Canal	No Restrictions	County
CR 64 at Pumping Canal	No Restrictions	County
CR 49 at Colorado River	50,000 LBS	Private
CR 4954/Baptist Camp	50,000 LBS	Private
CR 4640 to CR 46 Wild Acres	24,000 LBS	Private
Rocky Mtn Homesteaders	Unknown	Private

## Appendix E

### **Grand Lake Community Evacuation Plan:**

In preparation for a major wildfire event, Grand Lake Fire Protection District (GLFPD) and affiliated agencies have developed a plan to coordinate the evacuation of the Town of Grand Lake and its surrounding communities and to inform the residents and visitors on how to respond should an emergency requiring an evacuation occur within or around Grand Lake, CO.

### **Preparation and Action**

Residents are encouraged to prepare for emergency situations, which may include evacuation. The Ready, Set, Go Wildland Fire Program helps residents be **Ready** with preparedness understanding, be **Set** with situational awareness when fire threatens, and to **Go**, acting early when a fire starts.<sup>5</sup>

**Ready:** Residents should have family disaster plans in place, including evacuation routes, emergency meeting locations, emergency supply kits and up-to-date wildfire information through resources such as social media sites including:

- GLFPD's website, [www.grandlakefire.org](http://www.grandlakefire.org),
- GLFPD's Facebook page, <https://www.facebook.com/pages/Grand-Lake-Fire-Protection-District/247585745385719>,
- Twitter: GrandLakeFire
- Grand County OEM: [www.gcemergency.com](http://www.gcemergency.com)
- local radio stations 106.3FM/930AM.

This is also the time for voluntary evacuations to take place.

**Set:** Residents should be prepared to evacuate as soon as they are set. They should be dressed in the appropriate clothing, have their vehicles packed with important papers and emergency supply kits. They should stay aware of the developing situation by checking the resources listed above for important updates. They may be advised to leave all house lights on, turn off gas; leave doors unlocked, and leave a note on their house clearly visible from the street, etc. This is also the time for voluntary evacuations to take place.

**Go:** Residents shall leave the area using an identified evacuation route and go to a predetermined low-risk area, evacuation center, or Red Cross shelter. Keep up-to-date on wildfire information through resources listed above.

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<sup>5</sup> <http://www.wildlandfirersg.org/>

Residents are encouraged to register cell phones on CodeRED® to receive emergency notifications. Please visit <http://co.grand.co.us/193/CodeRED-Cellular-Emergency-Notification->

### **Visitors**

Visitors of Grand County can download the CodeRED alert app on smartphones. This application transmits geographically-based notifications. While visiting Grand County visitors will be able to receive emergency notifications that could affect them.<sup>6</sup>

For additional information about the Ready-Set-Go program, please visit <http://www.bewildfireready.org/ready-set-go/>

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<sup>6</sup> <http://co.grand.co.us/193/CodeRED-Cellular-Emergency-Notification->

## Evacuation Plan Map:

