



Firewise Communities / USA

Community Assessment for
Greenhorn Creek

Developed by the

**Plumas County
Fire Safe Council**



Plumas County, California

June 2014

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FOREWORD

In August of 2010, The Greenhorn Community sought Title III funding from Plumas County Board of Supervisors to obtain Firewise Community status develop a Community Wildfire Protection Plan (CWPP). The Board of supervisors funded the project. In February of 2013 the Greenhorn Creek CSD Board of Directors voted to enter into a Memorandum of Understanding with the Plumas County Fire Safe Council and their fiscal sponsor Plumas Corporation to provide assistance with the development of an application for the National Fire Protection Association (NFPA) Firewise Communities/USA Program, the development of a CWPP for the community of Greenhorn Creek which has been identified as a “Community-at Risk” within a wildland-urban interface (WUI), an area that figures prominently in wildland fire discussions. Greenhorn Creek consists of both residential developments within a mix of conifer forestlands managed by both the federal government as well as private industrial timber owners making this community a textbook example of the WUI.

The potential for catastrophic wildland fire has been recognized in Greenhorn Creek since its very establishment in 1968. Various efforts have been made over the years to reduce hazards on residential lots and community-owned parcels, and state laws are encouraged regarding the creation and maintenance of defensible space on all lots with structures. The owners/managers of adjacent timberlands have taken steps to reduce hazards on their lands there as well, by way of thinning and general understory cleanup. Nevertheless, fire remains a priority safety concern throughout Greenhorn Creek. In 1990, the community experienced a large wildland fire that originated within the community and spread onto public lands.

In 2001, in the wake of several years of increasingly devastating WUI fires across the nation, the federal government undertook an effort to identify those areas and communities that were threatened by wildland fire. In an August 2001 Federal Register listing Greenhorn Creek was included with many other communities which were identified as “Communities at Risk”. These communities were included in the development of Plumas County Fire Safe Council’s Community Wildfire Protection Plan.

At the local level, Greenhorn Creek has been an active participant in the development of an emergency evacuation plan, training sessions for the VFD to conduct “Home Ignition Zone” Assessments, and has had the benefit of having the CSD owned lands treated to a fire resilient condition with funding assistance from the Plumas County Fire Safe Council. The community has been included in the broader County wide efforts of the Plumas County Community Wildfire Protection Plan (CWPP), the Plumas County wildfire fuel assessments, and the Plumas County, Disaster Mitigation Assistance Plan. Thus, the current *Firewise Communities / USA* initiative is simply the latest formal fire prevention activity pursued by the community of Greenhorn Creek.

1) INTRODUCTION

The Firewise Communities/USA program is designed to provide an effective management approach for preserving wildland living aesthetics. The program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire. The following community assessment is intended as a resource to be used by Greenhorn Creek residents for creating a wildfire safety action plan. The plan developed from the information in this assessment should be implemented in a collaborative manner, and updated and modified annually or as needed.

Principal participants who assisted in the preparation of this assessment are:

Plumas County Fire Safe Council

- Jerry Hurley, Council Coordinator & Advisor to GM Fire Safe Committee

California Department of Forestry & Fire Protection (Cal Fire)

- Shane Vargas, Plumas County Fire Protection

Greenhorn Creek Community Services District

- Janice Bishop
- Candy Miller
- Gayle Higgins
- Zeke Awbrey
- Cecilia Williams

Greenhorn Creek Fire Department

Roy Carter

2) THE HOME IGNITION ZONE

Greenhorn Creek is located in a wildfire environment. Wildfires will happen-- exclusion is not a choice, as lightning accounts for many of the ignitions. The only variables are (a) where the wildfire will occur, (b) when it will occur, (c) what resources will be available at the time of ignition, and d) what the relevant conditions will be at that time. It is this last variable that homeowners can influence, and influence very strongly, by their actions before fire appears.

A house burns because of its relationship with its immediate surroundings, an area called the "home ignition zone". To avoid a home ignition, nearby fuels must be reduced or interrupted and combustible materials found on or up against the home must be protected or eliminated. Homeowners do have the ability to

significantly impact their home ignition zone in either a positive or negative manner. Attention to the need and some relatively simple actions will have a positive impact; inattention, procrastination or denial will have the opposite effect.

This assessment addresses the wildfire-related characteristics of the greater Greenhorn Creek Community. It primarily examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but rather on the community as a whole. In so doing, it deals with widely applicable techniques of fuel interruption that alter or eliminate the natural path that a fire might take. Changing a fuel pathway is a relatively easy-to-accomplish task that homeowners can do, and one that can prevent a tragic structure loss. This is basically a strategy of separating combustible materials from the structure and reducing the volume of vegetation to reduce fire intensity.

The assessment is based on community observations made during the fall of 2013, by wildland fire professionals. It addresses the relative ease or difficulty with which home ignitions could occur under severe wildfire conditions, and how those ignitions might be avoided with prudent preventative action. Greenhorn Creek residents can reduce their risk of home destruction during a wildfire by taking a few important steps within the home ignition zone, which includes the structure itself and an area extending outward about 100 to 150 feet. By addressing community vulnerabilities in advance, residents will be able to substantially reduce their exposure to loss. Relatively small investments of time and effort will reap large rewards in wildfire safety.

While each home ignition zone is an independent entity, managed by the owner of the individual property, the combined home ignition zones in a development can form either an invitation to wildfire or a barrier. This is further complicated by overlapping home ignition zones found in most of Greenhorn Creek with typical lot sizes resulting in relatively close proximity to neighboring structures. Embers produced by burning vegetation or structures on one lot can easily drift onto adjacent lots, and these can lead to new ignitions and spot fires. This is why a community approach is just as important as the need for individual property owners to protect their individual homes.

The community must recognize that in the event of a major fire emergency, there simply will not be enough fire trucks and crews to protect all or even a large portion of the homes in the District. Home survivability often is determined by the extent of work accomplished in the home ignition zone.

Residents need to be conscious of keeping high-intensity fire more than 100 feet from their homes and to prepare homes for the eventual ember blizzard that can occur during intense wildland fires. It is important for them to ensure that the fire does not come into contact with their structures; this includes firebrands. The assessment team recommends the establishment of a 'fire free zone', allowing no fire to burn within ten feet of a house by removing combustible materials

adjacent to structures. All efforts should be made to ensure that fire is not permitted to come in contact with a structure during a wildfire. Remember that, while wildfire cannot be eliminated from a property, it can be reduced in intensity.

Homeowners are reminded that street signs, addresses, road widths and fire hydrants do not keep a house from igniting. Proper attention to their home ignition zones does. They should identify the things that will ignite their homes and address those.

3) SEVERE CASE WILDLAND FIRE CHARACTERISTICS

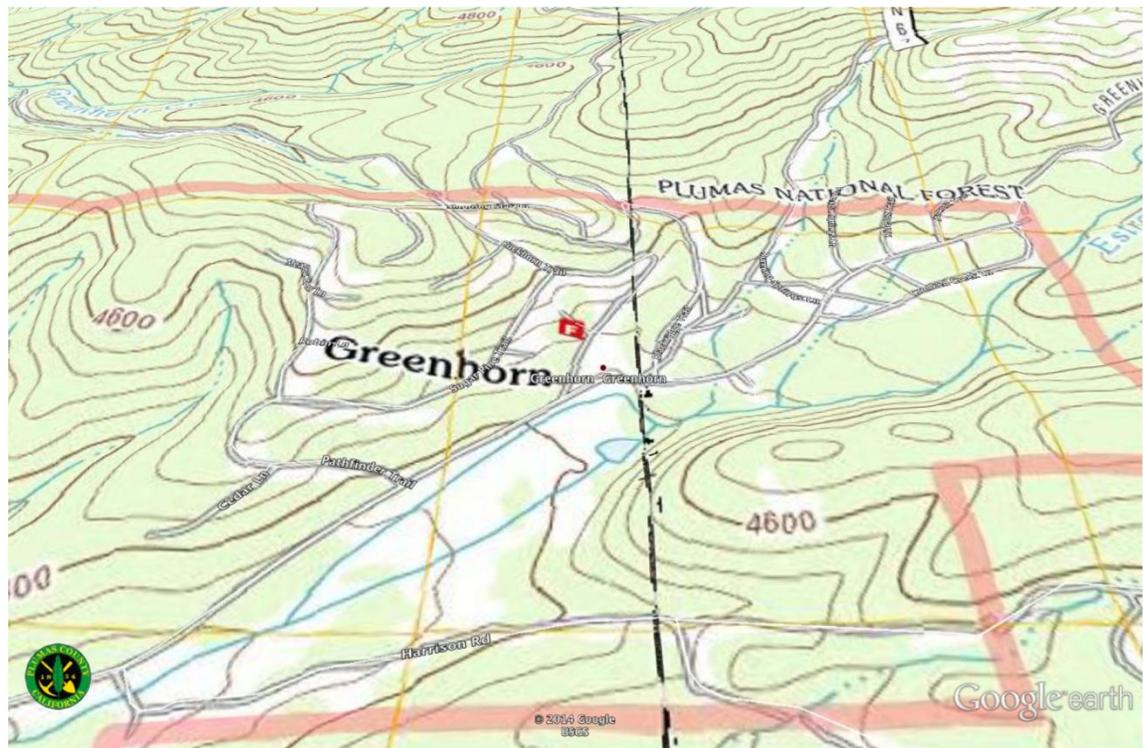
Firefighters generally categorize fires into several basic types. Among those are wildland fires and structure fires, these two types of fires are relevant to this assessment. A wildland fire is one that primarily occurs within and consumes natural vegetation, while a structure fire primarily burns structural materials and building contents. These two fire types converge in the wildland-urban interface (WUI).

Locally, wildland fires are addressed by the U.S. Forest Service (USFS) on National Forest lands and private lands by contractual agreement with California Department of Forestry and Fire Protection (CAL FIRE). The Greenhorn Creek VFD generally addresses structure fires and medical aid. Response to a WUI fire in Greenhorn Creek would involve the Greenhorn Creek VFD, USFS and other mutual-aid resources under a unified command.

Fire intensity and spread rate depend on the fuel type and condition (live/dead), the weather conditions prior and during ignition, and the topography. Generally the following relationships hold between the fire behavior and the fuel, weather and topography.

- Fine fuels ignite more easily and spread faster with higher intensities than coarser fuels. For a given fuel, the more there is and the more continuous it is, the faster the fire spreads and the higher the intensities. Fine fuels take a shorter time to burn out than coarser fuels. Fine fuels have the most important impact on fire intensity as measured by flame lengths. Fine fuels are considered the primary carrier of fire in fire modeling.
- The weather conditions affect the moisture content of the dead and live vegetative fuels. Dead fine fuel moisture content is highly dependent on the relative humidity and the degree of sun exposure. The lower the relative humidity and the greater the sun exposure, the lower the fuel moisture content. Lower fuel moistures produce higher spread rates and fire intensities.

- Wind speed significantly influences the rate of fire spread and fire intensity. The higher the wind speed, the greater the spread rate and intensity.
- Topography influences fire behavior principally by aspect and the steepness of the slope. However, the configuration of the terrain such as narrow draws, saddles and so forth can influence fire spread and intensity. In general, south and southwest aspects tend to be warmer and drier; the steeper the slope, the higher the intensity and the more rapid rate of uphill fire spread.



Google earth

feet 2000
meters 700



Greenhorn Creek is situated in a forested area bounded by steep terrain and dry southerly slopes to the south. That setting, coupled with prevailing summertime breezes and strong fall pre-frontal winds from the southwest to west, suggests that the most likely spread of a wildland fire would be from the south or west (as can be seen in prior large fires that have burned in the area). Also, because Plumas County has some of the highest incidence of lightning fires in California, ignitions from a lightning fire can spread in any direction under the influence of downdrafts during thunderstorms.

Embers or firebrands are produced from burning needles, leaves, bark, twigs and cones, when natural vegetation burns. Embers tend to be carried aloft by the

superheated air generated by the blaze and can then be carried long distances in advance of the actual flame front by even light winds. It is not uncommon to find glowing embers a mile ahead of the main fire.

If the conditions are right, millions of embers can be produced in a relatively short time by even a modest wildland blaze. These tend to fly like incendiary snowflakes, eventually settling to the surface and even “drifting” to form small clumps. If they land on a combustible material, they can cause a new ignition even though the main fire is still a long distance away. This is the way that “spot fires” are ignited. This is also the primary threat to residences.

Fire modeling accomplished as part of the 2004 *Plumas County Hazardous Fuel Assessment and Strategy* indicated that fire behavior in the community and adjacent timber would be conducive to passive an active crown fire with some surface fire. Due to efforts of the CSD and adjacent landowners since this study, some lands have been treated to a more fire resilient condition, which would result in more surface fire on these treated lands. Prior fires have also bore out these modeling estimates.

Torching trees both increase fire intensity and become excellent generators of embers for spotting. Thus, the preventative actions taken on those treated lands have reduced the potential intensity and ember production of an approaching fire; but the community can still anticipate a severe “ember attack” during a wildland fire event in untreated stands both adjacent and within the community.

For purposes of this assessment, there are two viable scenarios for a severe wildland fire event, a) would be a major blaze in untreated forestlands southwest of community bringing fire up the canyon, producing large quantities of windblown embers, and b) a lightning strike without precipitation and the rapid onset of downdrafts. Subsequent spot fires, torching trees or burning structures in the interiors of developments could produce additional quantities of embers, contributing to further ignition potential and suppression difficulty.

Topography and Vegetation

The topography of the district varies from a low point of 4,300 feet above mean sea level (msl) and rising to 4,708 feet msl at the highest point. Slopes steepness ranges from 0 to 35%, with occasional steeper pitches.

The vegetation in the surrounding area is a predominately densely forested land with a brush or litter understory. Those lands that are untreated are prone to torching and crowning due to the abundance of fuel and fuel continuity.

Some forestlands to the south and west of Greenhorn Creek have been treated to reduce fire hazards by various landowners. These treatments have included the thinning and understory burning on some Plumas National Forest public lands. Those lands that have received treatment have reduced, but have not completely eliminated the probability of high intensity crown fires around the community. Some of those treatments are in need of follow-up maintenance.

About 40% of the community land base consists of untreated lots that have heavy fuel loads that would complicate fire suppression efforts and increase the production of embers. There are a number of features within the community that could lessen wildfire impacts. A number of parcels within the community have received Hazardous Fuel Reduction (HFR) treatments. The CSD has an ordinance and the authority to enforce compliance with California's defensible space law on developed properties; they also can enforce maintenance on undeveloped properties as needed to achieve California's Public Resource Code (PRC) 4291 compliance.

Fire Hydrant System

Greenhorn Creek is served by a residential fire hydrant system. The domestic water supply and hydrant supply system is gravity fed from two large storage tanks, each with a 100,000 gallon capacity. In addition, the system also has an 8,000 gallon capacity tank. All tanks are located on the hilltop area of the development. Water can be replenished to the tanks at a rate of more than 210 gallons per minute when the two (2) domestic well pumps are operating. Basic flow rate at the individual hydrants typically varies from 500 to over 750 gallons per minute, depending on hydrant location; even higher flow rates are available if the water is "drawn" by the fire engine

Demographics

The most recent official census in 2000 indicated that the community of Greenhorn Creek had a total population of 236 individuals in 140 households at that time. These numbers represent those who claim residency within the

development, as opposed to those who may have a second home or vacation home here. This difference is further clarified by the census count of 140 total housing units within the development, versus 106 “full time” households, indicating that nearly half of the homes in Greenhorn Creek at that time were only occupied on a part-time or occasional basis. Of the full time population, 27% were age 55 or older, and 18% were age 65 or older.

During the winter months, the number of occupied residences drops even lower than what the above figures would indicate as “snow birds” migrate to warmer climates for periods of up to several months.

Local Fire Department

The Greenhorn Creek VFD consists of one station located in the center of the community. The Greenhorn VFD, a county-chartered entity provides fire prevention, fire suppression and emergency medical services.

Personnel

Greenhorn Creek has 6 local residents who are volunteer firefighters.

Equipment

Station One:

2005 – Type 3 Wildland unit

1971– TYPE 2/ International

1978– Ford Pickup truck

Departmental resources also include up-to-date firefighter gear for all responders (i.e., protective clothing, breathing apparatus, and radios), necessary firefighting tools, appropriate medical response equipment and supplies are carried on those vehicles.

Automatic aid and mutual aid agreements are in place with other nearby agencies to supplement the Greenhorn VFD force as required. Such support in the event of a major structural fire would typically come from the similar agencies at, Quincy, C-Road, Long Valley, Eastern Plumas, Meadow Valley, Indian Valley and Portola.

ISO Fire Rating

The Insurance Services Office, Inc. (ISO) is the principal supplier of statistical, actuarial and underwriting information for the property insurance industry. ISO fire insurance ratings serve as an industry standard, a foundation upon which most insurers build their coverage programs. Their ratings are based on several factors including:

- The quality of the fire department
- The water supply and hydrant system

- Communication systems
- Building codes
- Property inspection programs

ISO ratings range from 1 to 10, with 1 being perfect. Since the ISO insurance companies to set insurance premium rates, the lower the ISO fire rating, the lower the premium use ratings.

Greenhorn Creek has an ISO rating of 7.

Wildfire History

Wildland fires usually occur between June and October, a period of time commonly referred to as fire season. However, it is not uncommon for fires to occur as early as April and as late as November.

Wildland fires are not a new problem to the Greenhorn Creek community. In 1990, a wildfire originated within the community and burned about 1,000 acres onto public lands managed by the US Forest Service, Plumas NF.

Between 1985 and 2010, there have been over 30 wildland fires that received initial attack actions by Plumas NF fire personnel within a 2-mile radius of the community.

5) ASSESSMENT PROCESS

A team approach was taken in preparing this assessment of fire hazards and risks to the Greenhorn Creek community. Relevant background data was initially collected and distributed for review by the several team members identified in the Introduction to this document. That group then conducted a visual review of the community from a roadside perspective. Observations were noted of both favorable and unfavorable conditions, summaries of these can be found in subsequent sections of this document. The combined information led to the development of recommendations for mitigation actions through a collaborative process where draft materials were circulated, reviewed, revised based on inputs from the team and re-circulated for follow-up review.

A key event in the process was the community inspection, which took place on November 2013. Team members conducting that inspection were Jerry Hurley, an experienced wildland firefighter and fire management officer who has been the coordinator for the Plumas County Fire Safe Council; Roy Carter, Greenhorn Fire Captain, Cal Fire representative Shane Vargas who is the Fire Prevention Specialist for Plumas County, and Sue McCourt Wildland Fire Prevention Specialist for Plumas County.

The Complete report of observations and recommendations are included in Appendix B.

6) IMPORTANT CONSIDERATIONS

The Firewise Communities/USA program seeks to create a sustainable balance that will allow communities to live safely while maintaining environmental harmony in a WUI setting. Homeowners already balance their decisions about fire protection measures against their desire for certain flammable components on their properties. It is important for them to understand the implications of the choices they are making. These choices directly relate to the ignitability of their home ignition zones during a wildfire.

The three most important considerations to provide a safer community would be:

- 1) All residents have proper defensible space on their property



- 2) All properties should be treated to provide a full 100 feet of defensible space around all structures-in compliance with the CSD's "*Fire Fuel Clear of 100 Feet Around All Structures*" ordinance.



- 3) Seek treatment and maintenance of all vacant parcels to achieve a fire resilient condition that would prevent continued tree torching and ember production within the community during a wildfire.



7) OBSERVATIONS AND RECOMMENDATIONS

A team approach was taken in preparing this assessment of fire hazards and risks at Greenhorn Creek. To view the complete details see the full assessment report in Appendix B.

Positive Community Attributes:

- ❖ The community has their own Volunteer Fire Department (VFD).
- ❖ Fire hydrants are extensive and available throughout the community & there is substantial water storage to support them. There are also two ponds accessible for drafting and one would support helicopter dipping.
- ❖ The CSD has an ordinance requiring a “*Fire Fuel Clear of 100 Feet Around All Structures*” regardless of property ownership. But at present does not enforce it. This goes above CA State law, Public Resources Code 4291, which only requires defensible space to the property boundary.
- ❖ For the most part, overall construction is fire resistant with mostly Class A or B roofs and fire resistant siding.
- ❖ There are a number of excellent examples within the community of a Firewise home and property.
- ❖ While roads are not paved they are hard packed dirt and well maintained.
- ❖ Road signs in sub-division #1 are well posted and reflectorized.
- ❖ Some of the CSD parcels in the community have been treated to a fire resilient condition through grants and assistance from the Plumas County Fire Safe Council.
- ❖ Greenhorn Creek has a community burn pile for disposing of green yard waste trimmings and pine needles from efforts of those citizens who maintain their defensible space.
- ❖ There have been efforts years earlier to reduce the hazardous fuel conditions on some of the surrounding large landowner parcels.

Items creating an increased risk to community safety:

Areas identified as a concern or for improvement

A. Structures & Defensible Space

- While Defensible Space in the “Lean Clean, Green Zone” (0-30 feet) was present on many residences, there is still a need for fine-tuning. However, there were some homes with grass and forest litter accumulations right up to the structures with combustible wood siding, decking lattice or ornamental vegetation.
- Most homes lacked adequate treatment in what is referred to as the “Reduced Fuel Zone” (30-100 feet). This is due in part to the

small lot sizes not extending 100 feet from the structures. However, enforcement of the Greenhorn Creek CSD ordinance *Fire Fuel Clear of 100 Feet Around All Structures* would reduce the acres of untreated fuels, provide additional protection to all homes and improve the survivability of structures within the community.

- Many homes had firewood stored immediately adjacent to the structure, on porches or under decks, or in close proximity to structures. But because this assessment was accomplished in November, it may not accurately reflect summer time practices.
- Some of roofs and gutters had substantial needle accumulation.
- There are homes where highly flammable ornamental vegetation (such as junipers) was immediately adjacent to structures, decks or along driveways. These plants increase risk of structure ignitions and can create additional hazards for emergency responders.
- A number of decks were skirted by decorative lattice, often these structures had vegetation growing right up to them.
- Some homes have wooden fences surrounding the home and attached directly to the residence creating a wick for fire spread from the wild land, to the fence, to the structure.
- A number of residents had large collections of excess human treasures and/or flammable materials stored on their lots, adjacent to structures or under decks. These accumulations could increase structure ignition and/or create hazards to firefighters attempting to take actions in structure protection.
- A number of homes lacked clearance to mineral soil around propane tanks.
- Propane tank regulators. While not wildfire issues per say, a number of regulators were next to the tank under trees and have potential to be damaged from falling snow or ice loads allowing for propane leaks that have caused explosions or structure fires in the winter.

B. Access

1) Driveways



- Currently many homes lack adequate address signing. Consistent house numbering along roads at driveways would be extremely beneficial to responding emergency service providers (visible & reflectorized.). The VFD may want to consider a “If we can’t find you, we can’t help you” campaign.
- Driveways should have slopes less than 16%. Be cleared of vegetation and depending on length meet other state requirements, so as not to put citizens and emergency personnel at risk.
- Most of the existing structural driveway problems can’t be corrected, except for clearance of vegetation. However, the community could pay attention to future development/new home construction with respect to driveways complying with PRC 4290.

2) Roads



- Subdivision #1 has reflectorized street signs, but they don’t exist in Subdivision #2, making emergency response and assistance more

difficult in smoky or nighttime conditions, especially for assisting resources that may be from out of the area.



- A number of the community roads dead-end and don't provide adequate turnarounds for suppression equipment or go off into the forest and don't provide adequate egress in the event of an evacuation.

C. Vegetation between the Home Ignition Zones (HIZ).

1) Vacant Lots –

- There are number examples of, both CSD and private, lots that have been treated to a fire resilient condition. It is estimated that about 40% of the parcels in the community are undeveloped or vacant lots. This poses a significant threat that will contribute to fire spread within the community from active tree torching and generating embers for additional spot fires and fire perpetuation within the community.

2) Forested Lands surrounding the community –

- While there have been a number of efforts in the past to reduce the hazardous fuel conditions on some of the surrounding large landowner parcels, a number of the properties are becoming in need of maintenance or they will lose the initial benefit provided by those treatments.

8) SUCCESSFUL FIREWISE MODIFICATIONS

Additional community efforts that promote fire prevention and suppression in Greenhorn Creek:

- **Parcel Consultations**

The Greenhorn Creek VFD has participated in trainings to provide voluntary Home Ignition Zone consultations for homeowners, reviewing these parcels for compliance with state law (i.e., PRC 4291).

- **Community Hazardous Fuel Reduction (HFR)**

PC FSC provided assistance to the community in obtaining funding and implementing Hazardous Fuel Reduction (HFR) on 20 Community Services District (CSD) parcels, totaling 30 acres, from 2005-2007.

- **Information Availability**

Public education is a continuing effort of Greenhorn Creek CSD and VFD and the local Fire Safe Council. A variety of information sheets, pamphlets, brochures and video materials are available to property owners at the Greenhorn Creek fire hall. Additional fire prevention and parcel cleanup information is available on the Firewise Communities/USA website (<http://www.firewise.org>), the Plumas County Fire Safe Council website (<http://www.plumasfiresafe.org>), and the California Department of Forestry and Fire Protection (Cal Fire) website (<http://www.fire.ca.gov>). The availability of these information sources is made known via local community websites and periodic local newspaper articles, newsletters, and other mailings sent to all Greenhorn Creek property owners, as well as items posted on community bulletin boards. The Greenhorn Creek CSD currently has a website for additional distribution of information.

Prior Documentation

Formal documentation for the area was addressed by the larger Plumas County Fire Safe Council, which published the more comprehensive:

- *“Plumas County Hazardous Fuel Assessment and Strategy”, 2004*
- *“Plumas County Community Wildfire Protection Plan” (CWPP), Created in 2005 and updated in 2013.*

These two items are available online at the Plumas County Fire Safe Council website (<http://www.plumasfiresafe.org>).

9) NEXT STEPS

This Assessment is a first step in a longer process leading to improved wildfire safety in the community.

When adequately prepared, research has shown that, homes can likely withstand a wildfire even without the intervention of the fire service. The Firewise Communities/USA program is designed to enable communities to achieve a high level of protection against WUI fire loss even as a sustainable ecosystem balance is maintained.

A homeowner/community should first focus their attention on the home ignition zones and eliminate the fire’s potential relationship with the house and then work outward from the homes into the vacant lots working to create a fire resilient community.

The community should work together to create and maintain fire resilient conditions on the undeveloped lots to prevent tree torching and ember production.

Following a review and approval of the contents of this assessment and the recommendation for approval by the Greenhorn Creek CSD Board, the CSD appointed Firewise representative will then contact the California Fire Safe Council Firewise representative to submit an application.

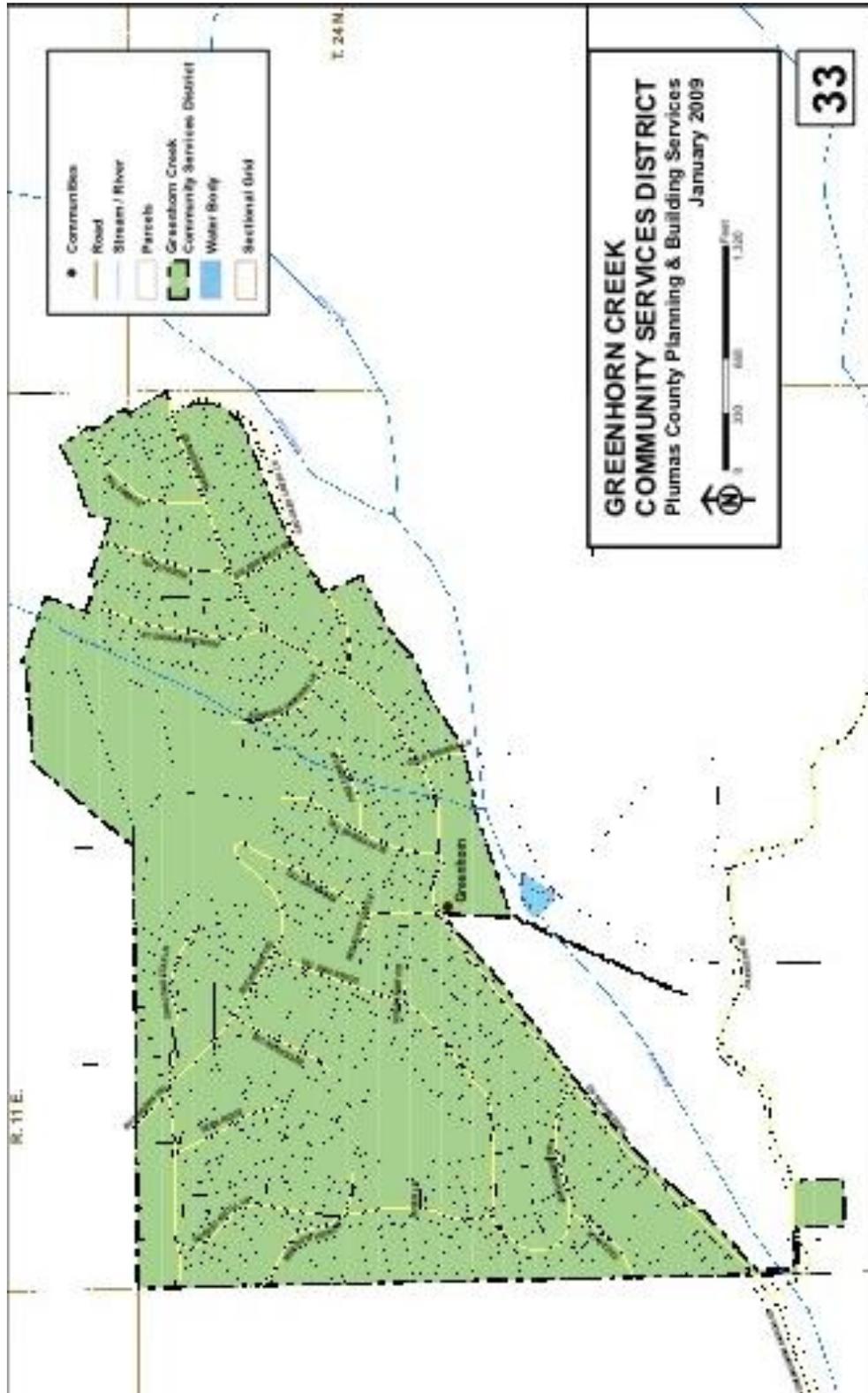
Assuming the assessment area seeks to achieve national Firewise Communities/USA recognition status, it will integrate the following standards into its plan of action:

- Sponsor a local Firewise board, task force, committee, commission or department to:
 - Create a plan from which to achieve community agreed-upon solutions for the recommendations of the WUI specialist.

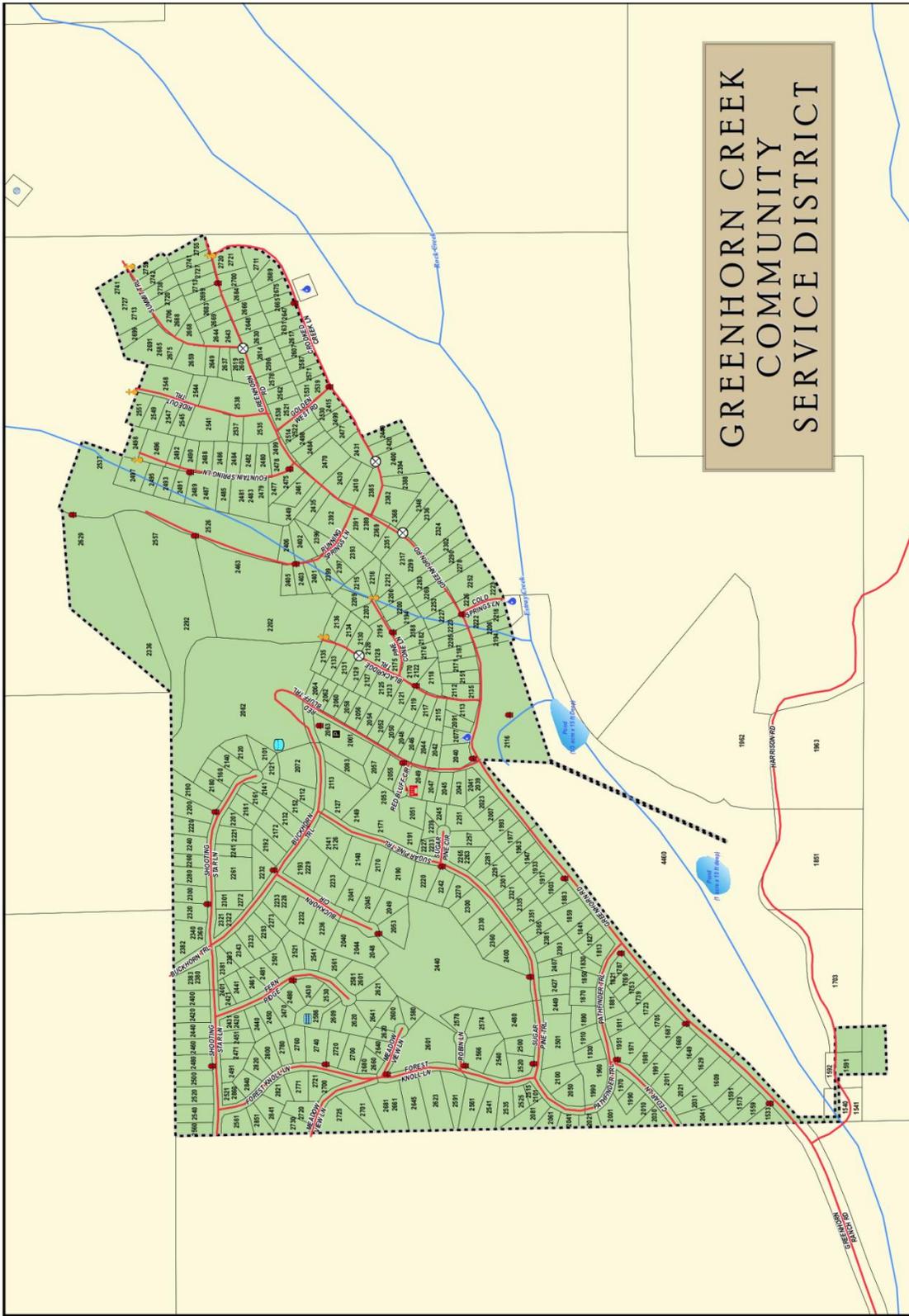
- Maintain the Firewise Community program planning and status reporting.
- Record and report the minimum of \$2.00 annually per capita of Firewise contributions towards the Communities/USA program. (Work done by municipal employees or volunteers, using municipal or other equipment, can be included, as can state/federal grants dedicated to that purpose.)
- Plan & organize a Firewise Communities/USA Day each spring that is dedicated to a local Firewise project.
- Submit an annual report to Firewise Communities/USA documenting continuing participation in the program.

APPENDIX A--Maps

- **Greenhorn Creek Subdivision Map**
- **Greenhorn Creek Hydrant Map**
- **Greenhorn Creek Evacuation Map**

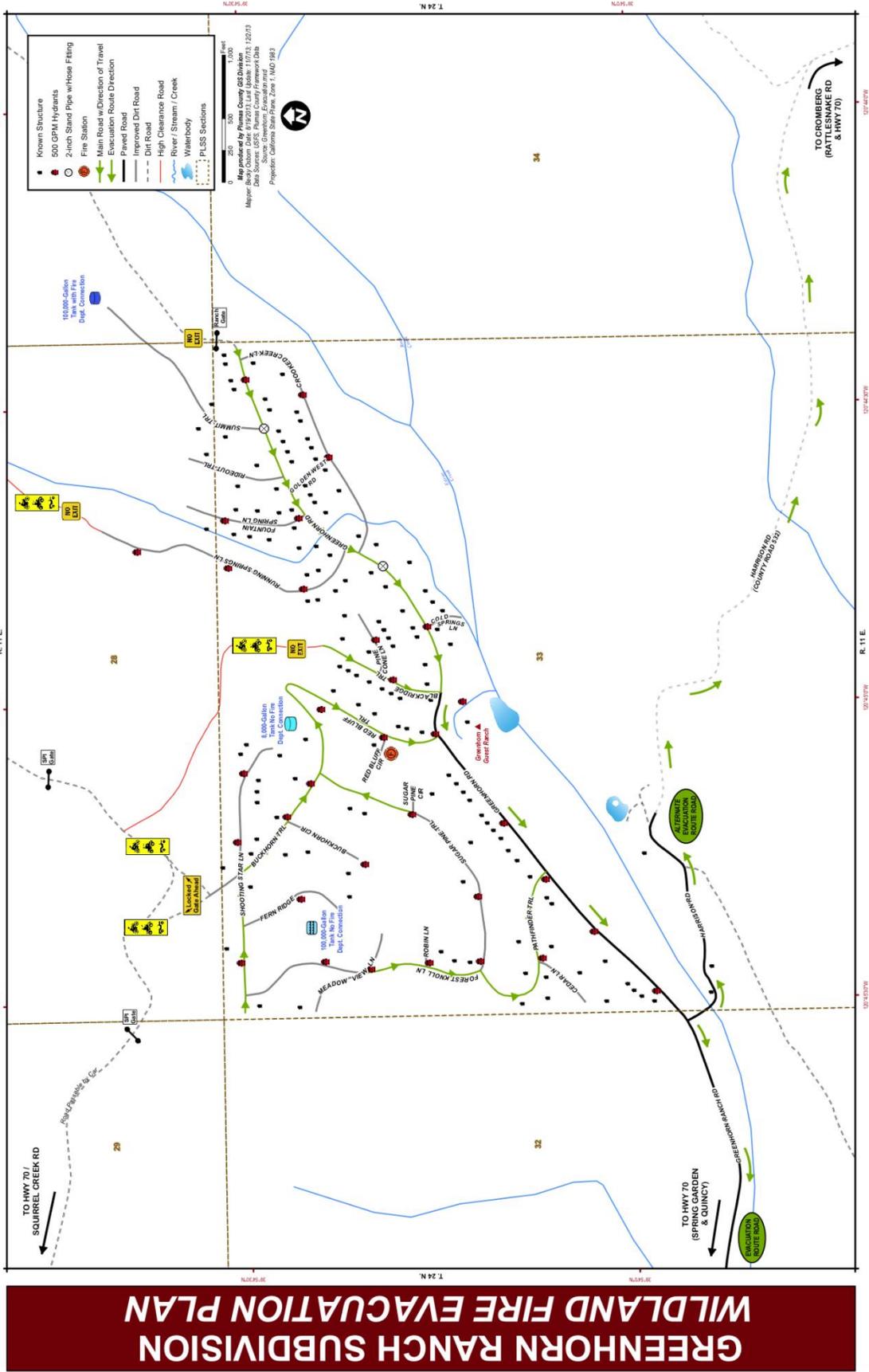


Source: GIS - Greenhorn Creek, CA, 7/2007
 Date Created: 1/2009
 Last Updated: 1/2009
 Author: Recorder 402030
 Reporter: California State River Zone 1 AND 33, Part



Disclaimer
 Plumas County GIS data is deemed reliable but provided "as is" and makes no warranty, representation or guarantee as to the content, sequence, accuracy, timeliness or completeness of any of the database information or spatial locations depicted. These map documents do not represent a legal survey of the land and are for graphical purposes only. Use of this data should be with acknowledgement of the limitations of the data including the fact that the data is dynamic and is in a constant state of maintenance, correction, and update.

Map produced by Plumas County GIS Services 10/23/2017
 Source: Greenhorn, CSD, Hydrant, 10/2017
 Mayor: Bory O'Brien
 Plumas County GIS Services 10/23/2017
 Source: Greenhorn, CSD, Hydrant, 10/2017



APPENDIX B--Greenhorn Creek Hazard Assessment

Plumas County Fire Safe Council



June 28, 2014

To: Roy Carter
Subject: Greenhorn Creek Firewise Assessment Review

This is the final version of our field assessment. On Friday November 15, 2013, I assisted the Roy Carter with Greenhorn Creek Community Service District (CSD) in a review of general community wildfire threats and hazards as part of their community assessment process in applying to become a recognized Firewise USA Community. I participated in this review with Shane Vargas, CAL FIRE, and Sue McCourt County Fire Prevention Specialist.

The Plumas County Fire Safe Council has worked with the Greenhorn Community on a number of wildfire mitigation projects since 2002.

- 2002-2004, the Council provided training to VFD members to conduct voluntary educational Home Ignition Zone Assessments.
- 2004-2005 – Greenhorn Creek community members assisted in developing a County-wide Community Wildfire Protection Plan (CWPP).
- 2005-2007, the Council sought grant funding and provided project implementation assistance to reduce hazardous fuel conditions on 20 CSD owned parcels totaling 30 acres.
- 2010, the Greenhorn Creek CSD obtained a Title III Grant from the County Board of Supervisors to develop a Firewise Application and create a Community Wildfire Protection Plan (CWPP)

Risk of Wildfire to the community

Because of the topography, slopes, and prevailing winds, there is a good chance that a fire could run into the community from surrounding forest vegetation. There is also a risk of a large fire in the surrounding hills raining embers into the different communities. Those embers would create spotfires, could cause torching of the pockets of excessive fuels and the fire would be perpetuated from within by spotting & torching. The Community of Greenhorn Creek is most at risk due to the close proximity of homes and vacant lots with untreated fuels.

Positive Community Attributes:

- ❖ The community has its own Volunteer Fire Department (VFD).

- ❖ Fire hydrants are extensive and available throughout the community & there is substantial water storage to support them. There are also two ponds accessible for drafting and one would support helicopter dipping.
- ❖ The CSD has an ordinance requiring a “*Fire Fuel Clear of 100 Feet Around All Structures*”, regardless of property ownership. But at present does not enforce it. This goes above CA State law, Public Resources Code 4291, which only requires defensible space to the property boundary.
- ❖ For the most part, overall construction is fire resistant with mostly Class A or B roofs and fire resistant siding.
- ❖ There are a number of excellent examples within the community of a Firewise home and property.
- ❖ While roads are not paved they are hard packed dirt and well maintained.
- ❖ Road signs in sub-division #1 are well posted and reflectorized.
- ❖ Utilities in sub-division #2 are above & below ground.
- ❖ Many of the CSD parcels in the community have been treated to a fire resilient condition through grants and assistance from the PC FSC.
- ❖ Greenhorn Creek has a community burn pile for disposing of green yard waste trimmings and pine needles from efforts of those citizens who maintain their defensible space.
- ❖ There have been efforts years earlier to reduce the hazardous fuel conditions on some of the surrounding large landowner parcels. But a number of them are in need of maintenance or they will lose the initial benefit provided.

Items creating an increase in Risk to community safety:

Areas identified as a concern or area for improvement

A. Structures & Defensible Space

1) Risk Conditions existing on many of the homes

- While Defensible Space in the “Lean Clean, Green Zone” (0-30 feet) was present on many residences. There still exists a need for fine-tuning or additional work on many of those homes.
- Most homes lacked adequate treatment in what is referred to as the “Reduced Fuel Zone” (30-100 feet). This is due in part to the small lot sizes not extending 100 feet from the structures. Untreated fuel hazards exist on the adjacent undeveloped parcels, usually under another ownership. These vacant lots have a high potential for torching and crowning during a wildfire, which will continue to generate additional embers and risk to the community. Enforcement of the Greenhorn Creek CSD ordinance *Fire Fuel Clear of 100 Feet Around All Structures* would provide additional protection to all homes and structures within the community.
- Many homes had firewood stored immediately adjacent to the structure, on porches or under decks, or in close proximity to structures. But because this assessment was accomplished in November, it may not accurately reflect summer time practices. However if left in place, this would pose a significant risk if left there in the fire season. Firewood piles can burn with intensities similar to a small structure; are excellent

recipients of embers. Residents should be educated of the importance that during fire season that firewood should be either isolated (>30') from a structure, or protected with flame resistant covers to prevent ember intrusion if next to or below the structure.

- A number of homes lacked clearance to mineral soil around the propane tanks. Without clearance, wildfire will burn up to, under and around them and potentially ignite them. There were also some instances of either firewood or other flammable materials in close proximity (<10') of the propane tanks. Propane tanks should have at clearance to mineral soil of 10 feet and nothing combustible stored next to them.

2) Risk Conditions existing on some of the homes

- There were some homes with grass and forest litter accumulations right up to the structures with combustible wood siding, creating a wick to initiate structure ignition. Structures with combustible siding should have at least 6 feet of mineral soil or rock paths around the structure.
- Some of roofs and gutters had substantial needle collection. CA State Defensible Space Law, PRC 4291, requires roofs be free of leaves and needles and overhanging branches
- There were homes where the highly flammable ornamental vegetation (such as junipers, immediately adjacent to structures, decks or along driveways, increase risk of structure ignitions. Residents should consider isolating highly flammable vegetation that could easily ignite structures or create additional hazards for emergency responders.
- A number of decks were skirted by decorative lattice, often with vegetation right up to it, which can be easily ignited from fire creeping in pine needles or adjacent ornamental vegetation. Structures with lattice should consider creating least 6 feet of mineral soil or rock paths around the structure.
- Some homes have wooden fences surrounding the home and attached directly to the residence. This creates a wick for fire spread from the wildland, to the fence, to the structure. A separation is recommended using a non-combustible material.
- A number of homes had large amounts of human debris and/or flammable materials stored under decks, thereby increasing the risk of embers igniting the materials and consequently the deck and house. Homeowners education about factors contributing to home ignition could provide beneficial to the community.
- A number of homes had large amounts of human debris, some flammable, adjacent to structures that could increase structure ignition or create hazards to firefighter attempting to take actions in structure protection. While the CA Defensible Space Law PRC 4291 does include non-vegetation flammable materials as requiring treatment, there is no requirement for other human debris that can create obstacles. Informing and educating the public as to the importance of creating a safer environment for firefighters in which to work may increase the chances of having their home protected.

- Propane tank regulators. While not wildfire issues per say, a number of regulators were next to the tank under trees and have potential to be damaged from falling snow or ice loads. Snow or falling tree branches have caused a mechanical failure allowing for propane leaks that have caused explosions or structure fires in the winter.

B. Vegetation beyond the Home Ignition Zone (HIZ) or 100 foot Reduced Fuel Zone.

1) Vacant Lots –

- There are number examples of, both CSD and private, lots that have been treated to a fire resilient condition. It is estimated that about 40% of the parcels in the community being undeveloped or vacant lots, this poses a significant threat that will contribute to fire spread within the community from active tree torching and generating embers for additional spot fires and fire perpetuation within the community.
- While the CSD has an ordinance requiring defensible space up to 100 feet from structures, regardless of property ownership, enforcement could significantly reduce the acres of untreated fuels within the community and significantly improve the survivability of structures within the community.
- Educating all vacant lot owners as to the survivability of their property by creating fire resilient properties would have the benefit of minimizing the esthetic loss to the community. This would also lessen the risk of fire spread being perpetuated within the community, in the event of a wildfire.
- Fire resilient conditions are created by fuel treatment that reduces the potential for torching and consequently lessens ember production, creating less spot fires. Spot fires are a leading cause of fire perpetuation in our area. Effective fuel treatments reduce the volume of surface and ladder fuels and increase both horizontal and vertical separation of fuels that reduces the potential of trees torching out, increasing ember production and the propagation of fire spread within the community. These treatments should also increase the “Crown to base height” (distance from surface fuels to the average height of the lower branches of the residual trees, which is a key factor in trees torching out.)

2) Forested Lands surrounding the community –

- As mentioned in positive community attributes there have been a number of efforts years earlier to reduce the hazardous fuel conditions on some of the surrounding large landowner parcels. A number of them are becoming in need of maintenance or they will lose the initial benefit provided. There may be opportunities to work with some of these large landowners, including the U.S. Forest Service that manages the adjacent public lands.

C. Access

1) Driveways

- Currently many homes lack adequate address signing. Consistent house numbering along roads at driveways would be extremely beneficial to responding emergency service providers (visible & reflectorized.). The

VFD may want to consider a “If we can’t find you, we can’t help you” campaign.

- A number of driveways have potential to put citizens and emergency personnel at risk.
 - Factors include:
 - Excessive slopes (<13% or 16% county approved engineering & paved)
 - Lack of turnarounds (>300’= TA within 50’ of structure)
 - Lack of turnouts (150’-800’ =TO halfway, >800’=TO every 400’)
 - Driveway clearance of vegetation 10’ wide by 15’ high for all driveways.
- Most of the existing structural driveway problems can’t be corrected, except for clearance of vegetation. However, the community could pay attention to future development/new home construction with respect to driveways. CA Public Resources Code (PRC) 4290 is an excellent source for information.

2) Roads

Subdivision #1 has reflectorized street signs, but they don’t exist in Subdivision #2, making emergency access and assistance more difficult in smoky or nighttime conditions, especially for assisting resources that may be from out of the area. Adding reflectorized street signs in Subdivision #2 would be highly beneficial.

- A number of the community roads dead-end and don’t provide adequate turnarounds for suppression equipment. Examples include Cedar Lane, Sugar Pine Circle, Buckhorn Circle, and Fountain Springs. Fern Ridge is an excellent example of what is desirable. Additionally a number of roads go off into the forest and don’t provide adequate egress in the event of an evacuation. Signing of these roads with “No Turnaround” or “No Outlet” could minimize difficulties for suppression equipment and evacuation efforts. There is also potential to use future driveways at the end of dead end roads that lack adequate turnarounds to provide the “same practical effect, if they were to “T” off of the roads. CA Public Resources Code (PRC) 4290 is an excellent source for information.

Roy, I have appreciated the opportunity to assist you and your committee in a review of the Greenhorn Ranch community wildfire hazards as part the assessment for applying to become a recognized Firewise Community. I applaud the efforts of both you and the CSD Board in working to become a recognized Firewise Community.

Respectfully,

/s/JERRY HURLEY
Jerry Hurley
PC FSC Coordinator

CC: Shane Vargas
Sue McCourt

APPENDIX C-- Greenhorn Creek Action Plan

<i>Situation/Concern</i>	Recommendation	<i>Lead Person</i>	<i>Due Date</i>
<i>Efforts focused on education regarding wildland fire prevention within the community.</i>	1. CSD to schedule, organize and encourage community participation at an annual Firewise Day.		
	2. Continue being active in Plumas County Fire Safe Council.		
	3. Incorporate prevention messages into Community Newsletters. Subjects could include reminders of: Defensible Space, safe burning, moving firewood off of porches & decks in fire season, clearing of needles from gutters & roofs, clearance around propane tanks, deck lattice free of vegetation, wooden fences not touching homes, risk of excessive human debris to firefighters.		
	4. Work with the Greenhorn Guest Ranch on education of ranch guest in fire prevention. (i.e. smoking and off-road vehicles)		
	5. Include Hazardous Fuel Reduction (HFR) education for property owners of larger vacant lots. Consider signing of common(s) areas treated as demonstration.		
<i>Creation and Maintenance of Home Defensible Space, PRC 4291</i>	1. Institute a Home Ignition Zone (HIZ) educational consultation program to better educate homeowners on creating defensible space.		
	2. Establish a system to annually insure all homeowners have taken the necessary measures to comply with PRC 4291, maintaining of defensible space, on their property. Through self-certification or a compliance inspection process.		
	3. Actively enforce PRC 4291 on adjacent lots to attain the full 100 feet as required by the “ <i>Fire Fuel Clear of 100 Feet Around All Structures</i> ,” CSD ordinance.		
	4. Encourage homeowners to use only fire resistant plants in landscaping adjacent to their residences.		
<i>Disposal of “Green Waste” from Defensible Space Maintenance</i>	1. Encourage use of the community “Burn Pile” for residents to dispose of their green waste generated from reducing fire hazards, and maintaining their defensible space. To reduce potential of ignitions within the community from escaped debris burns.		

Situation/Concern	Recommendation	Lead Person	Due Date
<i>Emergency vehicle access on community roads and driveways.</i>	1. CSD to update wooden signs I Subdivision #2 to reflectorized signs.		
	2. Institute a home address signing campaign within the community to improve emergency response.		
	3. Sign all Dead End or limited access roads to indicate no outlet.		
	4. Restrict parking on dead end roads during the fire season.		
	5. Work with the County, property owners and contractors to have all future driveways comply with California Fire Safe Driveway Regulations.		
<i>Hazardous Fuel Reduction (HFR) Planning</i>	1. Community and CSD with PC FSC leadership, develop a CWPP (following established process) with federal and state agencies and private adjacent industrial landowners to address fuel conditions outside and adjacent to the community.		
	2. Work with PC FSC to find funding opportunities for County, state or federal program assistance or grant funds to treat hazardous fuels inside and adjacent to the community.		
<i>Fuel treatment standards and strategy to reduce the fuel hazard inside the community</i>	1. Implement a community hazard reduction strategy where all parcels are treated to a fuel treatment standard that creates a fire resilient condition that allows the community's homes and aesthetics survive a wildfire intrusion.		
<i>Fuel hazard risks outside and adjacent to the community, which place its assets and aesthetics at risk</i>	1. Work with private land managers to develop or maintain a fuel breaks on their properties adjacent to the community.		
	2. Work with the Mt. Hough Ranger District to treat and maintain effective HFR treatments on their managed properties adjacent to the community.		