

WILDLAND-URBAN INTERFACE COMMUNITIES-AT-RISK PROGRAM

Final Mitigation Report BLM Buffalo Field Office, Wyoming Billy Creek Cabins Assessment Area



Order No: KAD034006
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DYNAMAC[®]
CORPORATION

FINAL

**WILDLAND-URBAN INTERFACE, COMMUNITIES-AT-RISK
MITIGATION REPORT**

**BUFFALO FIELD OFFICE
BILLY CREEK CABINS ASSESSMENT AREA**

Prepared for:

**U.S. Department of the Interior
Bureau of Land Management
Buffalo Field Office
Buffalo, Wyoming**

Prepared by:

**Dynamac Corporation
350 Middlefork Road
Garden Valley, Idaho 83622**

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ACRONYMS

Amsl	above mean sea level
ATV	All Terrain Vehicle
BLM	Bureau of Land Management
CRP	Conservation Reserve Program
GIFF	Gateway Interagency Fire Fund
GVW	Gross Vehicular Weight
NFPA	National Fire Protection Association
NRCS	National Resource Conservation Service
NWCG	National Wildfire Coordinating Group
USFS	U.S. Department of Agriculture, Forest Service

1.0 EXECUTIVE SUMMARY

During the 2000 fire season more than 6.8 million acres of public and private lands burned, resulting in loss of property, damage to resources, and disruption of community services. Many of these fires occurred in wildland-urban interface areas and exceeded fire suppression capabilities. To reduce the risk of fire in the wildland-urban interface, the President of the United States directed the Secretaries of the Departments of Agriculture and the Interior to increase federal investments in projects to reduce the risk of wildfire in the wildland-urban interface. To this end, the Bureau of Land Management (BLM), Buffalo Field Office, is currently in the process of forming partnerships with local governments to plan fuels reduction treatments and other mitigation measures targeted at the wildland-urban interface in the vicinity of federal lands. These partnerships are indicative of a shared responsibility to reduce wildland fire risks to communities.

The wildland-urban interface occurs where human structures meet or intermix with wildland vegetation. In certain situations, specific actions such as fuels reduction around communities, forestland and rangeland restoration, infrastructure improvements, and public education and outreach may reduce the risk of catastrophic fire in the wildland-urban interface. As a result, the BLM implemented the Communities-at-Risk, Wildland-Urban Interface Program. The program seeks to reduce the hazard of wildland fires to communities through public outreach, the reduction or prevention of fuel build-up, and by increasing the fire protection capabilities of communities. The Billy Creek cabins community was selected by the BLM to assess the hazard of wildland fire and to identify specific actions that may reduce the risk.

BLM contracted with Dynamac Corporation (Dynamac) to support it in its assessment of wildfire risk to the Billy Creek cabins community, specifically along the wildland-urban interface. Dynamac scientists conducted fuel surveys by categorizing the vegetation, slope, and aspect of the land in the Billy Creek cabins assessment area. The risk of wildland fire to homes, structures, and cultural resources on private land was also evaluated according to building materials, the presence of survivable space, road access, and the response time of the local fire department. Dynamac assessed the adequacy of the community's service infrastructure (including roads, water supplies, and fire fighting equipment) by systematic observation, and by interviewing community officials and fire prevention personnel. A community open house was held to disseminate information about the Communities-at-Risk, Wildland-Urban Interface Program to citizens, to afford them the opportunity to identify resources that are of value to the

community, and to have them identify actions that may reduce the risk of wildland fire. The information gathered from the fuel surveys, structural surveys, interviews, infrastructure assessments, and community profile was integrated into two reports: a hazard assessment report and a mitigation report. The following actions items were identified to reduce the hazard of wildfire in the Billy Creek cabins assessment area based on the data collected and hazardous conditions observed during the hazard assessment, and the threats posed by fire to the community:

- Improve ingress/egress, and reduce ignition potential by reducing fuel loading adjacent to roads within Billy Creek.
- Develop water storage and availability in the form of tanks, cisterns or bladders at specific locations in or near the Billy Creek assessment area, coordinated with Billy Creek residents, Johnson County Fire Department, State of Wyoming Forestry Division, and BLM.
- Initiate forest health measures combined with fuels treatments on BLM lands in the assessment areas in multiple phases.
- Create defensible space and implement firewise practices for homes and structures within the Billy Creek cabins assessment area.
- Continue the ongoing education and outreach program throughout the assessment area to assist homeowners with firewise practices and procedures.

2.0 GOALS AND OBJECTIVES

The goals of the Billy Creek cabins wildfire hazard assessment and mitigation plans are to evaluate the hazards of wildland fire within the assessment area and identify specific actions that could reduce the risks. The objectives are to decrease the chances of wildfire spreading from BLM land to private land or from private land to public land and to protect life, property, structures, and other valued resources in the community, including forest health.

3.0 BACKGROUND

Wildland fire is an integral component of many forest and rangeland ecosystems. In the conterminous United States, before European settlement, an estimated 145 million acres were annually consumed by wildfire. In comparison, only about 14 million acres are currently burned annually due to increased agriculture, urbanization, habitat fragmentation, and fire suppression programs. This change from the historical fire regime to the present day has caused a shift in the native vegetation composition and structure of fire-prone ecosystems, such as some forests and rangelands, resulting in a dangerously high accumulation of fuels. As a result, when wildland fires do occur, they may burn larger and hotter than those in the past and pose an increased risk to human welfare and ecological integrity. The Big Springs fire that occurred during July and August 2003, in and adjacent to the assessment area, provided residents with first hand observations of intense fire behavior. The fire behavior of the Big Springs fire is typical during times of high fire danger in fire prone ecosystems that historically have had fire excluded from them.

4.0 EXISTING SITUATION

Billy Creek provides homeowners with relatively easy access to Buffalo, Wyoming and numerous recreational activities on private, BLM, State of Wyoming, and USFS lands. The development closest to the Billy Creek cabins community is Hazelton, Wyoming. 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. There are approximately 24 homes within the assessment area and new homes are under construction. Billy Creek cabins residents are approximately 30 miles from Buffalo and 35 miles from Ten Sleep, Wyoming. The Billy Creek cabins community is located to the south and east of State Highway 16. USFS lands border this community to the west, BLM and private lands border Billy Creek on the southern and eastern and southwest sides, and State of Wyoming lands border the area to the northeast. Fire suppression on private land in the area is accomplished by the Johnson County Fire Department and on public and state lands by the BLM, USFS and State of Wyoming Forestry Division.

The major land use in the immediate area is recreation. Livestock grazing occurs on private, BLM and USFS lands, and on adjacent State of Wyoming lands. Access to BLM lands is from the Billy Creek Road.

Elevations in the assessment area range from 7,500 to over 8,000 feet amsl. Topography varies from rolling hills to steep and mountainous terrain.

The area assessed for wildfire hazards is comprised of portions of townships T48N R83W (**Map 1**).

The dominant hazardous fuels in the assessment area consists of overstocked mixed conifer stands and Ponderosa Pine stands with ladder fuels (saplings) that occur on lands generally west and east of the Billy Creek road and on private land in sections of the Billy Creek cabins assessment area. Aspen stands and sagebrush/grass/forbs fuel types did not receive fuel hazard assessments. Sagebrush/grass and grass/forbs fuels in the Billy Creek cabins assessment area are mitigated by biological fuel reduction methods (grazing). The grazing of open grasslands within the assessment area reduces the fuel loading of cured grasses and also indirectly influences a lower intensity of possible wildfire in the open grass areas as compared to areas with no grazing.

The assessed mixed conifer and Ponderosa pine fuel types will exhibit a high resistance to fire control and make initial attack difficult when fire danger ratings are high, combined with low relative humidity and fuel moisture, and a high Haines index. Continuous fuels, slopes, downed and dead woody material, ladder fuels (seedling and saplings), and numerous standing dead (snags) or dying trees will enable torching, crowning out, and spotting. Observed stand density on some slopes will enhance the possibility of a crown fire. Wildfire in the mixed conifer and Ponderosa pine stands of the Billy Creek cabins assessment area will be topographically influenced in combination with fuels and wind. The possibility of ignition in both mixed conifer and Ponderosa Pine fuel types is high, due to vehicular traffic on roads in the assessment area and summer thunderstorms. The fuels assessment area includes numerous fuel conditions and topographic features that will increase rates of spread, and allow fires to “roll out” beneath fire fighters or spot over roads (steep slopes, draws, and chutes). With present fuel loading, during periods of high fire danger, the Billy Creek road should not be relied upon as a fire break where it traverses mid slope north/south and east/west through Section 19. A companion report to this volume, the Hazard Assessment Report for the Billy Creek assessment area, presents and summarizes data for fuel and terrain conditions. These data are also summarized in brief below.

Classes A, B, and C refer to low, moderate, and high hazard conditions, respectively.

- **Slope:** Forty percent occurred on moderate slopes (Class B) and 60 percent occurred on steep slopes (Class C).
- **Aspect:** Sixty 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 on south or west aspects (Class C)
- **Elevation:** The elevations for all the survey sites were between 7,600 and 8,150 feet amsl (Class A).
- **Fuel Type:** Ten percent of the fuel survey points had medium fuels heavy fuels (Class B) and 90 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), 40 percent were rated as moderate ground fuel bed depths (Class B), and 30 percent of the sites had a fuel bed depth of greater than three feet (Class C).

A second component of the Hazard Assessment was the characterization of structures in the assessment area for structure density, building materials, proximity to fuels, presence of survivable space, and road quality and accessibility. Thirteen sections were evaluated that contained structures such as homes or buildings, which occurred on private land within one mile of public land. All structures are located within the Billy Creek cabins community assessment area. Homes were variable in age and size, with some new homes under construction. Again, Classes A, B, and C, refer to low, moderate, and high hazard situations, respectively. The results of the structural 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, 80 percent were rated as high hazard, 15 percent were rated as moderate hazard, with fuels within 40 to 100 feet of structures (Class B), and 5 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 fire resistant roof (Class A) and 20 percent of the roofs were not

fire resistant. Even though most of the structures had metal roofs or other fire retardant material, all observed structures were constructed of log or wooden siding that appeared not to be fire retardant, yielding a moderate rating for eighty percent of the sections with structures.

- **Survivable Space:** In all sections with structures, 20 percent of the homes within 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).
- **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:** Roads in all sections are narrow, steep, and/or are a single lane (Class C). County fire truck access is from State Highway 16, northwest of Billy Creek. Most roads are one-way in and one-way out.

The data from the fuels hazard assessment is graphically depicted in Figures 1 and 2. The charts depict the percentage of fuel assessment points, based on a total of eight assessment points surveyed, that received a high, moderate, or low hazard ranking. The percentages of assessment points for hazards to structures are graphically depicted in Figure 3. The attributes pertaining to proximity to structures, predominant building materials, and survivable space were analyzed in the 5 sections that contained structures within the 10 sections of the assessment area.

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

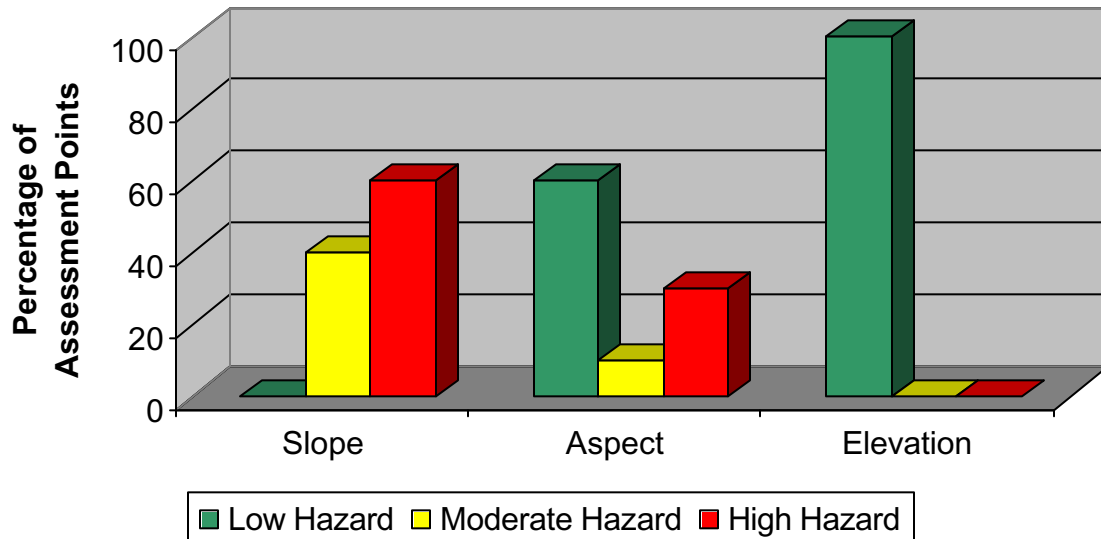
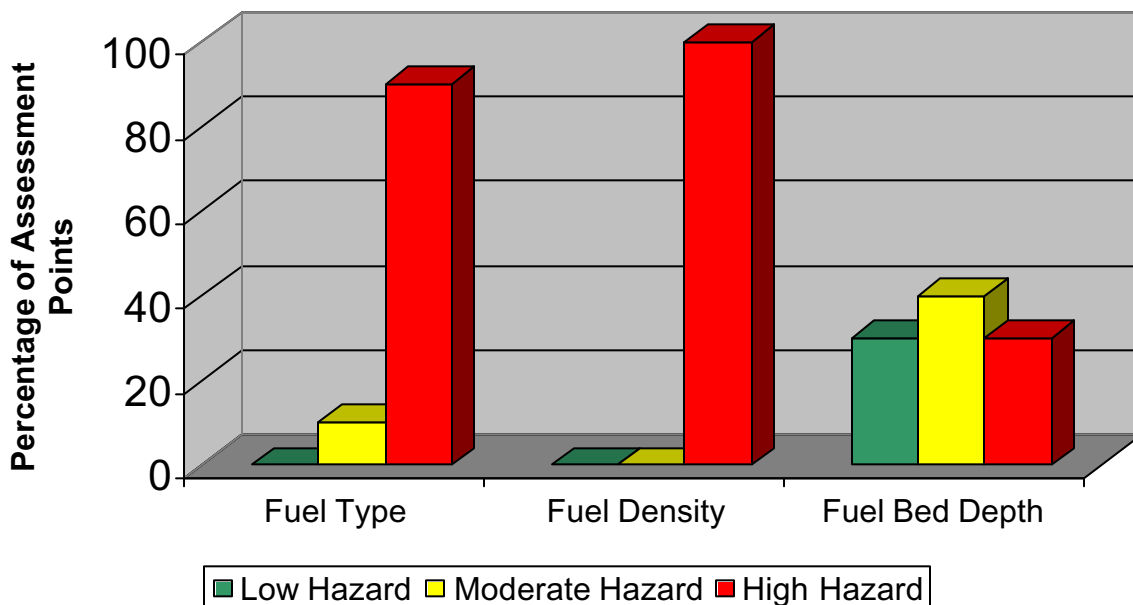
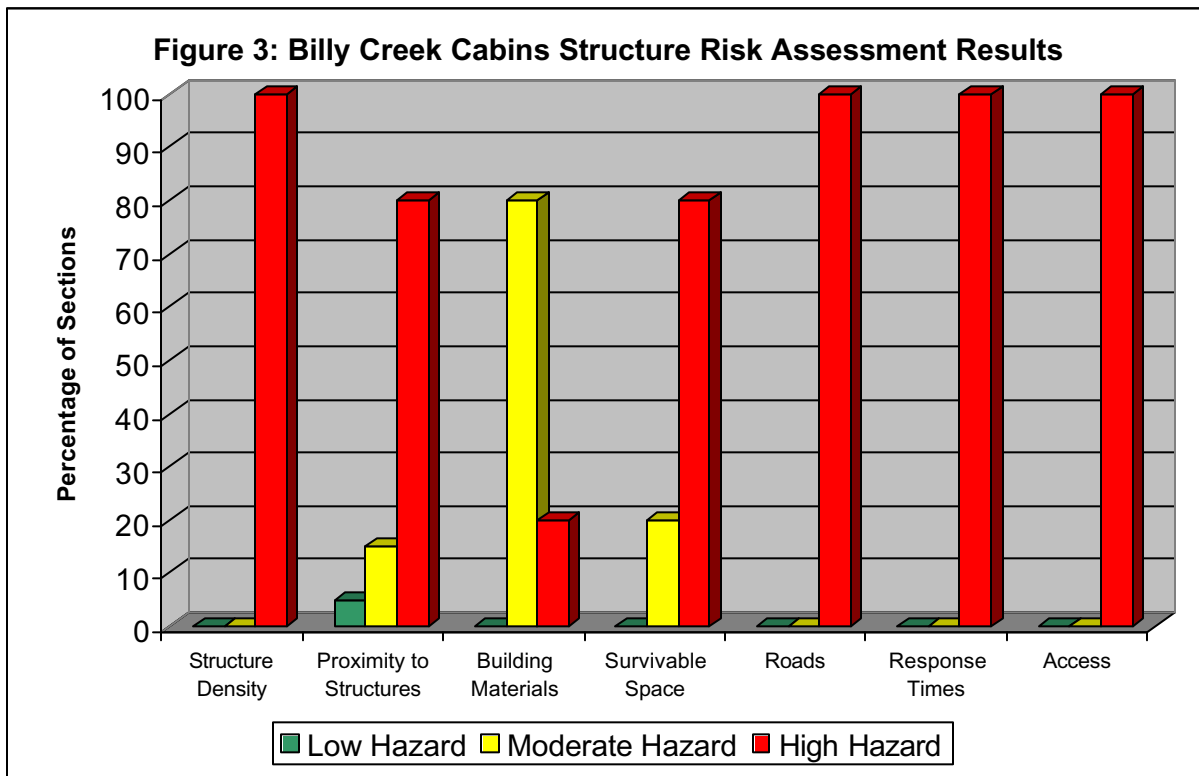


Figure 2: Billy Creek Cabins Fuel Hazard Assessment Results (Fuels)





5.0 SUGGESTED ACTIONS TO ACHIEVE A DESIRED CONDITION

Based on the interviews with community officials, discussions during the public meeting. Dynamac ascertained that the following actions should occur in the Billy Creek assessment area:

- Improve ingress/egress, and reduce ignition potential by reducing fuel loading adjacent to roads within Billy Creek.
- Develop water storage and availability in the form of tanks, cisterns or bladders at specific locations in or near the Billy Creek assessment area, coordinated with Billy Creek residents, Johnson County Fire Department, State of Wyoming Forestry Division, and BLM.
- Initiate forest health measures combined with fuels treatments on BLM lands in the assessment areas in multiple phases.
- Create defensible space and implement firewise practices for homes and structures within the Billy Creek cabins assessment area.
- Continue the ongoing education and outreach program throughout the assessment area to assist homeowners with firewise practices and procedures.

6.0 NEED FOR ACTION

Wildfire occurrence in or around the Billy Creek assessment area is not uncommon. Ignition usually results from natural causes, although human-caused ignition risk is high. The hazard of wildland fire is very high during high fire danger ratings because of the buildup of standing dead, dying and diseased trees; semi-continuous, heavy, downed, dead, woody material; ladder fuels; canopy spacing; topography in conifer forest stands; and the closeness of fuels to structures. A large wildfire resulting in a partial stand clearing occurred south of Billy Creek in July and August 2003. Similar fire behavior, rates of spread and intensities can be expected in the mixed conifer and overstocked Ponderosa Pine stands in the Billy Creek assessment area given similar weather and fuel moisture conditions.

Wildland fire risk is also increased due to forest health issues, such as infestations of various parasites in the conifers, which yield standing dead, red-needled, or dying trees. High canopy densities, combined with even-aged conifers and heavy loadings of downed, dead, woody material yield minimal vegetative biodiversity. This scenario, combined with topography, will enable the propagation of crown fires. Fuel loadings, private home placement, and adjacent public lands in the assessment area yield a potential for wildfire occurrence.

Both general and specific actions are needed to mitigate the wildland fire risk, improve forest health and enhance vegetative diversity. General actions include the adherence to firewise practices within the assessment area. The vegetation growing around structures and along roads needs to be maintained at an acceptable level. The recommended firewise distance to achieve a survivable space is a 40-foot perimeter around a home or structure, which should be properly landscaped with fire-resistant vegetation. Greater distances are needed if the structures are on a slope. Prescribed methods to keep the vegetation in compliance are the use of hand crews, mechanical removal or herbicidal treatments (limited use) and biological treatment (grazing). Selected trees should be harvested for use. Vegetation removed should be piled and burned or transported to a designated landfill. There are numerous instances where Ponderosa pine, Limber Pine, Douglas fir trees and standing dead or dying are close to structures. A professional arborist should carefully remove these trees or remove limbs that hang over structures or that are within 30 feet of the ground. These firewise practices are general, but long-term in nature, because they require continual adherence to reduce the hazard of wildfire.

Secondly, the Billy Creek community needs to identify areas to place vegetation removed from private lands for piling and burning. Utilization of private lands within the community for this endeavor would decrease travel times and expenditures for fuels removed from around residences. Piles should be covered and ignited in coordination with the State Forester, Johnson County Fire Department, and the BLM Buffalo Field Office. If burning will be conducted on individual properties, owners need to submit requests to or coordinate for winter burning with the State of Wyoming Forestry Division, Johnson County Fire Department and the BLM Buffalo Field Office. Burning of piles should be planned and executed during times that allow adequate smoke dispersal. Removal of fir and pine saplings located adjacent to roads on private lands should be implemented as a ladder fuel mitigation step.

Billy Creek is in need of additional water sources. The water sources can be distributed throughout the properties where they can be accessed in the event of a fire. This can be accomplished by several methods. One expedient, inexpensive method is the acquisition of 5,000- to 10,000-gallon bladders through federal excess by the Wyoming State Forestry Division and the USFS or BLM. These bladders can be strategically placed, anchored, and filled in summer months by water tenders, and drained and stored during winter. The bladders are generally not aesthetically pleasing and, though larger, the 10,000-gallon bladders can be difficult to manage. Anchoring of the bladders is important.

A more permanent mitigation measure for fire suppression water supply would be the development of underground tanks at a natural water source on State or private lands in or near the assessment area. Location, plans, easement, tank size needs, and desired flow rates should be coordinated with Johnson County Fire Department. The permanent tanks could be utilized throughout spring, summer, and fall for wildfire suppression by Johnson County and the State and Federal agencies.

The general and specific recommendations for private lands within the Billy Creek cabins community should be accomplished by private landowners, in coordination with Wyoming State Forestry Division and the Johnson County Fire Department, with possible cooperative agreements with the USFS and BLM.

For BLM-managed land within the Billy Creek cabins assessment area, flammable fuels should be reduced in overstocked mixed conifer, and Ponderosa pine stands. Diseased and dying trees should be designated for removal. Commercial tree thinning and tree removal using hand or

light mechanical methods could be employed to successfully mitigate forest health issues and reduce the buildup of hazardous fuel loadings and ladder fuels in mixed conifer and Ponderosa pine stands. Hand and light mechanical methods will also decrease the footprint that will remain post treatment. Projects funded by the Interagency Joint Fire Sciences program have indicated that thinning alone will reduce possible crown fires for 15 to 20 years whereas thinning combined with selective tree removal will reduce crown fire possibility significantly for over 50 years. During the environmental assessment, consideration of the no action alternative should identify that it will exacerbate the current forest health and fuel loading problems and negatively influence other ecosystem components as identified in Class 2 (moderate risk) and Class 3 (high risk) fire regimes.

Thinning, tree removal, piling, burning and creation of shaded fuel breaks where feasible on BLM land would reduce the chances of wildfire from spreading from private to public land or from public to private land and enhance access for fire fighters, while improving effectiveness of aerial suppression by air tankers and helicopters. The shaded fuel breaks can be constructed by selectively removing understory trees and shrubs. Vegetation not removed from public lands should be piled and ignited during late fall or winter during conditions of good smoke dispersal. In certain instances, large trees may also need to be removed; however, healthy large Douglas fir and Ponderosa Pine trees need to be avoided during thinning or removal projects. The shaded fuel break should be visually appealing, as private homes are located within close proximity.

The expected results of thinning, removal, piling and burning, and shaded fuel breaks are increased forest floor vegetative diversity (though seeding may be required in some areas) and additional forage provided for elk, deer, moose, and snowshoe hare. Identified Canadian Lynx habitat can be enhanced by designating a number of vegetation piles to be left for possible den areas and snowshoe hare cover. Scattered large standing dead may be left on site for possible raptor nest areas and perches. Once accomplished, these actions will improve forest health and decrease the risk that wildfire will evade initial attack.

7.0 METHODOLOGY

The mitigation actions proposed herein for the Billy Creek assessment area are based on information acquired from fuel and structure surveys, a public meeting, and interviews of community officials. The majority of information presented in this report was gathered during the time period between August 18 and 22, 2003.

The fire-hazard assessment area was defined by BLM. The BLM requested a minimum of 10 fuel survey points in the assessment area to be evaluated by Dynamac (Map 1). The fuel survey points occurred on BLM lands within the assessment area. At each survey point, digital photographs were taken of the surrounding area in each of the four cardinal directions. Additionally, a fire hazard assessment was completed which rated the hazard posed by fuel sources topographic characteristics of the area. The rating elements included slope, aspect, elevation, fuel type, fuel density, and fuel bed depth, and were assigned a risk category of low, medium, or high, as defined by BLM.

Dynamac staff also collected information on the flammability and defensibility of structures on private land from 5 sections located within the assessment area. The structural hazard assessment rated the structures, building material and the distance of flammable fuels to the structures located within a section. The rating elements included structure density, proximity of flammable fuels to the structures, building materials, survivable space, types of roads, response times, and access. Each element was assigned a low, medium, or high hazard category based on rating criteria defined by BLM.

A public meeting was convened on August 21, 2003, at the Johnson County Fire Hall in Buffalo, Wyoming from 6:00 to 9:00 p.m. 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, BLM, State of Wyoming Forestry Division, Johnson County Fire Department, County Commissioners, NRCS, and City of Buffalo Wyoming officials attended the public meeting to hand out firewise brochures, obtain information from the community on hazardous fire situations and desired conditions, and to be an informational resource to those attending the meeting.

A second public meeting was held September 30, 2003 at the Johnson County Fire Hall to review the draft mitigation report and receive public input. Dynamac personnel conducted a discussion and presentation, with participation by Billy Creek residents, Wyoming State Forestry Division, Johnson County Volunteer Fire Department (District 1), and the BLM Buffalo Field Office. The discussion and presentation addressed potential fire behavior with and without the proposed mitigation recommendations.

8.0 PROPOSED PROJECTS AND PRIORITY

The Billy Creek assessment area is of primary importance to the Johnson County Fire Department, State of Wyoming Forestry Division, BLM, and USFS. The proposed projects and their priority are based on information obtained from the fuel and structure surveys, community meeting, and interviews. The following specific action items, in order of priority, were identified to reduce the hazard of wildfire in the Billy Creek assessment area:

- Improve ingress/egress, and reduce ignition potential by reducing fuel loading adjacent to roads within Billy Creek.
- Develop water storage and availability in the form of tanks, cisterns or bladders at specific locations in or near the Billy Creek assessment area, coordinated with Billy Creek residents, Johnson County Fire Department, State of Wyoming Forestry Division, and BLM.
- Initiate forest health measures combined with fuels treatments on BLM lands in the assessment areas in multiple phases.
- Create defensible space and implement firewise practices for homes and structures within the Billy Creek cabins assessment area.
- Continue the ongoing education and outreach program throughout the assessment area to assist homeowners with firewise practices and procedures.

The locations of the proposed roadside treatments, forest health/fuel reduction projects, and fuel breaks are illustrated on **Map 2**. These projects are proposed because of the positive impact they would have on reducing the hazard of wildland fire in the Billy Creek cabins assessment area. The fuel survey and visual examination of the assessment area demonstrated the widespread occurrence of overstocked mixed conifer and Ponderosa pine stands and the excessive standing dead and downed dead trees. Residents at the community meeting expressed concern about the buildup of hazardous fuels in the assessment area and increasing water sources. The structure survey identified a lack of firewise practices associated with structures in each section. Therefore, a public education and outreach program should continue to inform and encourage specific actions that will reduce the chances of wildfire damaging structures. The public outreach program received the lowest priority, not because of low importance, but because it is an ongoing need throughout the assessment area, while the other proposed actions are time and location-sensitive. However, the public education and outreach program may, in the long run, prove to be the most effective in reducing wildland fire in the Billy Creek cabins assessment area.

8.1 Decrease Wildfire Ingress/Egress Threat along Billy Creek Road

Billy Creek Road Fuels Reduction and Fuel breaks: One of the priority objectives identified in the assessment is to reduce the buildup of hazardous fuels and improve forest health.

Ingress/egress on the Billy Creek Road in Sections 18, 19, 20 and 28 is of primary importance to residents and all agencies involved

Type of Treatment: The first operational phase can include a fuel break on BLM lands that border the Billy Creek Road in Sections 18, 19, and 29. Shaded fuel breaks are areas where understory trees, standing dead trees and excessive canopy cover are removed to create an area relatively free of midlevel fuels. Recommended minimum canopy distance is 20 feet. Grasses, forbs, and low-flammable shrubs may be left to control soil erosion. Certain trees may also be left in the fuel break for aesthetic appeal. Desirable trees that remain in the fuel break should have limbs removed to a height of 10 feet from the ground. Hand crews and mechanical and/or limited herbicide treatments can remove the vegetation from the fuel break. Excessive vegetative litter should be piled and burned or removed. The fuel breaks should be approximately 1.5 times the adjacent fuel height in width, (for the Billy Creek Road approximately 150 feet on the up slope and 200 feet on the down slope from the road) but may be wider or narrower depending on slope, topography, and the prevailing wind. Approximately 0.2, 1.0 and 0.5 miles of fuel breaks are suggested on BLM land for both sides of the Billy Creek Road in T48N R83E, Sections 18,19 and 29, respectively. This phase will include thinning, piling and burning on BLM land and removal as needed to enhance ingress/egress on the Billy Creek Road. This fuel break is not intended to stop a wildfire advancing to the Billy Creek Road from lower elevations, but rather to provide improved ingress/egress in the event of a wildfire and provide fire suppression personnel with tactical options. The addition of vehicle turnouts in these sections within the limits of the right-of-way, combined with the proposed shaded fuel break, would provide improved ingress/egress for various fire apparatus, though traffic control would still be required in the event of a wildfire.

Private land owners along the Billy Creek Road in Sections 18 and 29 also need to improve the ingress/egress to their property. This can be achieved by reducing the standing dead and saplings in Section 18, where the road departs from BLM land and traverses the slope going east/west. A cooperative maintenance agreement between Billy Creek land owners and BLM could be advantageous to both entities for enhancing ingress/egress, reducing fuels, and future

maintenance. In Section 29, overstocked saplings on both sides of the Billy Creek road represent a prime ignition source. The thinning, piling and burning of such vegetation by private landowners should be coordinated with the Johnson County Fire Department, the Wyoming State Forestry Division, and BLM. Such actions would diminish the wildfire potential and its effect on the ingress/egress of the Billy Creek Road.

Project Timing

The Billy Creek Road fuel reduction should be planned during the winter of 2003 and 2004. Fuel reduction should be initiated in 2004.

Project Necessity

The fuel treatments along the Billy Creek road are will assist residents and wildfire agencies with ingress/egress routes and mitigate the possibility of road closure due to wildfire. The areas recommended for treatment contain excessive standing dead trees, saplings, and canopy cover that, in the event of a wildfire ignition along the road, would render the road impassable for a period of time. The wildfire would quickly cross the road, resulting in fire on both sides of the road.

8.2 Improve Water Storage Capabilities

The assessment area has some ponds for drafting of water by fire equipment, but additional waster facilities and easier distribution need to be improved. The Johnson County Fire Department can receive water storage bladders from federal excess supplies through the Wyoming State Forestry Division, USFS, or BLM.

Type of Water Storage Facility:

Temporary: The proposed temporary water storage bladder would be at least 5,000 gallons in size and be equipped to fill tanker trucks at an acceptable rate.

Permanent: Water storage of 10,000 gallons in a tank or cistern on private or state land with flow rates, design, and location coordinated with Johnson County Fire Department, State of Wyoming Forestry Division, and private land owners.

Locations of Water Storage Facility: The locations and placement of the proposed water storage units should be determined by the Johnson County Fire Department, BLM, and residents of the Billy Creek cabins community.

Project Timing: Temporary water bladders could be procured and installed during Spring 2004. Water tank storage development could be assisted by various federal VFD or FEMA grants, once the project is planned, cost estimates provided, and appropriate clearances are obtained.

Project Necessity: Readily available water sources have been shown to be effective in reducing the risk of wildland fire. This assessment of specific hazards and threats to a community has helped to identify problems and solutions for both State, County, federal, and private landowners, and offers opportunities for partnerships and agreements. Approximately 24 structures within the Billy Creek cabins assessment area would have reduced risk from wildland fires. Successful suppression of wildfires by County, State and Federal agencies will be enhanced.

8.3 Hazardous fuels and shaded fuel breaks on public lands

Excessive standing dead, down dead trees and numerous overstocked saplings are prevalent on public lands in Sections 18, 19, 20, 21, 28, 29, and 30. Portions of public lands in Section 30 appear to have been thinned but not lopped and piled yielding a large amount of downed and dead trees. Fuel breaks on public lands currently exist as trails, 2-track, or 4-wheel drive roads. Forest health and fuel break projects along these access routes include removal of dead and diseased and over stocked trees by thinning and selective removal and burning of piles or slash within 100 feet of the road. Wood recovered from the thinning of overstocked trees could be made available to area residents for use as firewood prior to piling and burning.

Types of Treatments: The **first phase** of recommended fuels treatments is located in Sections 19 and 21. Fuel reduction recommendations in Section 19 are felling, bucking and piling standing dead trees and covering and burning hand piles currently located on BLM lands. The first location is adjacent to the 4-wheel drive road that departs from the Billy Creek in the center of Section 19 and goes generally southwest to the top of a ridge that is the border of BLM and private land. Recommendations for Section 21 are lopping, piling, and burning slash located in the previous select cut area located on BLM land. This will provide fuels reduction, decrease potential fire intensity, and enhance visual aspects of the area.

The **second phase** of recommended fuel treatments includes commercial thinning, thinning and lopping of standing dead trees, and selective light mechanized tree removal, combined with piling and burning. These actions will improve forest health and reduce the amount of

flammable vegetation in T48N R83 W, Sections 18, 19, 20, 21, 28, 29 and 30. The proposed treatment area, approximately 1,450 acres, includes all the BLM-administered acres that comprise these sections. Timber value in these sections will need to be determined and trees selected for removal will need to be identified. Areas with steep slopes, springs, seeps and riparian areas in Sections 18, 19, 21, 28 29 and 30 will require additional planning and consideration.

The recommended treatment is directed at improved forest health consisting of thinning, piling burning and tree removal by hand and light mechanical methods. Action is a necessity in this area. A “no action” decision will result in additional diseased, dying and dead trees while simultaneously increasing dead fuel loadings and potential fire intensity and severity. The area is mixed conifer, fuel model 10, generally termed a “long interval” fire forest, and overstocked Ponderosa Pine a “short interval” fire forest. Canopy densities combined with ladder fuels, standing dead and downed, dead, and woody materials indicate a high potential for torching, spotting, and crowning.

The thinning, piling, burning and tree removal should include Sections 17, 19, 21, 28, 29, and 30 in T48N R 83W. The objective is selective removal of diseased and other trees yielding decreased stand density with consideration to wildlife habitat, recreation and viewshed. Standard Federal environmental and silviculture requirements and methods will be met and applied. It is recommended that mechanical apparatus be restricted to the BLM approved skid trails to yield a smaller footprint in the area. Diseased and overstocked tree and sapling removal is the objective.

Seeps and springs may be located on BLM land and impact to these areas should be avoided. Coordination with various BLM specialists prior to thinning or tree removal will also be required. Public viewing of similar projects conducted by the State of Wyoming Division of Forestry, BLM or U.S. Forest Service via photos or in person is encouraged during the environmental assessment phase of this project. The BLM, State Forestry and the private landowners may choose to enter into agreements to reduce the accumulation of hazardous fuels in the assessment area.

The **third phase** is fuel reduction adjacent to 4 wheel drive roads on BLM lands in Sections 20 and 21, as with the Billy Creek road thinning, piling and burning of overstocked saplings and tree removal to decrease canopy cover could be accomplished on both sides of the roads. This would improve access for fire suppression vehicles and provide fire suppression operations with

options, especially in the Ponderosa pine areas of these sections. Fuel reduction should occur on 0.7 and 0.4 miles in Sections 20 and 21, respectively.

An additional option to the third phase could be construction of shaded fuel breaks on BLM lands adjacent to private lands where topography and expected fire behavior would help prevent the spread of fire from public land to private land or from private land to public land. Utilization of grass fuel types on private lands next to BLM lands as a fuel break is feasible, especially if the grass fuel types are reduced by grazing. A cooperative agreement between private landowners and the BLM could allow for construction of fuels breaks maintained by landowners. Mid slope fuel breaks should be avoided wherever possible.

Project Timing: BLM generally schedules projects in the following manner: Year One is the year during which identification and justification of projects occurs, treatment objectives are determined, and field surveys begin. In Year Two, projects that require compliance with the National Environmental Policy Act (NEPA) are planned, analyzed, and designed; projects that do not require NEPA compliance begin implementation. In Year Three, NEPA projects begin implementation. All steps are contingent on available funding. In Year Four, post-treatment monitoring begins. The phase 1 and phase 2 could also be initiated at the same time as they are in the same area. Planning forest health and fuels thinning, removal, piling, and burning could be initiated during spring of 2004, with actual implementation occurring during summer of 2005. Both efforts will require considerable public input and cooperation, and the timing may depend on funding and federal clearances.

Project Necessity: The combination of fuel breaks and fuel reduction has been shown to be an effective means by which communities can reduce the risk of fire in the wildland-urban interface. Forest health issues such as standing dead, dying, and diseased trees will continue to increase the potential for wildland fire and wildland-urban interface problems and forest degradation. A “no action” decision will increase the forest health problems, increase potential wildfire intensity and severity, and increase the risk potential for homeowners. In addition, a reduction in forage for wild ungulates will occur as well as loss of potential habitat for Canadian Lynx as the result of a wildfire similar to the Big Springs fire of 2003.

A solid assessment of specific hazards and threats to a community has helped to identify problems and solutions for both federal and private landowners, and has offered opportunities for partnerships and agreements. The risk of wildland fire losses would be reduced for

approximately 24 existing homes in the vicinity, as well as homes under construction, at the time of the assessment.

8.4 Create defensible space near homes and improve road ingress/egress on private lands

This recommendation is highest priority for home and private landowners in the Billy Creek assessment area. The majority of the homes and structures in the Billy Creek assessment area have limited defensible space. Private lands next to Billy Creek Road have areas of overstocked conifer saplings. Identification of an acceptable area to deposit limbs, brush, and trees removed for the creation of defensible space should be coordinated between private land owners and state, county, and federal agencies. Federal and State lands will require an approved permit for such an area.

Proposed Treatment: For all structures, begin implementation of defensible space within 40 feet of homes and structures. This should include felling and lopping (bucking) of downed, dead materials and standing and dying trees for removal or piling for burning. Undesirable trees should have limbs removed to a height of 10 feet if they are located within 40 feet of the structure. The footings and the undersides of homes, decks, and outbuildings should be enclosed with steel flashing, or other such materials, to prevent access by flying embers. Planting of fire tolerant shrubs, grasses, and trees to replace removed flammable vegetation could be accomplished as a second phase. Additional recommendations include the removal of refuse; placement of firewood stacks and other wooden material away from homes; thin conifer trees to reduce crown spacing to 10 to 20 feet apart; clean up and pile leaf litter and needle cast prior to fire season; and reduce grass height by mowing or grazing.

Treatment along the Billy Creek road and driveways includes thinning of saplings, tree limb removal and removal and/or piling of thinned sapling and tree limbs for burning. Overstocked saplings on both sides of the Billy Creek road (T48N R83W Sections 28 and 29) need to be thinned and removed. Burning of piles on private land should be coordinated with State of Wyoming Forestry Division, BLM, and the Johnson County Fire Department.

Project Timing: Building defensible space adjacent to the homes in Billy Creek should be initiated upon review of this report (October 2003). The first phase, creating at least 40 feet of defensible space around the home could be accomplished by late summer of 2004 for many

homes in the Billy Creek area. Some homes with large amount of standing or heavy down/dead trees will require a longer period.

Project Necessity: The construction of defensible space extending 40 to 100 feet in diameter from a dwelling or structure will decrease (but not eliminate) potential for wildfire damage or ignition to homes, and provide fire suppression operations with better options than homes without defensible space.

8.5 Community Education, Outreach,

Purpose of Public Education and Outreach: The purpose of the community-wide education program is to 1) educate the public of the dangers of wildfire in the area with aggressive prevention measures during summer months; 2) urge residents to take responsibility in reducing the risk of wildfire and to create defensible space around their residence; and 3) increase awareness of the natural role of low-intensity fire in woodland or grassland ecosystems and the benefits from removal of overstocked trees. The public education and outreach program could be co-sponsored by the BLM, USFS, and Johnson County Fire Department through a partnership agreement.

Outreach Occurrence: An annual “Firewise Clean-Up Week” is one tool that is recommended to encourage residents to create defensible and survivable space around their residence. In conjunction with the Firewise Clean-Up Week, specific demonstration projects may be designed and utilized to educate residents about longer-term investments they could make to increase fire safety. The clean-up week would occur in conjunction with public demonstrations, education programs, and speakers on wildfire and firewise practices. Fire prevention and fire danger signs along the Billy Creek road could assist by providing increased awareness to visitors and residents.

Outreach Timing: The annual “Firewise Clean-up Week,” education program, and public demonstrations would likely be most effective in the spring or early summer to remind people to prepare their properties for the coming fire season.

Outreach Necessity: Citizen involvement in wildfire mitigation in and around communities is a necessary element for success. Public education and outreach is an effective means of engaging the public in the process of reducing risks to a community, can help identify problems and

solutions for both federal and private landowners, and offer opportunities for partnerships and agreements. Such education and outreach has been shown to motivate homeowners to incorporate firewise measures around their individual properties, thereby contributing to the reduction of wildfire hazards in a community. Further, a community education and outreach program would help identify problems and solutions for both federal and private landowners, and offer opportunities for the Billy Creek cabins community to meet the requirements for a nationally recognized Firewise Community. Through partnerships, agreements, demonstration projects, and completion of the Firewise Community application, the Billy Creek cabins community could be recognized nationally as a Firewise Community. Further information can be found at www.firewise.org.

9.0 POTENTIAL SOURCES OF FUNDING

Potential funding sources should be coordinated with Johnson County, State of Wyoming Forestry Division, BLM, and USFS. Potential funding sources include but are not limited to the following:

- Volunteer fire assistance: BLM and USFS grants to volunteer fire departments (50/50 match).
- Hazardous Fuels Reduction: A hard and soft matching grant administered by Wyoming State Forestry Division for wildland urban interface communities at risk (60/40 match).
- Federal Excess Property: USFS loans equipment to State Foresters, recipients-State Forestry
- Economic Action Programs (EAP): A USFS, State, and private program that can assist in diversification for uses of forest products, including utilization of hazardous fuels byproducts (80% federal, 20% nonfederal), <http://www.fs.fed.us/r3/spf/community/>.
- Assistance to Fire Fighters: A FEMA and US Fire Administration Program that can improve fire fighting operations, services, and equipment (90% Federal, 10% non-Federal), <http://www.usfa.fema.gov>.
- Pre-Disaster Mitigation Program: A FEMA program delivered through the state emergency management agency. This program is for emergency management and assists local governments to develop all hazard mitigation plans.

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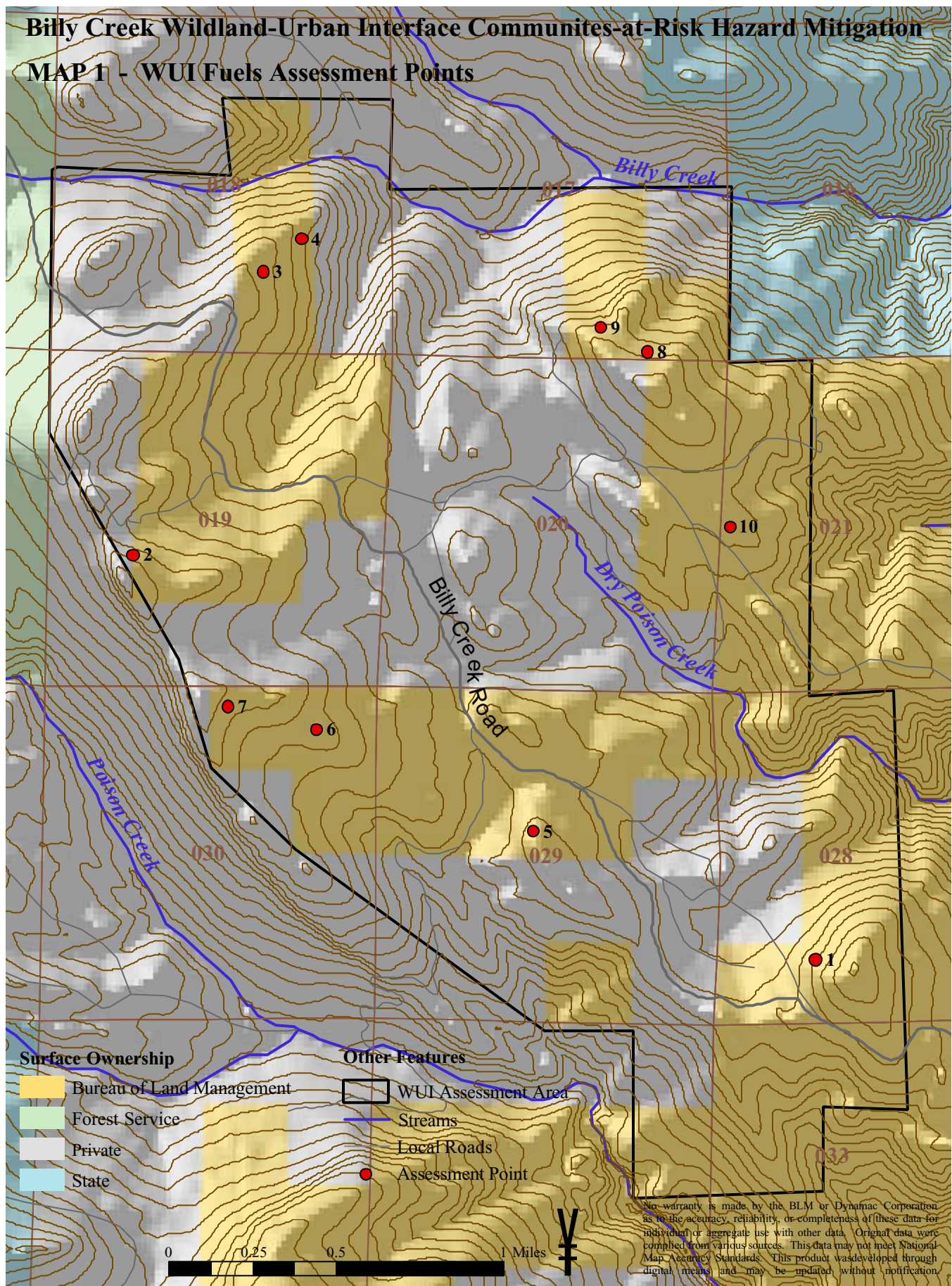
Appendix: Maps

Map 1: Billy Creek Assessment Area WUI Fuels
Assessment Points

Map 2: Billy Creek Assessment Area Proposed
Mitigation Projects

Billy Creek Wildland-Urban Interface Communities-at-Risk Hazard Mitigation

MAP 1 - WUI Fuels Assessment Points



Billy Creek Wildland-Urban Interface Communities-at-Risk Hazard Mitigation

MAP 2 - Proposed Mitigation Projects

