

1.0 OVERVIEW

The wildland-urban interface occurs where human structures (e.g., homes, businesses, agricultural buildings, recreational facilities) meet or intermix with wildland vegetation. At times the wildland vegetation may pose a fire hazard because of its flammability or an unusually high accumulation of plant material or fuel. The accumulation of wildland fuel around and within communities in the wildland-urban interface poses a significant fire hazard. Methods to reduce the risk of wildland fire in the wildland-urban interface are:

- Reduce the amount of fuel in the interface area;
- Fragment or break up continuous wildland fuels;
- Improve the fire suppression capabilities and fire response infrastructure of the community;
- Reduce the incidence of human-caused fires; and
- Inform the public through educational and outreach activities of proper firewise practices that may reduce the risk of wildland fire to their homes and property, and involve the public in implementing firewise measures around their property.

Based on fiscal year 2001 Congressional direction, the U.S. Department of the Interior, Bureau of Land Management (BLM), seeks to reduce the hazard of wildland fire within the Billy Creek cabins assessment area through the Communities-at-Risk Program. The means to achieve this objective are through the prevention or reduction of the buildup of hazardous fuels, improving the fire protection capabilities of the community, and public education of firewise practices. The anticipated benefits of the program are the reduction of the frequency of wildfires spreading from city or private property to BLM land, as well as the reduction of wildfires spreading from BLM land to private or municipal property. This will ultimately reduce the risk to human safety and damages to property, and reduce costs to taxpayers for wildfire suppression and loss.

The successful implementation of the Communities-at-Risk Program requires considerable cooperation and coalition building among community officials, private landowners, county officials, State Foresters, the U.S. Department of Agriculture Forest Service (USFS) and the BLM. To this end, the BLM contracted with Dynamac Corporation (Dynamac) to fulfill specific tasks in assessing the hazards of wildland fire in the Billy Creek cabins assessment area. Dynamac was specifically tasked to evaluate the flammability of fuels and structures in the assessment area, convene a public meeting to educate and to obtain information from the general public, and to assess the ability of the community to suppress fires in the wildland-urban interface. The information obtained from the fuels and structure surveys, public meeting, and

interviews of public officials is presented in this hazard assessment report. A companion report, the Billy Creek cabins Wildfire Mitigation Plan, presents specific actions that have been identified to reduce the hazard of wildland-urban interface fires in the Billy Creek cabins assessment area.

2.0 GENERAL DESCRIPTION OF ASSESSMENT AREA

Name of Community: Billy Creek cabins, Johnson County, Wyoming

Population: The Billy Creek cabins assessment area includes over 20 homes and is an unincorporated part of Johnson County, Wyoming. The Billy Creek cabins community mainly consists of seasonal homes, with high occupancy during the summer months. Some homes are occupied year round. The population of Johnson County is 7,075 (U.S. Census Bureau 2000); of these, 3,900 reside in Buffalo.

Ownership of Land in Assessment Area (Approximate): USFS 0%; BLM 60%; State 0% Private (Billy Creek cabins) 40%.

Date of Assessment: August 18-22, 2003

The Billy Creek cabins community is located in Johnson County, Wyoming, to the south and east of State Highway 16, approximately 30 miles from Buffalo, Wyoming.

The Billy Creek cabins community was formerly part of a private ranch that was divided into multi-acre sites for permanent and seasonal recreational homes. Approximately 9 sections comprise the Billy Creek cabins community. These sections are bordered by approximately 5 sections of public land administered by the BLM Buffalo Field Office, 3 sections of State of Wyoming lands, and 2 sections of U.S. Forest Service land administered by the Buffalo Ranger District, Big Horn National Forest; other adjacent land is privately owned. Structures within the Billy Creek cabins community are variable in age (ranging from new foundations to homes greater than 15 years old) and in size (from sheds and one-room cabins to multi-thousand square-foot homes). The Billy Creek cabins community provides residents an acceptable summer commute to Buffalo, Wyoming. The area addressed in the wildfire hazard assessment includes portions of Township 48N, Range 83W. The Billy Creek cabins community includes approximately 24 homes or cabins. Fire suppression is provided by the Johnson County Volunteer Fire Department, BLM and USFS. The nearest county fire station is located in Buffalo, Wyoming, and the nearest BLM and USFS fire suppression forces are also located in Buffalo.

Topography of the Billy Creek cabins community is variable, ranging from rolling hills to steep mountainous terrain with nearly vertical slopes. Elevations range from 7,400 feet to over 8,000 feet above mean sea level (amsl).

Roads in the assessment area include four-wheel drive roads on private and public lands and narrow graveled, weight limited, steep roads within Billy Creek cabins. The most heavily used road is the Billy Creek Road, which runs in a northwest to southwest direction through the assessment area and ends in section 33. Billy Creek Road provides access to public and private lands in the assessment area and also is the main ingress/egress for residents, fire suppression personnel and equipment, and construction equipment. Most of Billy Creek Road is in good condition, though some of private drives and approaches appear to be unimproved 2 tracks. The Billy Creek Road supported numerous engines, water tenders, and dozers during the Big Springs fire of July and August 2003. Culverts along Billy Creek Road appear functional and adequate. However, portions of Billy Creek Road are vulnerable to wildfire ignition and closure from wildfire and falling trees.

The roads within Billy Creek cabins do not utilize county snow removal services. Access to the assessment area during winter months is by snow machine, cross country skis, snowshoes, or sled dog teams.

Air quality in the assessment area is generally good, meets Clean Air Act standards and enhances the viewshed. However, air quality can be adversely affected by wildfires during the summer and fall months and by valley inversions during winter months. Wind in this area is generally west to northwest, with some southwest winds, and easterly winds occurring with frontal passages.

Cultural and historical resources observed within the assessment area include an older wooden cabin in disrepair located on private lands. Further assessment is needed to adequately address cultural resources.

Land use in the immediate area includes recreation, livestock grazing on private, BLM, USFS and State of Wyoming lands and post and pole sales. Land ownership is a mixture of BLM and private within the assessment area. Recreation is the major land use in the assessment area. Access to most BLM lands in the assessment area is provided from Billy Creek Road. Horse ownership and livestock grazing on private land within the assessment area appears to be ongoing.

Recreation in the assessment area is of primary importance to the residents of Billy Creek cabins. Residents and visitors consider the recreational opportunities in and around the assessment area as a significant part of their lifestyle that also adds to the attractiveness of Billy Creek cabins. Recreational activities include, but are not limited to solitude, horseback riding, motorcycle riding, All-Terrain Vehicle (ATV) riding, snow machine riding, cross country skiing, hiking, wildlife and scenic photography, berry picking, hunting, and birding or animal watching. These recreational activities occur within Billy Creek cabins and on BLM and USFS lands accessed by residents of Billy Creek cabins. Occupants and visitors to the area enjoy scenic views of Billy Creek Canyon, Cloud Peak Wilderness, and the Big Horn Mountain range.

Riparian habitat in the assessment area includes Billy Creek and Dry Poison Creek. Riparian habitat generally is grass, willows, and aspen. A man-made dam and containment ponds have been developed on Billy Creek outside the assessment area on private land. Dry Poison Creek also has a small pond developed within the assessment area. Roads and approaches within the Billy Creek cabins development area all use the Billy Creek road for access.

The Billy Creek cabins assessment area can be divided into six general vegetation areas: Aspen, Aspen/Conifer mix, grass/forb, sage/grass, Ponderosa Pine, and Mixed Conifer (Douglas Fir and Limber Pine). Hazard assessment fuel samples were taken in mixed conifer (Douglas Fir/Limber Pine) and Ponderosa Pine stands.

Forest health concerns include infestations of mountain pine beetle, mistletoe, Douglas fir bark beetle, and porcupine girdling. These are present in most conifer stands, yielding red-needled trees and standing dead or dying pine and fir trees.

Mixed conifer and Ponderosa pine timber stands also yield some creeping juniper, fescue grasses, along with heavy downed, dead, and forest litter in the understory (see photos of fuel points in Mitigation report).

Most aspen stands appear healthy, though some are aged and are in competition with conifers for available light and moisture.

Sage/grass and grass/forb fuels loading are moderated by ungulate grazing within the assessment area. Biological fuels management in grass/forb fuel types yields less cured grass for wildfire spread and a decreased intensity, due to low loadings, in the open grass/forb fuels in the Billy Creek cabins assessment area.

Wildlife present in the Billy Creek cabins reflects the diverse habitats in the area and includes raptors, various songbirds, and blue grouse. Large mammals present include moose, mule deer, elk, and black bear. Small mammals present include marmot, squirrels, chipmunks, mice, and voles. Elk, moose and black bear tracks or droppings were observed in the mixed conifer stands while conducting the hazard assessment. Mule deer and moose were observed in the aspen and aspen-sagebrush/grass edge-effect areas. Heavy browsing of seedlings by wild ungulates was present at some of the hazard assessment points. The assessment area has been identified as being on the fringe of possible Canadian lynx habitat. No eagle nesting areas were observed during this assessment.

No historic structures were observed on BLM land. Potential artifacts and cultural resources were not observed, however a cultural resources specialist was not present during the assessment.

The climate of Billy Creek cabins assessment area is generally warm or hot and dry during summer months with thunderstorms. Average high and low temperatures in July are 84.2°F and 52.9°F, respectively. Cold temperatures with wind and snow typify winters. Average high and low temperatures in January are 36.1°F and 9.2°F, respectively. Average annual snowfall is 41.8 inches (see **Table 1**).

**Table 1: Monthly Climate Summary
BILLY CREEK, WYOMING
Period of Record : 3/14/1962 to 3/31/2003**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	36.1	40.0	46.2	55.5	65.1	75.2	84.2	83.1	72.3	59.9	45.8	38.2	58.5
Average Min. Temperature (F)	9.2	14.4	20.7	29.2	38.3	46.9	52.9	51.1	41.5	31.1	19.5	11.5	30.5
Average Total Precipitation (in.)	0.31	0.30	0.062	1.46	2.23	2.35	1.48	1.04	1.15	0.91	0.44	0.31	12.61
Average Total Snowfall (in.)	5.8	5.5	7.5	6.8	1.6	0.0	0.0	0.0	0.9	3.1	5.2	5.4	41.8
Average Snow Depth (in.)	2	1	1	0	0	0	0	0	0	0	1	1	0

Percent of possible observations for period of record:

- Max. Temp.: 100 percent
- Min. Temp.: 99.9 percent
- Precipitation: 100 percent
- Snowfall: 99.7 percent
- Snow Depth: 99.8 percent

Source: *Western Regional Climate Center; www.wrcc.dri.edu*

3.0 FIRE HAZARD ASSESSMENT

Dynamac assessed the hazard posed by wildland fire within the Billy Creek cabins assessment area through fuel and structure surveys, information obtained from a public meeting, and interviews with public officials. The majority of information obtained for this report was gathered during the time period of August 18-22, 2003.

3.1 Field Survey

BLM's Buffalo Field Office in Buffalo, Wyoming requested that Dynamac survey at least 10 fuel assessment points in the Billy Creek cabins assessment area, within the wildland-urban interface area (**Map 1, Appendix A**). Dynamac surveyed 10 assessment points within the wildland-urban interface, all of which were on public land managed by BLM. The points were chosen from areas where public land formed an interface with private land, and, where possible, additional points were surveyed that were representative of vegetation in remote areas. As public land is not specifically fenced or demarcated at all boundary locations, the points that Dynamac surveyed were located by approximating the locations of public land on a topographical map, which delineated topography and land ownership. Dynamac assessors then drove and/or hiked to the selected points. Point data was obtained using hand-held Global Positioning Systems (GPS), which recorded Universal Transverse Mercator (UTM) coordinates for plots of interest, based on North American Datum 1927 (NAD27) for Zone 11. Elevations were also obtained using the GPS unit. After collection in the field, the UTM coordinates were geo-corrected to account for satellite positions. A summary of the actual fire hazard assessment points is presented in **Table 2**. This table includes the township, range, section, actual UTM coordinates and elevation, and photo log identification numbers for each assessment point.

Digital photographs were taken of the surrounding area in the four cardinal directions at each assessment point. The assessment point photos were taken in the following sequence: North, East, South and West. Photographs are designated by the disk and photo identification number. The photo identification numbers are presented in Table 2, and the photographs are located in **Appendix B** with their respective hazard assessment form.

At each assessment point, a Fire Hazard Assessment Form (Form 1) was completed which rated the characteristic of the land features and fuel sources located within a 50-meter radius (Appendix B). The rating elements included slope, aspect, elevation, vegetation type, fuel type, fuel density, and fuel bed depth and were assigned to a risk category that was defined by BLM.

Each point was evaluated to determine if the potential fire hazard was low (Class A), moderate (Class B), or high (Class C). The results of the fuel hazard survey, including canopy cover percentages, are reported in **Table 3**.

Information was also collected from 14 sections that contained private land located within one mile of Federal and state lands within the assessment area.

A Structural Hazard Assessment Form (Form 2) was completed which rated the survivability of structures within each of these sections, based on building materials, the distance of flammable fuels to the structures located within a section, as well as road conditions and accessibility (**Appendix C**). The information recorded on Form 2 represented the average condition for the section. A USFS map of the Big Horn National Forest, BLM 1:100,000 Buffalo topographical map and a topographical map of the assessment area and adjacent lands map were used to navigate to the sections. The sections were surveyed from existing roads, vantage points and private drive ways or approaches. The rating elements included structure density, proximity of flammable fuels to the structures, building materials, survivable space, types of roads, response times, and accessibility. Each element was assigned to a category defined by BLM. Each of these were evaluated to determine if the potential fire hazard was low (Class A), moderate (Class B), or high (Class C). All sections that were assessed included structures. Latitude and longitude waypoints were taken at, or as close as possible to, all structures that were accessible. The results of the structure hazard survey are reported in **Table 4**.

TABLE 2: Summary of Billy Creek Cabins Fire Hazard Assessment Survey Point Field Data

Survey Point	Township	Range	Section	North (UTM)	East (UTM)	Elevation (feet amsl)	Date	Photo Log (Disk, Photo Nos.)	Photo Numbers and Cardinal Direction
<i>Township 48N Range 83W</i>									
1	48N	83W	28	4884206.63702	352587.59980	7,690	8/19/2003	BC03010013	010N, 011E, 012S, 013W
2	48N	83W	19	4886149.87795	349308.85674	8,107	8/20/2003	BC04001004	001N, 002E, 003S, 004W
3	48N	83W	18	4887509.44501	349934.09707	7,777	8/21/2003	BC04009012	009N, 010E, 011S, 012W
4	48N	83W	18	4887669.13123	350118.86585	7,660	8/21/2003	BC02014017	014N, 015E, 016S, 017W
5	48N	83W	29	4884824.01414	351229.63774	7,709	8/22/2003	BC05001004	001N, 002E, 003S, 004W
6	48N	83W	30	4885311.79594	350189.71112	7,902	8/22/2003	BC05005008	005N, 006E, 007S, 008W
7	48N	83W	30	4885421.37589	349762.82341	8,061	8/22/2003	BC05009012	009N, 010E, 011S, 012W
8	48N	83W	17	4887126.91985	351778.65975	7,698	8/22/2003	BC06002005	002N, 003E, 004S, 005W
9	48N	83W	17	4887243.88905	351553.90358	7,718	8/22/2003	BC06006009	006N, 009E, 008S, 007W
10	48N	83W	20	4886286.42470	352177.49492	7,627	8/22/03	BC06010012, BC07001	010N, 011E, 012S, 001W

3.2 Public Meeting

A public meeting convened on August 21, 2003, at the Johnson County Fire Hall, Buffalo, Wyoming, from 6:30 to 8:30 pm. The community was invited to attend through mass mailings, as well as a newspaper article and radio announcement for the local newspaper and radio stations, respectively.

Dynamac and BLM personnel attended the meeting to distribute brochures, obtain information, and serve as an informational resource to those attending the meeting. The brochures provided information on ways to reduce the risk of wildfire around structures. Dynamac staff requested the participants respond to a survey (**Appendix D**), which questioned the community's perception of the hazards of wildfire, ways to mitigate wildfire, recent actions that had been taken in the community to reduce the hazard of wildfire, and important values in the assessment area that could be at risk to wildfire.

A second public meeting was conducted on September 30, 2003 at the Johnson County Fire Hall. This meeting presented the findings of the draft hazard assessment and mitigation report. Discussions about recommended actions to reduce the risk of wildfire in the assessment area were conducted with the public, BLM, Johnson County Fire Department, and State of Wyoming Division of Forestry. Recommendations include shaded fuel breaks, forest thinning, tree removal, slash piling and burning and creation of defensible space for residence.

3.3 Interviews of Public Officials

To obtain data for the community profile (Form 3, **Table 5**), a Dynamac Community Relations Specialist conducted interviews with numerous local public officials and residents. The information obtained from the interviews is presented in **Appendix E**. Individuals or groups interviewed include: the county planner, county fire board, county fire warden, county sheriff, State of Wyoming Forestry Division, and county commissioner. The Dynamac Community Relations Specialist explained Dynamac's position as a contractor for BLM, provided background information on the project, and asked questions to obtain information for the community profile.

4.0 GENERAL SUMMARY: FIRE FUEL HAZARD, STRUCTURAL FIRE ASSESSMENT, AND COMMUNITY PROFILE

4.1 Form 1: Fuel Hazard Assessment

The results of the fuel hazard assessment are presented in **Table 3** and **Maps 2 and 3**. Forms for all survey sites are contained in Appendix B. The dominant hazardous fuels in the assessment area are the overstocked mixed conifer stands, standing dead/dying trees, and saplings that act as ladder fuels. These fuels occur on private and BLM managed lands, along roadways, and within 40 feet of structures in the Billy Creek cabins assessment area, and on lands adjacent to the assessment area.

Aspen stands and sagebrush/grass fuel types did not receive fuel hazard assessments.

Sagebrush/grass fuels on Billy Creek cabins can present hazardous fuel conditions on slopes of the assessment in late summer and fall. However, resistance to control in the sagebrush/grass and grass/forbs fuels will not be as great as in the mixed conifer due to gentler slopes and reduced fuel loading due to ungulate grazing.

The assessed Ponderosa pine/mixed conifer fuel types will exhibit a high resistance to control and will make initial attacks difficult when fire danger ratings are high, combined with low relative humidity and fuel moisture, and high Haines index. Continuous fuels, fallen, dead, woody material, ladder fuels (seedling and saplings) and standing dead or dying material will enable torching, crowning out, and spotting. Observed stand density and ladder fuels on some slopes will enhance the possibility of a crown fire. Wildfire in the mixed conifer of Billy Creek cabins assessment area will be topographically influenced in combination with fuels and wind. The possibility of ignition in both mixed conifer, Ponderosa Pine, and grass fuel types is high due to vehicular traffic on the Billy Creed road in the assessment area. The fuels assessment area includes areas where fuel conditions, combined with topographic features, will increase wildfire intensities, rates of spread, and allow fires to “roll out” beneath fire fighters or spot over roads. With present fuel loading, and during high fire danger conditions, the Billy Creek Road should not be relied upon as a fire break as it traverses mid slope north/south then east/west through section 19. The results of the fuel survey are summarized as follows:

- **Slope:** 40 percent occurred on moderate slopes (Class B 10-30%) and 60 percent occurred on steep slopes (Class C >30%).

- **Aspect:** 60 percent of the sites had northern exposures (Class A) while 10 percent were on east (or relatively level) facing slopes (Class B) and 30 percent were located on south or west aspects (Class C)
- **Elevation:** The elevations for all the survey sites were between 7,600 and 8,100 feet amsl (Class A).
- **Fuel Type:** Ten percent of the fuel survey points had medium fuels (Class B) and ninety percent had heavy fuels (Class C).
- **Fuel Density:** One hundred percent of the sites had heavy continuous fuels (class C) with moderate to heavy downed-dead woody fuel and an abundance of fir sapling ladder fuels.
- **Fuel Bed Depth:** Thirty percent were rated as low ground fuel bed depths (Class A), forty percent were rated as moderate ground fuel bed depths (Class B) and thirty percent were rated as high ground fuel bed depths (Class C).

In an effort to integrate fuel hazard factors, data for fuel attributes (fuel type, density, and depth) were combined; an aggregate relative risk for each survey point was assigned based on the combination of scores for individual factors. Sites with “C” ratings for all three attributes were regarded as having the highest risk; sites with all “A” ratings, the lowest risk. Results are shown on Map 2. Terrain attributes (slope, aspect, elevation) were aggregated in a manner similar to that used for fuel attributes; these data show clear spatial patterns in terrain in the assessment area (Map 3). Fire Condition Class (CC), as displayed in Table 3, refers to three classes fuels can be assigned to. Class 1, low risk, represents fires that generally pose little risk and have a positive impact on biodiversity as well as soil and water quality. Class 2, moderate risk, represents fire regimes that have been altered from their historical range by decreased fire frequency, resulting in excessive accumulation of understory vegetation. If not treated, fuels of Class 2 may result in more intense wildfires and have a negative impact on biodiversity and soil and water quality. Class 3, high risk, represents fire regimes that have been drastically altered from their historic range, resulting in a high risk of losing key ecosystem components if fire occurs. Excessive accumulation of dead vegetation and large quantities of small trees that grow densely among the larger ones can lead to severe, high-intensity wildland fires. Data from the fuels hazard assessment are also depicted on Figures 1 and 2.

Figure 1: Billy Creek Cabins Fuel Hazard Assessment Results (Topography)

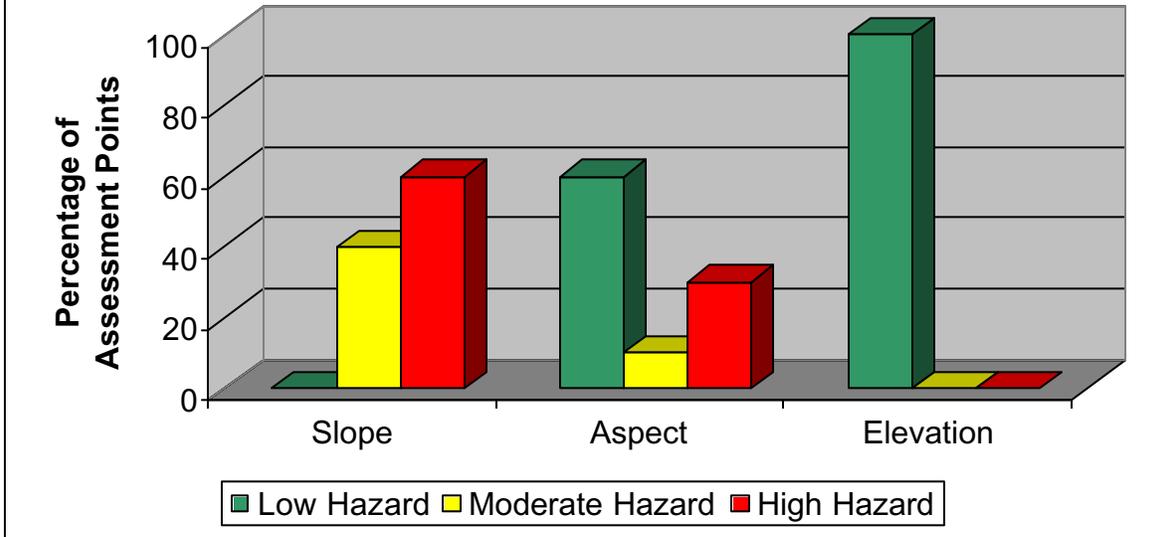


Figure 2: Billy Creek Cabins Fuel Hazard Assessment Results (Fuels)

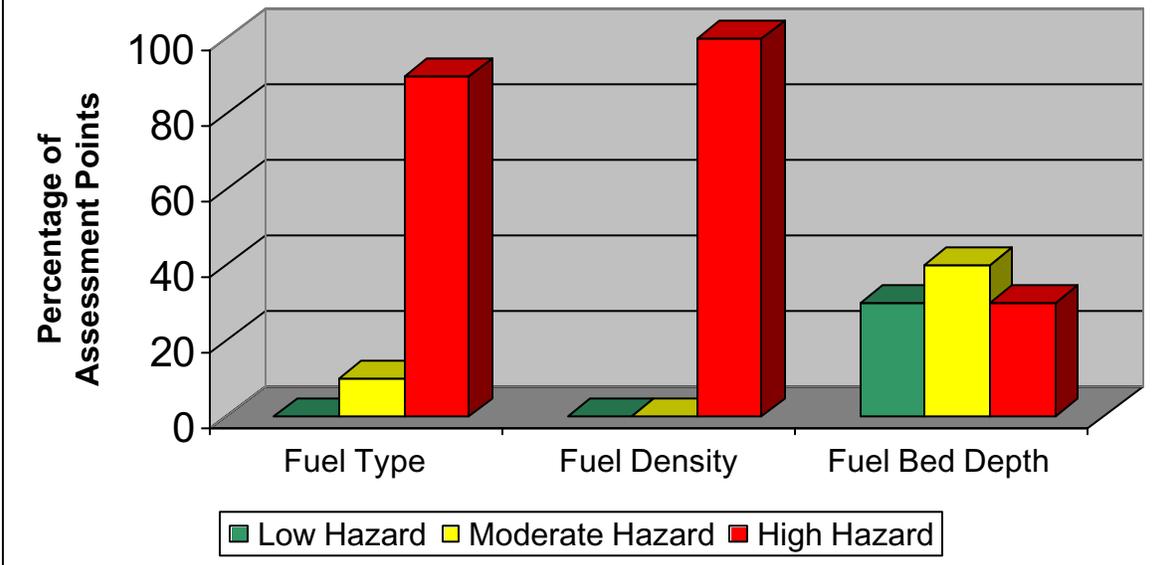


Table 3: Summary of Fuels Hazard Assessment for Billy Creek Cabins (Form 1)
(See Maps)

Survey Point	Rating Elements							Picture ID	Comments
	Slope	Aspect	Elevation	Fuel Type	Fuel Density	Fuel Bed Depth	Canopy Cover		
<i>Township 48N Range 83W</i>									
1	C	A	A	C	C	A	C	BC03010013	DF w/limber pine, ladder fuels abundant, FM-9, CC 2.
2	C	A	A	C	C	B	C	BC04001004	DF w/heavy standing dead and Dn. Dd. limber pine, DF saplings provide ladder fuels, Mixed conifer. FM-10, CC 2.
3	B	B	A	C	C	B	C	BC04009012	Heavy Fuel loading of standing dead- 4-14", moderate Dn. Dd., FM 10, CC 3.
4	C	C	A	C	C	B	B	BC02014017	FM 10 Numerous standing dead limber pine, DF saplings to 20 ft. red needle pine seedlings, CC 3.
5	B	A	A	C	C	A	C	BC05001004	FM 8, numerous saplings to 20 ft. P. Pine, heavy needle cast, some dead top mature P.Pine, light Dn.Dd, CC 3.
6	B	A	A	B	C	A	B	BC05005008	FM 2, logged area w/grass understory, slash disposed of, some P. Pine seedlings. DF and P. Pine to 70 ft, CC 1.
7	C	C	A	C	C	B	C	BC05009012	FM 10 HDD, appeared to be thinning of standing dead, numerous DF saplings provide ladder fuels to larger firs, CC 3.
8	C	A	A	C	C	C	A	BC06002005	Slash in old select sale. Some lopped, needs more lopping to pile and burn, FM -1.1.
9	C	A	A	C	C	C	C	BC06006009	Numerous DF saplings and seedlings, moderate standing dead and down dead, FM-10, CC 3.
10	B	C	A	C	C	A	C	BC06010012, BC07001	Ponderosa Pine, numerous saplings and small trees, need thin, pile, burn, moderate down dead, close canopy w/ ladder fuels, FM -9, CC 2.

FM: Fire Behavior Fuel Model
SD: Standing Dead
Dn: Down
P. Pine: Ponderosa pine
DF: Douglas Fir

4.2 Form 2: Structural Fire Hazard Assessment

The results of the structure survey are provided in **Table 4**. The data sheets are contained in **Appendix C. Maps 4 and 5** spatially illustrate the data from Table 4. Areas of 10 sections were evaluated, 5 of which contained structures such as homes or buildings that occurred on private land within one mile of public land. All structures were located within Billy Creek cabins assessment area. Newer structures occurred throughout the assessment area at a low density and at times intermixed with older structures. Most homes had metal roofs and wood or log siding. All sections evaluated had some homes with wildland fuels less than forty feet from the house. The results of the structure survey are as follows:

- **Structure Density:** One hundred percent of the sections had less than one structure per 10 acres (Class C).
- **Proximity to Structures:** Of the structures surveyed, eighty percent are rated “high hazard” (Class C) fuels within 40 feet of the structure, fifteen percent are rated as moderately hazardous, with fuels within 40 to 100 feet of structures (Class B), and five percent as low hazard, with fuels greater than 100 feet from structures (Class A).
- **Predominant Building Materials:** Eighty percent of the sections with structures had a majority of homes with a fire resistant roof, and 20 percent of the roofs were not fire resistant. Even though most of the structures were roofed with metal or other fire retardant material, all structures observed were constructed of log or wooden siding that appeared not to be fire retardant, yielding a moderate hazard rating for eighty percent of the structures.
- **Survivable Space:** In all the sections with structures, 20 percent of the homes had survivable space (Class B, 40-100 feet). Eighty percent of the homes had little to no survivable space (Class C, less than 40 feet). Dying, standing dead, or red needle trees, especially in the mixed conifer stands, represent a hazard to homes.
- **Roads:** One hundred percent of the sections had roads that are somewhat maintained (graveled and graded), but generally narrow with no shoulders (Class C). Pullout areas are widely spread and few turn-around areas exist, except for driveways.
- **Response Time:** One hundred percent of the sections had a response time of greater than 40 minutes, mainly due to distance from fire suppression forces, and the narrow, steep roads found within the area (Class C). Aerial fire suppression assistance for wildfires will be variable dependent upon commitment. A 40-minute response time for BLM/Forest Service air tankers from Billings, Montana or Rapid City, South Dakota or other aerial resource is possible but should not be expected.

- **Access:** All sections contain narrow, steep and/or single lane roads (Class C). County fire truck access is from State Highway 16 northwest of Billy Creek cabins. Most roads are one way in and one way out.

A combination of data for roads and response times is presented in Map 4. Overall risk is high in many sections not only because of the long response times but also because of the narrow and steep roads and the lack of available water for suppression. Combined data for structural conditions (proximity to fuel, building materials, presence of a survivable space) is presented in Map 5. The percentages of sections that received a high risk ranking for structures in the assessment area are graphically depicted in **Figure 3**.

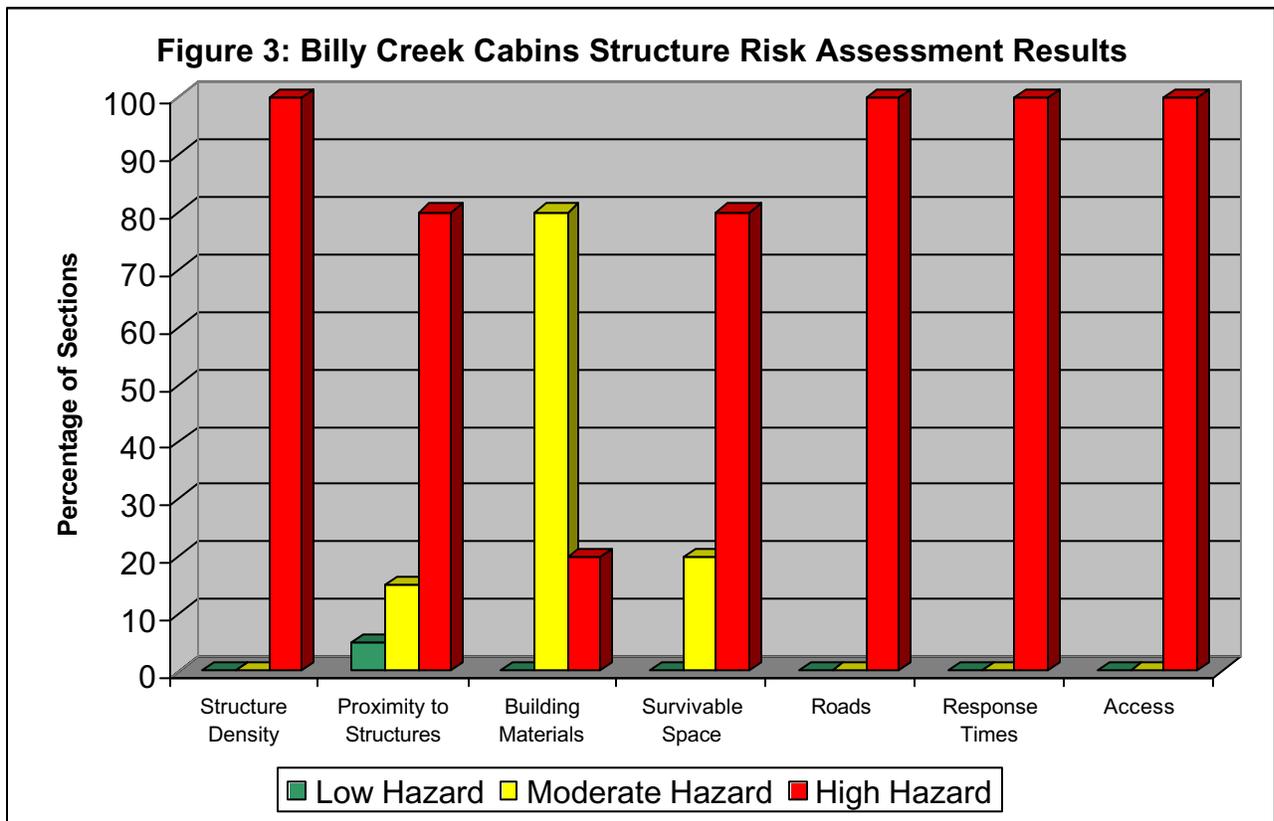


Table 4: Summary of Structural Fire Hazard Assessment (Form 2)

Section No.	Structure Density	Rating Elements					Response Time	Access	Comments
		Proximity of Fuels	Building Material	Survivable Space	Roads				
<i>Township 48N Range 83W</i>									
18	C	C	B	C	C	C	C	Standing Dead, Saplings, ladder fuels, creeping juniper near homes	
19	C	C	B	C	C	C	C	Mixed conifer, some sage/grass w/aspen, standing dead, down dead, saplings near homes	
20	C	C	B	B	C	C	C	Grass and Ponderosa, some red needle trees	
28	C	C	B	C	C	C	C	Ponderosa, standing dead/red needle, saplings, and mixed conifer.	
29	C	C	B	C	C	C	C	Mixed Conifer, numerous saplings, mod. Down/dead	

A = Class A, low fire hazard assessment rating

B = Class B, moderate fire hazard assessment rating

C = Class C, high fire hazard assessment rating

4.3 Form 3: Community Profile

Table 5 presents the findings of the community assessment regarding the community's attitudes and abilities to respond to wildland fires in the Billy Creek cabins assessment area. Initial findings raise a number of concerns about fire risks in the Billy Creek cabins assessment area. Specifically, the community was ranked as high risk for emergency operations response time, water systems/sources, structure density, community practices, and fire safety ordinances.

5.0 ON-GOING WILDFIRE HAZARD MITIGATION

Some Billy Creek cabins homeowners have applied fire safe practices in the areas immediately surrounding homes.

Johnson County Fire personnel have provided the assessment area with assistance and direction to reduce the risks at most home sites.

The Fire Department is willing to educate and provide fire safety information to any interested group or home.

Table 5: Community Profile Assessment (Form 3)

Community: Billy Creek cabins, Johnson County, Wyoming Date: August, 2003 Surveyor(s): Brooke Levy

Source(s) of Information: Interviews and Community Meeting

Rating Element	Class A	Class B	Class C	Rating (Use A, B, or C)
Community Description	There is a clear line where residential, business, and public structures meet wildland fuels. Wildland fuels do not generally continue into the developed area.	There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area.	The community generally exists where homes, ranches, and other structures are scattered by adjacent to wildland vegetation.	C
Response Times	Prompt response time to interface areas (20 min or less).	Moderate response time to interface areas (20-40 minutes).	Lengthy response to interface areas (40 + minutes).	C
Firefighting Capability	Adequate Structural Fire Department. Sufficient personnel, equipment and wildland firefighting capability and experience.	Inadequate Fire Department. Limited personnel and or equipment but with some wildland fire fighting experience and training.	Fire Department non-existent or untrained and/or equipped to fight wildland fire.	A
Water Supply	Adequate supply of fire hydrants and pressure, and/or open water sources (pools, lakes, reservoirs, rivers, etc.).	Inadequate supply of fire hydrants, or limited pressure. Limited water supply.	No pressure water systems available near interface. No surface water available.	C
Local Emergency Operations Group	Active Emergency Operations Group. Evacuation plans in place.	Limited participation in EOG. Have some form of evacuation procedures	No emergency operations group. No evacuation plans in place.	A
Structure Density	At least one structure per 0-5 acres.	One structure per 5-10 acres.	Less than one structure per 10 acres.	B
Community Planning Practices	County/local laws and zoning ordinances require use of fire safe residential design and adequate ingress/egress of fire suppression resources. Fire Department actively participates in planning process.	Local officials have an understanding of appropriate community planning practices for wildfire loss mitigation. Fire Department has limited input to fire safe development and planning efforts.	Community standards for fire safe development and protection are marginal or non-existent. Little or no effort has been made in assessing and applying measures to reduce wildfire impact.	C
Fire Mitigation Ordinances, Laws, or Regulations in place	Have adopted local ordinances or codes requiring fire safe landscaping, building and planning. Fire Department actively participates in planning process.	Have voluntary ordinances or codes requiring fire safe landscaping and building practices. Fire Department participates in planning process.	No local codes, laws or ordinances requiring fire safe building, landscaping or planning processes.	C

Table 5: Community Profile Assessment (Form 3)

Community: Billy Creek cabins, Johnson County, Wyoming Date: August, 2003 Surveyor(s): Brooke Levy

Source(s) of Information: Interviews and Community Meeting

Rating Element	Class A	Class B	Class C	Rating (Use A, B, or C)
Fire Department Equipment Status	Good supply of structure and wildland fire apparatus and misc. specialty equipment.	Smaller supply of fire apparatus in fairly good repair with some specialty equipment.	Minimum amount of fire apparatus that is old and in need of repair. None or little specialty equipment.	A
Fire Department training and experience	Large, fully paid Fire Department with personnel that meet NFPA or NWCG training requirements, are experienced in wildland fire and have adequate equipment.	Mixed Fire Department. Some paid and some volunteer personnel. Limited experience, training and equipment to fight wildland fire	Small, all volunteer Fire Department. Limited training, experience and budget with regular turnover of personnel. Do not meet NFPA or NWCG standards.	A/C¹
Community Fire Safe Efforts and programs already in place.	Organized and active groups (Fire Department) providing educational materials and programs for their community.	Limited interest and participation in educational programs. Fire Department does some prevention and public education.	No interest or participation in educational programs. No prevention/ education efforts by Fire Department.	B
Community support and attitudes	Actively supports urban interface plans and actions.	Some participation in urban interface plans and actions.	Opposes urban interface plans and efforts.	B

¹ The fire departments that would respond to a fire in and around Billy Creek cabins are highly trained and meet NFPA or NWCG training requirements and are experienced in wildland fire and have adequate equipment. However, the departments are small and composed of volunteers (there are no paid fire fighters).

6.0 VALUES AT RISK

Lives, homes, property, wildlife habitat, recreation, livestock, possible historic/cultural sites, grazing, soil stability, water quality, and timber are the values that are at risk to wildfire within the Billy Creek cabins assessment area. Billy Creek cabins is bordered by BLM land, private ranches and the Big Horn National Forest, and State of Wyoming Lands, providing numerous four-season recreational opportunities for residents and tourists.