



Community Assessment and Wildfire Mitigation Action Plan for the Town of Star Valley Ranch

Lincoln County, Wyoming

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Assisted by Jillaine Maes, Town of Star Valley Ranch

August 2014



This assessment describes the wildfire-related characteristics of the Town of Star Valley Ranch in general as well as the specific wildfire-related characteristics of the surrounding area. It addresses the issues and possibilities in which home ignitions can occur under severe wildfire conditions and how ignitions might be avoided within the home ignition zones of affected residents. It identifies specific issues within communities that can be addressed, and it explains how communities can become recognized NFPA Firewise Communities. While mitigation can greatly reduce the probability of property losses under anticipated wildfire conditions, no amount of mitigation can completely eliminate all risks, particularly those experienced under the most extreme fire conditions.

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TABLE OF CONTENTS

Forward.....	4
Introduction.....	5
Focus Area - Town of Star Valley Ranch.....	5
Site Description.....	6
Definition of the Home Ignition Zone.....	9
Description (Size and Nature) of the Severe Case Wildland Fire Characteristics That Could Threaten the Area.....	10
Important Considerations.....	10
Assessment Process.....	11
Common Issues.....	12
Recommendations (Action Plan).....	18
Next Steps.....	20
Signatures.....	21
Appendices.....	22
A. 30 foot Challenge Information	
B. Living with Wildfire in Wyoming	

COMMON ABBREVIATIONS:

Town of Star Valley Ranch = SVR

Natural Resource Board = NRB

Star Valley Ranch Association = SVRA

Bridger-Teton National Forest = B-TNF

National Fire Protection Association = NFPA

Wildland Urban Interface = WUI

Wyoming State Forestry Division = WSFD

FIREWISE COMMUNITIES/USA®
RECOGNITION PROGRAM
COMMUNITY ASSESSMENT FOR THE
TOWN OF STAR VALLEY RANCH, WYOMING

FOREWORD

Wildland Urban Interface is defined as the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Beginning in 2010 Lincoln County, Wyoming, began receiving Western States Wildland Urban Interface (National Fire Plan) federal competitive grant funds from the USDA Forest Service. These grant funds are in place to conduct physical hazardous fuels reduction projects, information and education outreach, and wildfire mitigation planning. A Fuels Mitigation Coordinator for Lincoln County is contracted to work with private landowners in priority areas to lessen losses from catastrophic wildfires. The coordinator also works with communities to initially establish a recognized Firewise Community.

Wyoming State Forestry Division (WSFD) continually conducts outreach as part of their technical assistance programs to better inform landowners of their responsibilities and threats from wildland fires in the Wildland Urban Interface (WUI). WSFD approached the Lincoln County Fuels Mitigation Coordinator and informed them of the National Fire Protection Association's "Firewise Communities" recognition program. This program was asked to be a tool to educate and organize communities in areas with high risk of wildland fires.

Local, State and Federal cooperators identified several high priority areas along the western edge of Lincoln County at high risk to wildland fire that contain WUI. Each of the identified focus areas lies within a wildland-urban-interface (WUI), and contain residential and/or recreational development adjacent to forest land and/or mixed-grass prairies that have not naturally burned for decades. The Town of Star Valley Ranch (SVR) has been considered to be in this area, and has a medium to high potential for catastrophic wildland fire loss.

In 2012, Wyoming experienced a severe wildfire season throughout the State. While this community was not directly impacted by wildfire, several surrounding areas suffered significant losses in similar terrain and ecosystems. The 2012 High Park Fire west of Fort Collins, CO destroyed 259 homes, killed one person, and burned 87,284 acres. The 2012 Arapaho Fire west of Wheatland, WY destroyed over 90 structures and burned 98,115 acres (310 miles southeast of SVR). The 2012 Squirrel Creek Fire west of Laramie, WY destroyed one home and burned 10,921 acres (270 miles southeast of SVR) and the 2012 Fontenelle Fire burned over 60,000 acres and threatened numerous remote residences in the Wyoming Range (25 miles southeast of SVR).



2012 Fontenelle Fire, Sublette County

INTRODUCTION

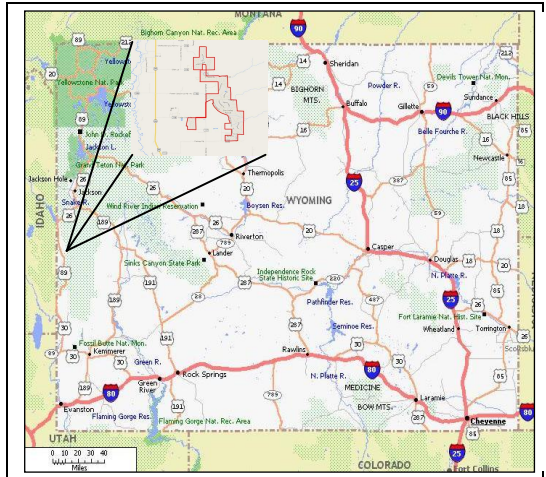
The NFPA Firewise Communities/USA recognition program is designed to provide an effective management approach for preserving wildland living aesthetics. The program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire. The following community assessment is intended as a resource to be used by residents in each focus area 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 as needed.

Data gathering for this assessment was performed on June 30th, 2014 by the following team:

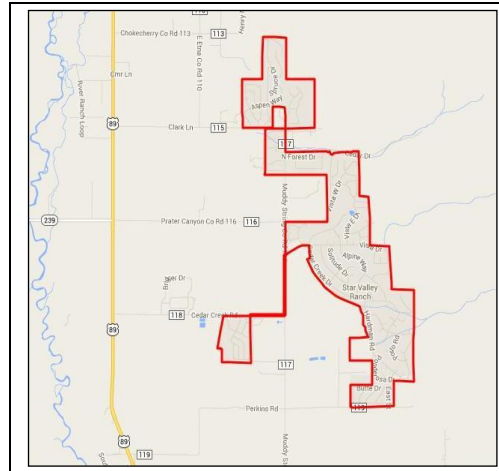
- Jessica Lozier, Firewise – Lincoln County
- Dennis West, Firewise – Lincoln County
- Nick Williams, Wyoming State Forestry Division
- Brook Lee, Wyoming State Forestry Division
- Jacob McCarthy, Wyoming State Forestry Division
- Dwayne Gibbons, USDA Forest Service, BTNF – Greys River RD
- Angie Crook, USDA Forest Service, BTNF – Greys River RD
- Greg Greenhoe, Town of Star Valley Ranch – NRB
- John Lynch, Town of Star Valley Ranch – NRB

FOCUS AREA - TOWN OF STAR VALLEY RANCH

The Town of Star Valley Ranch was incorporated on November 8, 2005. It is the newest town in the state of Wyoming. As of the 2010 census, there were 1,503 people, 612 households, and 461 families residing in the town although this population grows in the summer.



Location of the Town of Star Valley Ranch in Wyoming



Star Valley Ranch Corporate Limits Scale: 1"=2 miles

SITE DESCRIPTION

The community area is accessible from U.S. Highway 89 in northern Lincoln County. It lies within the lower valley of the Salt River drainage with portions extending up onto the foothills of the Salt River Range. Elevation within the town ranges from 6,018 feet within plat 5 along Cedar Creek Road to just over 6,764 feet at the north end of town. Climate is marked by long, cold and snowy winters and cool, mild summers. Total snowfall in the winter can range from 120 to as high as 280 inches depending on the location within the town. It is not uncommon to have snow cover in excess of 36 inches on the ground from November to March.

There are five distinct native vegetation types found within the Town of Star Valley Ranch:

- Grass/Sagebrush Steppe
- Spruce/Fir Forest
- Douglas-fir Forest
- Aspen Forest
- Cottonwood/mixed riparian vegetation
- Juniper woodland

Geologically most of the site is composed of very rocky alluvial material washed out over time from the Salt River Range.

The subdivision for Star Valley Ranch was created in 1972. At that time and for the next 20 years the community was mainly a summer retreat with most residences being seasonal in nature. Beginning in the 1990s an increasing number of residents began living in the community on a permanent, year-round basis.



Town of Star Valley Ranch, taken from Ridgecrest Drive looking north. Homes tucked into Aspen & Douglas-fir Forest

The corporate boundary encompasses 2,240 lots of which approximately 1,000 have been developed with homes. Approximately 250 to 300 homes are occupied year-round. To the east of the town is the Bridger-Teton National Forest. The town has 5.5 miles of common boundary with these public lands.

The total area of the community is approximately 1,700 acres broken down in the following categories:

<u>Land Use Type</u>	<u>Acreage</u>	<u>Percent of Total</u>
Residential Developed (by parcel)	550	32.3%
Residential Undeveloped (by parcel)	682	40.1%
Homeowners Association owned and managed	257	15.1%
Community Roads	171	10.1%
Fox Run Park (open space)	35	2.1%
Town Public Works Shops	5	0.3%
Total	1,700	100.0%



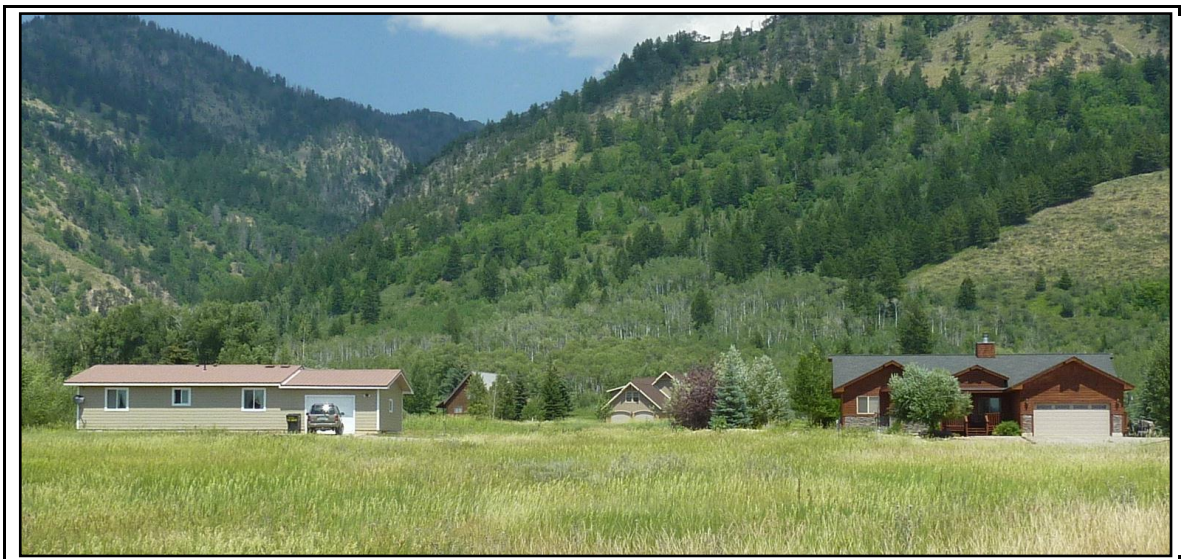
Photo taken from Vista East Drive looking north. Primary threat is from a fuel driven fire coming from the east in the B-T NF

The majority of the residences within the community are located on flat or gently rolling terrain with steeper slopes leading as you approach the mountains to the east. Vegetation can be classified into the following categories:

Vegetation Type	Acres	% of area
Grass/Sagebrush Steppe (includes lawns & golf courses)	948	55.7
Cottonwood Riparian	55	3.2
Aspen Forest	470	27.6
Juniper Woodland	5	0.3
Douglas-fir Forest	179	10.5
Spruce-Fir Forest	2	0.1
Open Water	2	0.1
Unvegetated	39	2.3

The northern portion of the community is forest vegetation consisting of Aspen and Douglas-fir Forest. To the south end of town the vegetation changes to grass/sagebrush steppe, cottonwood riparian and juniper woodland, the later having the lowest fuel loading but the longest period of flammability, roughly from the middle of July to October.

The Aspen forest on the northwest portion of the town shows some mortality in the stand as old stems die back. This mortality is not as prevalent as you get closer to the Salt River Range. While these stands are replacing themselves, there is considerable dead and down in the older forests. Another issue with the Aspen forest is the invasion of conifers from up slope, mostly Douglas-fir. Aspen forests are valued due to their relatively low flammability but they are easily replaced over time by Douglas-fir, a much more flammable species.



View from Hardman Rd. looking northeast towards Cedar Creek Canyon. Drier site on the south end of the community.
Flashier fuels of grass and sage brush.

DEFINITION OF THE HOME IGNITION ZONE

Each focus area covered in this assessment is located in a wildfire environment. Wildfires will happen – exclusion is not a choice. It is not a matter of “if a fire will happen”, but “when”. The variables in a fire scenario are when the fire will occur, and where. This assessment addresses the wildfire-related characteristics of the SVR Community area in general and the specific wildfire-related characteristics of each focus area. It examines the area’s exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but examines the general characteristics of the entire landscape as well as each focus area as a whole.

A house burns because of its interrelationship with everything in its surrounding **home ignition zone** – the house and its immediate surroundings. To avoid a home ignition, a homeowner must eliminate the wildfire’s potential relationship with the house. This can be accomplished by interrupting the natural path a fire takes. Changing a fire’s path by clearing a home ignition zone is an easy-to-accomplish task that can result in avoiding home loss. To accomplish this, flammable items such as dead vegetation must be removed from the area immediately around the structure to prevent flames from contacting it. Also, reducing the density of live vegetation will affect the intensity of the wildfire as it enters the home ignition zone.

Included in this assessment are observations made while visiting each focus area. The assessment addresses



the ease with which home ignitions can occur under severe wildfire conditions and how these ignitions might be avoided within the home ignition zones of affected residents. Residents can reduce their risk of home destruction during a wildfire by taking actions within their home ignition zones. This zone principally determines the potential for home ignitions during a wildland fire; it includes a house and its immediate surroundings within 100 to 200 feet.

Wildfire behavior will be dominated by the residential characteristics of each area. The good news is that by addressing community vulnerabilities, residents will be able to substantially reduce their exposure to loss. Relatively small investments of time and effort will reap great rewards in wildfire safety.

DESCRIPTION [SIZE AND NATURE] OF THE SEVERE CASE WILDLAND FIRE

CHARACTERISTICS THAT COULD THREATEN THE AREA

Fire intensity and spread rate depend on the fuel type and condition (live/dead), the weather conditions prior and during ignition, and the topography of the area. 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 type, the greater the continuity and quantity, the faster the fire spreads and the higher the intensities. Fine fuels take a shorter time to burn out than coarser fuels.
- 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 moisture produces higher spread rates and fire intensities.
- Various bark beetle and other insect species have increased the dead fuels in the community area, especially on National Forest lands to the east. Douglas-fir and other conifer species have been impacted. There is currently some amount of standing dead trees in the community area, but the majority of tree mortality is on these public lands. These dead standing trees can add to fire behavior and intensity and thus pose a concern in a severe wildland fire.
- Wind speed significantly influences the rate of fire spread and fire intensity. The higher the wind speed, the greater the spread rate and intensity. The National Renewable Energy Laboratory shows that this community area has moderate to below average winds speeds of anywhere in the country. With average wind speeds of less than 10 mph and gust possible to 60+ mph.
- Topography influences fire behavior principally by the steepness of the slope. However, the configuration of the terrain (such as narrow draws and saddles) can influence fire spread and intensity. In general, the steeper the slope, the higher the rate of uphill fire spread and intensity.
- The largest concern by fire management officers for wildfire in this area is a large fuel driven fire occurring in the canyons to the east of the town on National Forest lands with embers spotting into flammable structures and vegetation within the community. Wind driven fires from the west are also possible but with irrigated agriculture to the west this possibility is less likely.

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 five largest considerations observed by the assessment team was the need for:

1. A closer look at all home-ignition zone areas. Each landowner should evaluate the common issues addressed in this document.
2. General hazardous fuels reduction. Each landowner has an opportunity to look at the trees and shrubs on their property and learn what could be done to protect them and their home.
3. Improve ingress and egress for firefighting equipment as well as escape routes for residents and responders. Several major community roads have been restricted by the re-growth of younger trees and shrubs. Thinning and pruning of this vegetation will improve overall roadway safety, access to homes in the community, as well as improve the community's ability to remove snow and maintain the roadways.
4. Improved street addressing of homes.
5. Reduction of home flammability by replacement of wood roofs with non-flammable roofing materials.

Residents are reminded to be conscious of keeping high-intensity fire more than 100 feet from their homes. It is important for them to avoid direct fire contact with their structures, including 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 fuels located there. 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. Residents should identify the things that

Weather is of course, of great concern during a wildfire season. When the possibility of wildfire is severe, homeowners should be encouraged to remove flammable items from their 'fire free zone', including fiber doormats, flammable patio furniture, firewood stacks near their homes and all other moveable flammables.

ASSESSMENT PROCESS

The assessment process began with a review of the town's Vegetation Management Plan. While this plan only addresses fire management issues in the broadest terms, it does identify vegetation types and where they are found within the town. Next a Firewise Assessment Team was formed and visited the community on June 30th, 2014. The team visited a number of sites, residences and adjacent National Forest lands. Based on this field work the team identified a number of common issues:

COMMON ISSUES

Several common issues were observed within the community. Many of these can be addressed for little or no cost, and others may form a starting point for community discussion of ways to improve the area's readiness for the next wildfire.

1. **Descendant or understory shrubs, downfall and standing dead trees.** This issue is particularly true of homes built into the Aspen and Douglas-fir Forest. Residents that have cleaned up their property and removed downed material quite often find themselves bumping up to their neighbor, an absentee landowner who has not cleaned up the downfall and dead fuels. Trying to establish a 30 foot non-flammable zone is difficult when you are "set-back" from your neighbor by as little as 20 feet.

The second issue is descendant shrubs; serviceberry, chokecherry and other brush species that have grown up in the understory. Homeowners remove this vegetation only to find it sprouting back in a year or two; a constant maintenance problem.

2. **Vacant or little used properties:** Within the town there are a number of properties that are used very infrequently, perhaps once a year or even less. They have little or no clearance or defensible space. Firefighters will find these structures very difficult or impossible to protect during a major wildfire.



Vacant property on Vista West Drive. This home will most likely be a total loss in a wildfire event.

3. **Property Size vs. Defensible Space:** See above. The issue here is a structure built at the 10 foot setback with a neighbor who is unwilling to allow the property owner to clear enough defensible space.
4. **Firewood and Construction Materials stored under porches and against homes:** One of the biggest issues that the review team observed was the storage of firewood and other flammable materials either directly adjacent to the structure or under decks and porches. As stated earlier the largest threat to the community is most likely a fuel driven fire from the east with embers raining

down on homes within the town. Those homes with flammable materials adjacent to the structure will have a high probability of igniting during such an event.



Firewood stored against or near the residence provides a spotting bed when a wildfire is dropping embers into a neighborhood greatly increasing the chances of having the home ignite.

5. **Mowing Grass:** Quite a number of homes visited had large fuels removed from the ignition zone but homeowners were not mowing their grass within this zone. As a result the uncleared fuel will provide a pathway for fire to reach the home.



Lack of mowing and ornamental shrubs against the house will almost assure the ignition of this home in a wildfire.

6. **Street Address Standards:** Very few homes visited had street address numbers visible from the road. This will make it very difficult for first responders to locate a residence in an emergency.



Clearly visible street address numbers are critical for first responders

7. **Wood/Shake Shingle Roofs:** Within the Town of Star Valley Ranch the review team noted around 20 homes and structures that have wood shake roofs. All of these buildings are older structures that were built long before the town adopted the 2006 International Building Code. At the present time the town does not have a roof replacement ordinance and a building permit is not required for replacing a roof.



In a wildfire situation a wood shake roof is almost guaranteed to ignite.

8. **No or limited clearing around propane tanks:** The Firewise Assessment Team noted quite a few propane tanks without proper clearance. The Firewise standard is 5 feet of non-flammable vegetation or clearance around tanks.



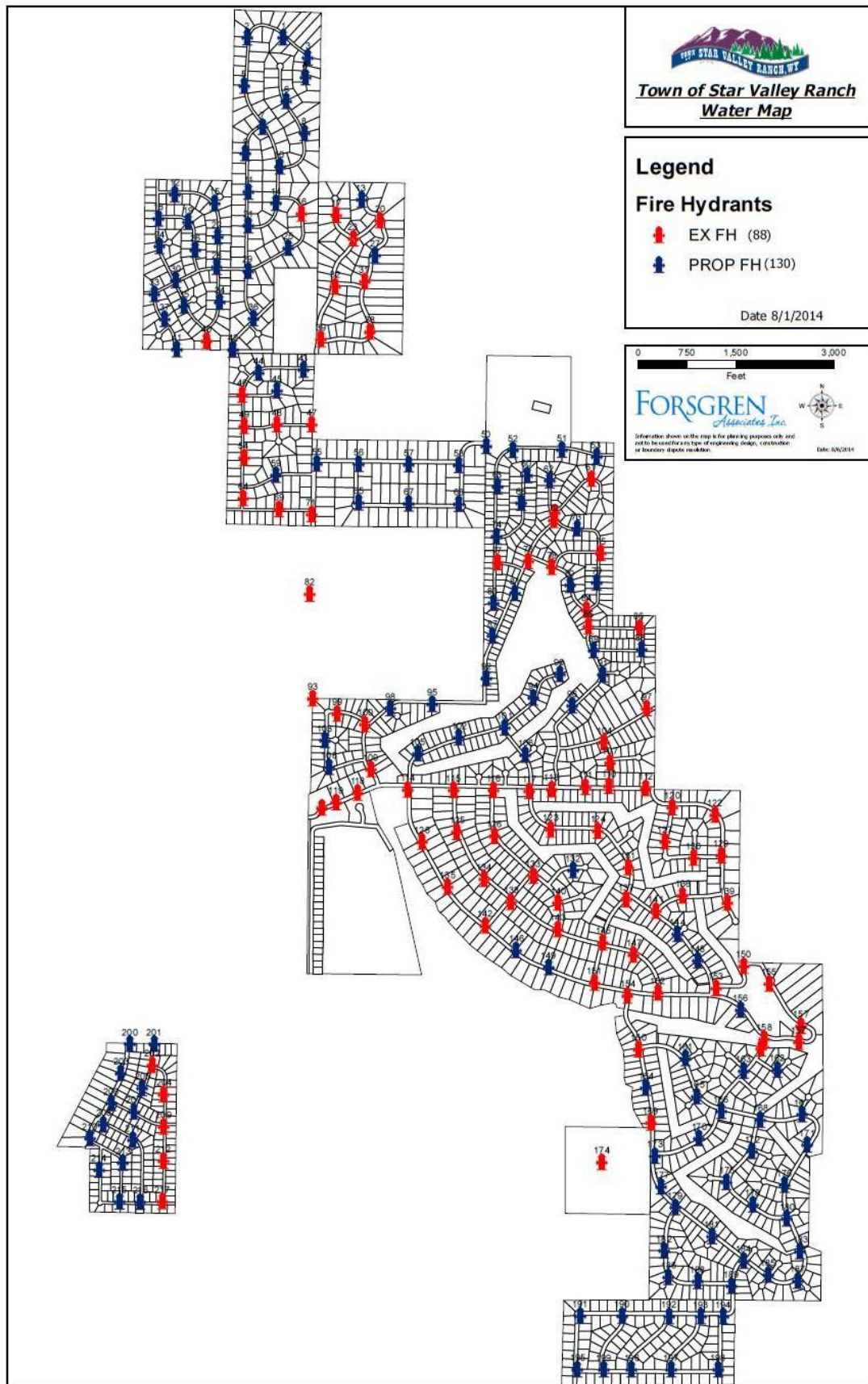
Lack of proper clearance can compromise the integrity of propane storage tanks and place both the homeowner and first responders at risk.

9. **Shaded Fuel breaks:** Along the 5 ½ miles of common boundary with the B-T NF the Forest Service has established a shaded fuelbreak. This work was done around 2003/2004. Some of these areas are in need of some additional maintenance as dead fuel is beginning to accumulate.



Shaded fuelbreak on National Forest Land just north of Vista Drive.

10. **Lack of Emergency Water Supply:** The town has been working to install a fire hydrant water delivery system within the community. To date the town has installed 88 of a planned 218 fire hydrants (40.4%) on the municipal water system. A total of 130 hydrants still need to be installed. As of today residential areas in the extreme northwest and southeast portions of town do not have access to a reliable supply of water in the event of a conflagration emergency. See map below.



11. **Emergency Ingress/Egress:** The assessment team noted in several locations, especially on the north end of the town, where over-story trees and understory vegetation have crowded the road which will cause problems when first responders are entering the community and residents are evacuating.



Looking north on Dogwood Drive. Shrub vegetation has closed in on the road making ingress/egress difficult in an emergency.

In addition the Town Star Valley Ranch recently completed a survey of roads within the town. The survey noted several roads where grades and limited secondary routes out of the area are concerns.

EMERGENCY VEHICLE ACCESS

The Town of Star Valley Ranch has several locations that limit the ability of first responders. In particular steep grades and areas with limited secondary routes will limit the ability of first responders. Also, the neighborhoods accessing off of the following roads have limited routes into and out of the neighborhood.

- Alpenglow Drive
- Spruce Drive
- Evergreen Drive
- North Forest Drive
- Cedar Drive
- Redwood Circle
- Spurwood Drive
- Green Canyon Drive (East)

From Town of Star Valley Ranch, Master Roads Study, Executive Summary – April 15, 2014
Sunrise Engineering

Recommendations (Action Plan)

Many of the issues identified in the previous section can be addressed by individual homeowners. Working in concert with adjacent homeowners however, can provide increased safety for the entire community; particularly on smaller properties where Home Ignition Zones overlap; there are opportunities to increase protection for multiple homes. Some recommendations apply to the common areas and association rights-of-way, and will require involvement of the community as a whole to complete. These improvements will greatly improve the community's resilience to catastrophic wildfire.

The assessment team has developed a prioritized list of action items that should be completed to add to the safety and reduce the risk of losses from wildfire:

Prioritized Project List and Details:

1. Improve survivability of structures through improved vegetation management and control of flammable materials.

Strategies:

- A. Increase the number of participants in the Firewise Program through aggressive marketing in the Water Bill newsletter, e-mails and other forms of communication.
- B. Develop an Education Plan to increase community recognition of the key items listed below. Utilize proven communication methods, i.e. water bill, e-mails, brochures:
 - a. Storage of firewood and other flammables during fire season
 - b. Vegetation clearance around propane tanks
 - c. Best herbicides for treatment of descendent shrubs after clearing
 - d. The need to provide visible street numbers for first responders
- C. Establish Firewise and fire prevention signing at the major entrances to town.
- D. Establish and conduct an annual Firewise Day for residents within the Town.
- E. Offer a more detailed assessment of individual homes at the request of property owners to address specific recommendations for wildfire threats.

2. Improved residence survivability through the establishment of a roof replacement ordinance.

Strategy:

- A. Request to Planning and Zoning Board to draft a roof replacement ordinance for consideration by the Town Council. The ordinance would require non-flammable roofing material and meeting the ICC 2006 code when replacing a roof within the town.

3. Establish/Maintain shaded fuel breaks along key roadways and adjacent National Forest Lands.

Strategy:

- A. Work collaboratively with the USDA Forest Service on a plan to maintain the established fuel breaks along the east side of the town. Consider a jointly funded project with the State.
- B. Widen key roadways and establish shaded fuel breaks by thinning vegetation, removing dead and down material and treating descendent shrubs with herbicide. This treatment will also assist with snow removal in the winter.
- C. These fuel breaks must be inspected annually and maintained to keep their effectiveness. These areas identified should be prioritized by the Natural Resource Board. These road side hazardous fuels reduction areas would be a perfect project for the annual "Firewise Day" required for the Firewise Community recognition program.

4. The Town of Star Valley Ranch needs to make every effort to complete the installation of fire hydrants within the town.

Strategy:

- A. The town should search out grant or loan opportunities to complete the installation of these fire suppression devices.

5. Working with the SVR Association, develop a plan for working with absentee landowners to gain increased compliance with Firewise standards

Strategy:

- A. Establish a joint committee between the Association and the Natural Resource Board to investigate ways to get cooperation with absentee landowners.
- B. Consider revising our town's building ordinance increasing setback from 10 feet to 30 feet.

6. Establish a full and consistent home/address identification signing system. This information is crucial to helping identify homes and helping firefighters and medical response personnel find specific locations.

Strategy:

- A. SVR could encourage all homeowners to take part in the 30 foot Challenge program offered by Lincoln County Firewise Program. A reward of the 30 foot challenge is a free home identification sign.
- B. Establish a home identification sign standard and share ordering information with homeowners.
- C. Investigate a grant for identification signs for landowners.

7. Develop an emergency evacuation plan for the Town of Star Valley Ranch

- A. Work with Lincoln County Office of Emergency Management to develop an Emergency Evacuation Plan for the town

NEXT STEPS

After reviewing the contents of this assessment and its recommendations, the Star Valley Ranch Natural Resource Board and Town Council will decide whether to accept and agree to this document and its observations. The Lincoln County Firewise Coordinator will work with the Community for edits, revisions and collect signatures.

If the site assessment and recommendations are accepted and recognition will be sought, the SVR Natural Resource Board will use this document as an area-specific action plan for projects that could be completed in the future.

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

- Sponsor a Firewise Community Board and work with Lincoln County Firewise Coordinator, Thayne Volunteer Fire Department and Wyoming State Forestry Division to maintain the Firewise Community program and status.
- Work with the Lincoln County Firewise Coordinator to implement the recommended prioritized action plan items.
- A minimum of \$2.00 annually per capita per community will be invested in the Firewise Communities/USA program through whatever means necessary to create the required matching funds. The Firewise Community Board will track work done in the SVR area by public employees and/or volunteers, using public or other equipment, and provide this information annually to the Lincoln County Firewise Coordinator to be used for reporting purposes. The Firewise Community Board will submit an annual report and renewal application to Firewise Communities/USA, which documents continuing participation in the program.
- Work to conduct an annual Firewise Communities/USA Day that is dedicated to a local Firewise project.

SIGNATURES

Signature is to show review and agreement with the document. Agreement being that the suggestions and comments are made in a good faith effort to improve the wildland fire threat to the community described.

**Town of Star Valley Ranch
Natural Resource Board Chair**

Gregory S. Greenhoe
Print Name

Signature

Date

Lincoln County Firewise Coordinator

Jesica Lozier
Print Name

Signature

Date

**Wyoming State Forestry Division
District Forester**

Brook Lee
Print Name

Signature

Date