

**GUIDELINES FOR DEVELOPMENT
WITHIN THE
WILDLAND-URBAN INTERFACE**

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Table of Contents

INTRODUCTION.....	1
A. PREFACE	1
1. Wildfire Protection	1
2. Wildland-Urban Interface Categories	1
3. Purpose of Development Guidelines	2
B. COMMON WILDLAND-URBAN INTERFACE PROBLEMS	2
C. DEVELOPMENT OF THESE GUIDELINES.....	3
D. DEFINITIONS	6
SECTION I: GUIDELINES FOR SUBDIVISION REGULATIONS.....	13
A. INTRODUCTION.....	13
B. PURPOSE.....	13
C. AUTHORITY	14
D. GUIDELINES	14
1. Wildland Fuel Mitigation	14
2. Site Development.....	15
3. Fuelbreaks and Greenbelts.....	15
4. Means of Access.....	16
5. Water Supply.....	18
6. Alternative Development	21
7. Miscellaneous	21
SECTION II: GUIDELINES FOR ZONING REGULATIONS.....	22
A. INTRODUCTION.....	22
B. PURPOSE.....	22
C. AUTHORITY	23
D. APPLICABILITY	23

Table of Contents (Cont.)

E. GUIDELINES	23
1. Fuel Mitigation.....	23
2. Site Development and Building Construction Standards.....	24
3. Means of Access.....	25
4. Alternative Development	28
5. Miscellaneous	28
SECTION III: FINANCIAL ASSISTANCE FOR DEVELOPMENT WITHIN THE WILDLAND/URBAN INTERFACE	29
A. CRITERIA FOR FINANCIAL ASSISTANCE.....	29
APPENDIX A – HOMEOWNER’S CODE OF RESPONSIBILITY	30
APPENDIX B – DEFENSIBLE SPACE CLEARANCE	34
APPENDIX C – SOURCES.....	36

GUIDELINES FOR DEVELOPMENT WITHIN THE WILDLAND-URBAN INTERFACE

INTRODUCTION

A. PREFACE

Montana Code Annotated section 76-13-104(8) requires that the Montana Department of Natural Resources and Conservation (DNRC) adopt administrative rules that address development within the wildland-urban interface (WUI). This includes, but is not limited to, best practices for development within the WUI and criteria for providing grant and loan assistance to local government entities to encourage them to adopt those practices. The "best practices" required by statute are referred to in this document as "Guidelines", to be adopted by reference pursuant to the Montana Administrative Procedure Act and will partially fulfill DNRC's rulemaking mandate.

1. Wildfire Protection

In Montana, summer typically brings the fire season; the result of low rainfall, high temperatures, low humidity, and summer thunderstorms. Nevertheless, major wildfires may occur at any time of the year. Varied topography, a semi-arid climate, and numerous human related sources of ignition make this possible. But Montanans can readily protect lives, property, natural resources, and scenic beauty and greatly facilitate the work of fire suppression organizations by following these Guidelines. This facilitation is especially important in the WUI, where wildfires threaten homes and other buildings.

2. Wildland-Urban Interface Categories

Since the mid-1960s, people have subdivided and developed wildlands for residential, recreational, and commercial uses. This development has created many communities mixed with wildland vegetation. Fire Protection Specialists call these areas the wildland-urban interface or WUI.

A WUI fire situation exists anywhere that structures are located close to natural vegetation. A fire can spread from the vegetation to structures or vice-versa. A WUI can vary from a large housing development adjacent to natural vegetation to a structure(s) surrounded by natural vegetation. The two general categories of WUI are:

- a. **boundary WUI** means an area where a clearly defined, linear boundary of homes meets wildland vegetation. Typically, this sort of interface is on the fringe of large towns; and
- b. **intermix WUI** means an area where structures are scattered among or mixed with wildland vegetation, without a clearly defined boundary.

Typically, the intermix WUI is in rural areas where people have subdivided wildlands into small parcels of 1 to 40 acres.

3. Purpose of Development Guidelines

These Guidelines may be used by local government entities, fire protection agencies, planners, developers, and homeowners to improve protection of life, property, and resources from wildland fire. However, because Montana is so large and diverse in terrain, vegetation, and weather, the Guidelines must be applied with flexibility and in consultation with local fire experts. The ultimate goal is the protection of life, property, and resources, and there are several alternatives to achieving that end.

Local governmental entities must examine their individual situations and challenges. This examination may lead to deviations from these Guidelines.

In order for an Authority Having Jurisdiction (AHJ) to institute these Guidelines as a regulatory document, changes must be made to the language. The word "should" must be changed to "shall", "discourage" must be changed to "prohibit" and recommend to "require".

These are minimum guidelines, and counties and AHJ may apply more stringent standards where appropriate. Rules for construction techniques are being addressed by the Montana Department of Labor and Industry (DLI).

Developments in science and technology, along with the adoption of new rules by the state of Montana and its counties governing construction and fuels mitigation in the WUI will present new ideas and direction for homeowners and other residents of the WUI.

B. COMMON WILDLAND-URBAN INTERFACE PROBLEMS

Fire protection agencies, local government entities, developers, planners, and landowners must work together to improve fire protection in the WUI. Some common problems are listed below.

1. Responsibilities and jurisdictions of different fire protection agencies are sometimes unclear.
 - a. Enhancing development standards to achieve better fire protection in the WUI must occur in conjunction with efforts to reduce fuel loads on state and national land that abuts private property.
2. The responsibilities of the developer, planner, and landowner are not well defined. Few people who live, plan, and develop in the WUI recognize the wildfire hazards. Consequently, they seldom invest in appropriate fire prevention and protection measures.

3. Frequently, no fire protection agency takes the responsibility for adopting or enforcing local and state fire regulations.
4. Firefighters often find inadequate roads, insufficient water, and a buildup of natural fuels.
5. Some WUI areas have no organized fire protection agency.

Wildfire disasters in WUI areas are common in many parts of the nation, and the problem is increasing. This problem can be corrected only through comprehensive planning that includes housing development design, fuels management, and public education. A fire-protection agency by itself will not suffice.

These Guidelines describe how to reduce risk by reducing and managing the buildup of fuels, building and maintaining adequate road systems, and providing adequate water to firefighters. These steps, along with the use of fire-resistant materials and designs for homes and outbuildings can work in conjunction to protect lives, property, and natural resources across the state of Montana.

C. DEVELOPMENT OF THESE GUIDELINES

The development of these Guidelines began in the winter of 2007/2008 by many groups, organizations, government agencies, and individuals as concerns grew about protection of lives, property, and natural resources from unwanted wildfire across Montana.

Between the severity of the annual fire seasons and the continued development of the WUI, fire suppression costs escalated, giving even more reason to encourage homeowners, developers, and others to take on some of the responsibility of protecting homes and developments from wildfire (see Appendix A).

In 2007, the Montana State Legislature saw the need for these Guidelines and mandated DNRC to work toward their development and their adoption as administrative rules. The legislation included the following statutes:

Mont. Code Annotated section 76-13-115. State fire policy. The legislature finds and declares that:

- (1) the safety of the public and of firefighters is paramount in all wildfire suppression activities;
- (2) it is a priority to minimize property and resource loss resulting from wildfire and to minimize expense to Montana taxpayers, which is generally accomplished through an aggressive and rapid initial attack effort;
- (3) interagency cooperation and coordination among local, state, and federal agencies are intended and encouraged, including cooperation when restricting activity or closing areas to access becomes necessary;
- (4) fire prevention, hazard reduction, and loss mitigation are fundamental components of this policy;

- (5) all property in Montana has wildfire protection from a recognized fire protection entity;
- (6) all private property owners and federal and state public land management agencies have a responsibility to manage resources, mitigate fire hazards, and otherwise prevent fires on their property;
- (7) sound forest management activities to reduce fire risk, such as thinning, prescribed burning, and insect and disease treatments, improve the overall diversity and vigor of forested landscapes and improve the condition of related water, wildlife, recreation, and aesthetic resources; and
- (8) development of fire protection Guidelines for the wildland-urban interface is critical to improving public safety and for reducing risk and loss.

Mont. Code Annotated section 76-13-104. Functions of department -- rulemaking.

- (1) The department has the duty to ensure the protection of land under state and private ownership and to suppress wildfires on land under state and private ownership. No fees may be collected for this purpose except fees provided for in Mont. Code Annotated section 76-13-201.
- (2) (a) The department shall adopt rules to protect the natural resources of the state, especially the natural resources owned by the state, from destruction by fire and for that purpose, in declared emergencies, may employ personnel and incur other expenses when necessary.
 (b) The department may adopt and enforce reasonable rules for the purpose of enforcing and accomplishing the provisions and purposes of part 2 and this part.
- (3) The duty imposed on the department under this section is not exclusive to the department and does not absolve private property owners or local governmental fire agencies organized under Title 7, chapter 33, from any fire protection or suppression responsibilities.
- (4) The department may give technical and practical advice concerning forest, range, water, and soil conservation and the establishment and maintenance of woodlots, windbreaks, shelterbelts, and fire protection.
- (5) The department shall cooperate with all public and other agencies in the development, protection, and conservation of the forest, range, and water resources in this state.
- (6) The department shall establish and maintain wildland fire control training programs.
- (7) The department shall appoint firewardens in the number and localities that it considers necessary, subject to confirmation by the local county government, and shall adopt rules prescribing the qualifications and duties of firewardens that are in addition to those provided in Mont. Code Annotated section 76-13-116.
- (8) By October 1, 2008, the department shall adopt rules addressing development within the wildland-urban interface, including but not limited to:
 - (a) best practices for development within the wildland-urban interface; and

(b) criteria for providing grant and loan assistance to local government entities to encourage adoption of best practices for development within the wildland-urban interface.

With that mandate, the following groups, organizations and government agencies collaboratively assisted DNRC in the fulfillment of its mandate to develop these Guidelines.

Montana League of Cities and Towns
Montana Farm Bureau
Montana Association of Counties
United Department of Agriculture State Forest Service
United States Department of Interior Bureau of Land Management
Montana Department of Labor and Industry
Montana Wood Products Association
Montana Association of Realtors
Independent Insurance Agents of Montana
Montana Department of Commerce
Montana Fire Chiefs Association
Montana State Fire Marshal
Montana Disaster and Emergency Services
Montana Department of Health and Human Services
FireSafe Montana
Lewis and Clark County
NorthWestern Energy
Montana Smart Growth Coalition
Montana Bankers Association
Flathead Electric Cooperative
Fire Logistics Incorporated
Montana Association of Planners
Plum Creek
Missoula County
Montana Forest Landowners Association
Montana Department of Fish, Wildlife and Parks

D. DEFINITIONS

1. **Access:**
 - a. **legal access** means a property fronting a public (city, county, state, or federal) street, road, or easement that has been dedicated for public use, or a private street, road, or easement that has been dedicated for either public or private use- ;
 - b. **physical access** means property fronting a street, road, or driveway that has been constructed in conformance with road standards adopted by the AHJ- ; and
 - c. **access**, from a practical standpoint should be defined as a road or roads that provide all-weather, all-season access.
2. **Accessory building or structure** means any building or structure used incidentally to another building or structure. It may be unenclosed, without a complete exterior wall system enclosing the area under roof or floor above.
3. **Alternative** means a system, condition, arrangement, material, or equipment submitted to the AHJ as a substitute for applicable requirements.
4. **Approved** means acceptable to the authority having jurisdiction or other entity having jurisdictional authority.
5. **Aspect** means the compass direction toward which a slope faces.
6. **Authority Having Jurisdiction (AHJ)** means jurisdictions, approving agencies, private entities, and/or property owners who may assume the role of an AHJ, given a statutory authority or legal responsibility.
7. **Building** means any structure used or intended for supporting any use or occupancy.
8. **Building envelope** means the designated area of a lot within which a structure or structures can be built and which is depicted or described on a site plan, final subdivision plat, or lot layout.
9. **Canyon** means a deep valley with steep slopes carved from the landscape by a river or a stream.
10. **Combustible** means any material that, in the form in which it is used and under conditions anticipated, will ignite and burn (see noncombustible).
11. **Community Wildfire Protection Plans (CWPP)** are authorized and defined in Title I of the Healthy Forests Restoration Act (HFRA) passed by Congress on November 21, 2003, and signed into law by President George W. Bush on December 3, 2003.
12. **Critical fire weather** means a set of weather conditions (usually a combination of high temperatures, low relative humidity, and strong wind)

whose effects on fire behavior make control difficult and threaten firefighter safety.

13. **Cul-de-sac** means a street having only one outlet for vehicular traffic and terminating in a bulb or hammerhead shaped turn-around area.
14. **Defensible space** means an area, either natural or manmade, where material capable of allowing a fire to spread unchecked has been treated, removed, or modified to slow the rate and intensity of an advancing wildfire and to provide a safe working area for wildfire suppression operations to occur while protecting life and/or improved property.
15. **Development** means land use development or construction projects that involve substantial property improvement and usually a change in the land use character within a subject property or properties. Such development generally involves using land for residential or commercial/industrial purposes.
16. **DLI** means the Montana Department of Labor and Industry.
17. **Driveway** means a vehicular ingress and egress route that serves no more than two buildings or structures or no more than five dwelling units, not including accessory structures.
18. **Dwelling** means any structure or portion thereof providing complete, independent living facilities for one or more households.
19. **Easement** means the right of a property owner to use all or a portion of another's property for a specified purpose, created by law, agreement, deed, or other document.
20. **Evacuation** means the temporary movement of people and their possessions from locations threatened by a hazard.
21. **Fire chimney** means topographical features, usually canyons, gulches or valleys, which tend to funnel or otherwise concentrate fire toward the top of steep slopes. Fire chimneys are generally less than one-half mile in length, have slopes of 20 percent or steeper, are less than 600 feet wide, and are at least 120 feet deep as measured from the bottom of the ravine to the crest of either adjacent ridge or slope.
22. **Fire flow** means the flow rate of a water supply (measured at 20 psi [137.9 kPa] residual pressure) that is available for firefighting.
23. **Fire hazard** means a fuel complex (defined by kind, arrangement, volume, condition, and location) that determines the ease of ignition and/or resistance to fire control.

24. **Fire hydrant** means a valved connection on a year-round water supply system having one or more outlets that is used to supply water for fire departments.
 - a. **Pressurized hydrant** means an arrangement of pipe permanently connected to a year- round water source with a pressurized water supply system that provides a ready means of water supply for firefighting purposes.
 - b. **Dry (draft) hydrant** means an arrangement of pipe permanently connected to a year- round water source other than a piped, pressurized water supply system that provides a ready means of water supply for firefighting purposes and that utilizes the drafting (suction) capability of fire department pumpers.
25. **Fire protection feature** means any feature outlined in the fire protection plan, or any other features that aid in the prevention or protection from fire.
26. **Fire protection plan** means a document prepared for a specific project or development proposed for the WUI area. It describes ways to minimize and mitigate the fire problems created by the project or development, with the purpose of reducing impact to (and enhancing) the community's fire protection delivery system.
27. **Fire resistance rated construction** means the use of materials and systems in the design and construction of a building or structure to safeguard against the spread of fire within a building or structure and the spread of fire to or from buildings or structures to the WUI area.
28. **Fire weather** means weather conditions favorable to the ignition and rapid spread of fire. In wildfires, this generally includes high temperatures combined with strong winds and low humidity (see critical fire weather).
29. **Fuels** means all combustible materials within the WUI including, but not limited to vegetation and structures.
30. **Fuel break** means an area, strategically located for fighting anticipated fires, where the native vegetation has been modified or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fireprone areas into smaller areas for easier fire control and to provide access for firefighting.
31. **Fuel loading** means the volume of fuel in a given area. Generally expressed in tons or pounds per acre, fuel loading may be referenced by fuel size or timelag categories, and may include surface fuels or total fuels.
32. **Fuel mosaic** means a fuel modification system that provides for the creation of islands and irregular boundaries to reduce the visual and ecological impact of fuel modification.

33. **Governing body** means the legislative body of a city, town, county or consolidated government, created pursuant to Title 7, chapter 2, MCA.
34. **Greenbelt** means an area with fire-resistive vegetation (planted or native), maintained to cause a reduction in fire intensity, and used for purposes other than fire protection (golf course, cemetery, park, playground, mowed park, orchard, etc.).
35. **Ground fuels** means all combustible materials such as grass, duff, loose surface litter, tree or shrub roots, rotting wood, leaves, peat, or sawdust that typically support combustion.
36. **Gulch** means a V-shaped valley formed by erosion. It may contain a small perennial or ephemeral stream.
37. **Hammer head turnaround** means a road ending that terminates with a T-shaped turnaround similar to the head of a hammer.
38. **Hazard** means a fuel complex defined by kind, arrangement, volume, condition, and location that determines the ease of ignition and/or of resistance to fire control.
39. **Highway, road, or street**, whether these terms appear together or separately or are preceded by the adjective "public", are general terms denoting a public way for purposes of vehicular travel and include the entire areas within the right-of-way (60-1-103(19), MCA).
40. **Improved property** means a piece of land or real estate upon which a structure has been placed, a marketable crop is growing (including timber), or other property improvement has been made.
41. **Jurisdiction** means the legal power, right or authority over a territory, or the territory within which each may be exercised.
42. **Ladder fuels** means fuels that provide vertical continuity, allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.
43. **Land or property owner** means any and all individuals, organizations, corporations, or other parties with a titled interest in the subject property. For all other purposes of these regulations, the terms "property owner", "landowner", and "owner" mean both the seller and the purchaser under a contract for deed.
44. **Land use** means the type or degree of activity occurring or intended to occur on a piece of land.
45. **Life safety** means actions taken to prevent the endangerment of people threatened by emergency incidents or by activities associated with the management.

46. **Local Government** includes city councils, county commissions, and other elected and appointed officials who work for local government.
47. **Mitigation** means action that moderates the severity of a fire hazard or risk.
48. **Noncombustible** is a material that in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire.
49. **Obstructions** mean any object or collection of objects that may deter, hinder, or block access.
50. **Occupancy** means the purpose for which a building, or portion thereof is used or intended to be used.
51. **Open space** means land or water areas provided or preserved in an essentially undeveloped state for active or passive park or recreation purposes; land conservation or other natural resource protection; historic or scenic purposes; or assisting in the shaping of the character, direction, and timing of community development.
52. **Planned Unit Development (PUD)** means a land development project consisting of residential clusters, industrial parks, shopping centers, or office building parks that compose a planned mixture of land uses built in a prearranged relationship to each other and having open space and community facilities in common ownership or use (76-3-103(10), MCA).
53. **Primary access road** means a main entry and exit road. Usually the road(s) that provide(s) access to the development from a highway, county road, or major arterial. Must provide for unobstructed traffic circulation during an emergency.
54. **Private road or street** means a street or road providing access that is not a public road or street.
55. **Public highway, road, or street**, whether the terms appear together or separately or are preceded by the adjective "public", are general terms denoting a public way for purposes of vehicular travel and include the entire area within the right-of-way.
56. **Public highways** means all streets, roads, highways, bridges, and related structures:
 - a. built and maintained with appropriated funds of the United States, the state, or any political subdivision of the state;
 - b. dedicated to public use;
 - c. acquired by eminent domain, as provided in Title 70, chapter 30, and Title 60, chapter 4, MCA; or

- d. acquired by adverse use by the public, with jurisdiction having been assumed by the state or any political subdivision of the state (60-1-103(22), MCA).
57. **Risk** means the measure of the probability and severity of adverse effects to persons or property that results from an exposure to a wildland fire (direct flames, radiant heat, or firebrands).
58. **Secondary road** means a road that leaves a primary access road to reach homes, buildings, recreational sites, etc. that lie away from the primary road.
59. **Street or road** means any access, not including a driveway, providing access to more than one parcel and primarily intended for vehicular access.
60. **Slash** means an accumulation of any burnable, organic material that has been severed or removed from its natural state.
61. **Slope** means an upward or downward incline or slant, usually calculated as a percent of slope (rise or fall per 100 feet [30.45m] of horizontal distance).
62. **Street or road identification signs** means any sign containing words, numbers, directions, or symbols that provide information to emergency responders.
63. **Structure** means that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built-up or composed of parts joined together in some definite manner.
64. **Structure protection** means protecting a structure from the threat of damage from an advancing wildland fire. Protection involves the use of standard wildland protection tactics, control methods, and equipment, including fire control lines and the extinguishment of spot fires near or on the structure. The protection can be provided by both the rural and/or local government fire department and the wildland fire protection agency.
65. **Subdivision** means a division of land or land so divided that it creates one or more parcels containing less than 160 acres that cannot be described as a one-quarter aliquot part of a United States government section, exclusive of public roadways, in order that the title to or possession of the parcels may be sold, rented, leased, or otherwise conveyed and includes any resubdivision and further includes a condominium or area, regardless of its size, that provides or will provide multiple space for recreational camping vehicles or mobile homes (76-3-103(15), MCA).
66. **Surface fuels** means all materials lying on or immediately above the ground, including needles, leaves, duff, grass, small dead wood, downed logs, stumps, large limbs, low brush, and reproduction.

67. **Survivable space**: Survivable space is defined as the characteristics of a structure and the adjacent area and their ability to survive a wildland fire. Appropriate and applicable survivable space provisions provide the best chance for a structure to resist loss and/or major damage during a wildland fire, on its own without direct suppression intervention by firefighters.
68. **Traffic lane** means that portion of a roadway that provides a single lane of vehicle travel in one direction.
69. **Tree crown** means the primary and secondary branches growing out from the main stem, together with twigs and foliage.
70. **Turnaround** means a portion of a street or road, unobstructed by parking, that allows for a safe reversal of direction for emergency equipment.
71. **Turnout-Pullout** means an area along the edge of a street or road that provides a space for a vehicle to safely move out of a traffic lane in order to permit the passage of emergency or other types of vehicles.
72. **Valley** means an elongated depression of the Earth's surface, usually found between ranges of hills or mountains.
73. **Vegetation** means any plant, native or planted, living or dead: tree, shrub, bush, grass, flower, etc.
74. **Vegetation management plan** means a plan that reduces the amount of fuel available for wildland fires, reducing the probability of a rapidly spreading wildland fire. Elements of the plan include removal of slash, snags, other ground fuels, surface fuels, ladder fuels and dead trees, and thinning of live vegetation.
75. **Water supply** means an acceptable source of water for firefighting activities.
76. **Wildland** means an area in which development is essentially nonexistent, except for roads, railroads, power lines, and similar facilities.
77. **Wildland fire or wildfire** means an unplanned and uncontrolled fire spreading through vegetative fuels, at times involving structures.
78. **Wildland fire protection** means the work of prevention, detection, and suppression of wildland fires, and includes the training required to perform those functions.
79. **Wildland-Urban Interface (WUI)** means the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

SECTION I: GUIDELINES FOR SUBDIVISION REGULATIONS

A. INTRODUCTION

These Guidelines provide a list of recommendations that can be incorporated into local subdivision regulations. These would apply to the development of lots in new subdivisions. These Guidelines do not include structural elements that are the responsibility of DLI. However, once DLI defines what construction techniques or other mitigation measures are appropriate for use in mitigating hazards during the subdivision process, local government may adopt them into their county subdivision regulations.

B. PURPOSE

1. The purpose of these Guidelines is to provide a means to protect the public health, safety, and welfare by establishing recommendations for new subdivisions to:
 - a. reduce threats to life safety, property, and resources by improving access to and defensibility of developments, homes, and other property in wildland-urban interface areas;
 - b. minimize the potential of spreading fire from wildland areas to structures and from structure fires to wildland areas, and permit efficient suppression of fires;
 - c. identify the appropriate use of cul-de-sacs, hammer head turnarounds, and turnouts on streets and roads providing legal and physical access to new subdivisions with the intent to provide better emergency access to remote areas;
 - d. recommend that new subdivisions and planned unit developments developed in the WUI should provide water supply systems with suitable access for firefighting crews and apparatus, with the intent to increase the resources available to such crews and minimize the spread of a wildland or structure fire; and
 - e. educate property owners, residents, and people that they have a responsibility for prevention of wildland fire on their own property pursuant to 76-13-115(6) and 76-13-212, MCA.

2. In order for an AHJ to institute these Guidelines as a regulatory document, changes must be made to the language. The word "should" must be changed to "shall", "discourage" must be changed to "prohibit", and "recommend" to "require".
3. This section is not intended to replace or duplicate subdivision review, nor to require the mitigation of off-site impacts on water supply systems or roads.

C. AUTHORITY

1. In conformance with 76-3-504(1)(e), MCA, these Guidelines may be incorporated into subdivision regulations adopted on or after October 1, 2009, for fuels mitigation, road access, and water supply.

D. GUIDELINES

1. Wildland Fuel Mitigation

a. Defensible Space

- i. A building envelope should be defined on each lot prior to construction of a structure in cooperation with the AHJ.
- ii. Each building envelope should have a minimum defensible space established prior to construction, and the defensible space should be based on the attached guideline chart (see Defensible Space Guidelines, Appendix B).

b. Vegetation Management Plan

- i. The subdivider should provide a vegetation management plan for all properties and streets or roads within the subdivision, including the open space.
- ii. The plan should be approved by the AHJ and should be implemented prior to the filing of the final plat for the subdivision. The intent of a vegetation management plan is to reduce fuel loading and provide continuous maintenance of the fuel load. The plan should address managing vegetation to meet the following goals:
 - A. protect life and property;
 - B. reduce the potential for a fire on improved property to spread into wildland fuels, and for a fire in wildland fuels to spread into improved property or structures. This also applies to reducing the potential for a fire spreading to or from lands adjacent to the subdivision;
 - C. provide a defensible space and a safe working areas for emergency responders fighting fire. Defensible space should be based on the attached chart (see Defensible Space Guidelines in Appendix B); and
 - D. maintain important native plant communities, the ecological processes that influence them, and consistency with fish and wildlife habitat conservation goals. Consulting with biologists in the

preparation and implementation of the vegetation management plan is strongly encouraged.

- iii. All areas within five feet of each side of a driveway should be cleared of vegetation to a maximum height of five inches prior to the construction of any new structures or the alteration, moving, or change of use of an existing structure on an existing lot.

2. Site Development

- a. **Steep Slopes.** Structures in new subdivisions should not be sited in areas where the slope exceeds 30 percent as measured before disturbance or alteration. Any proposed lot within a new subdivision that has slopes that exceed 30 percent should have a building envelope or no-build areas established on the face of the final plat for the subdivision that provides for a building site on slopes less than 30 percent. The structures located on each lot should be located within the building envelope or away from no-build areas as determined by the governing body.
- b. **Chimneys.** Buildings and building sites are discouraged within ravines or other topographical features which constitute "fire chimneys", and within 150 feet of the apex of "fire chimneys". Any proposed lot within a new subdivision with a "fire chimney" located on the lot should have a no-build area/zone designated on the face of the final plat for the subdivision that prohibits future development within "fire chimneys" and within 150 feet of the apex of "fire chimneys".
- c. **Improvements Prior to Construction.** Water sources, wells, draft sites, hydrants, fire breaks, access routes, and other fire protection equipment or features required by the preliminary plat approval should be installed prior to construction of any residential or commercial/industrial structures in a new subdivision.

3. Fuelbreaks and Greenbelts

WUI fire protection may rely on fuelbreaks and greenbelts to separate communities, groups of structures, or individual homes. These breaks can slow or stop the spread of an oncoming fire. Locate fuelbreaks and greenbelts to protect both existing and planned developments and adjacent wildlands.

Good landscaping design can incorporate vegetation or fire fuelbreaks in planned developments. These fuelbreaks should not be a bare soil trail bulldozed around a subdivision, but can be as simple as the removal of dead and fallen trees, tree limbs, shrubs, and other flammable vegetation together with breaking the continuity of vegetation in a band 100 to 300 feet around the perimeter of the development.

One of the most effective means of providing fire protection is the use of open spaces and public use areas such as parks, recreation sites, picnic areas, trails, and perimeter roads to break fuel continuity.

Natural features such as rocky formations with little or no vegetation or rivers or streambeds in which vegetation has been thinned and dead and dying materials removed can also be utilized to the extent allowed by the Montana Streamside Management Zone (SMZ) Law in an overall subdivision landscaping plan to help retard an advancing wildfire.

4. **Means of Access**

Most non-firefighter deaths during wildland fires occur during evacuation or attempts to escape from a fire front. Access to developed areas requires that public and private roads, bridges, and driveways be properly constructed to provide for safe ingress and egress for fire personnel and equipment and the public.

Streets and roads providing legal and physical access to lots in new subdivisions and other improvements that help ensure access should address the following. These access Guidelines apply to all means of access, public or private.

a. **Streets and Roads**

- i. Legal and physical access to the lots in all subdivisions and other developments should be provided by a minimum of two approach routes, located as remotely from each other as possible to assure more than one escape route for residents and access routes by emergency vehicles. In addition, it is encouraged that new developments plan for and connect to adjoining properties and their road systems.
 - A. Subdivisions that cannot provide a minimum of two approach routes are discouraged. However they may be allowed if developers can mitigate the risks by use of one or more of the following measures, and when approved by the AHJ:
 - I. increased defensible space requirements;
 - II. fuel breaks along the roadways;
 - III. turnouts and pull-outs;
 - IV. cul-de-sacs and/or hammer head turnarounds;
 - V. increased flows of fire protection water supply;
 - VI. interior fire sprinklers;
 - VII. exterior fire-retardant sprinkler systems; and
 - VIII. safety zones.
- ii. All subdivisions should be designed to ensure that fire apparatus has access to within 150 feet of all portions of the buildings constructed on

the lots in a proposed development.

iii. In areas of extreme fire hazard classification, as determined by the AHJ, the length of a road ending in a cul-de-sac or hammer head shall not exceed 600 feet. In all other areas the maximum length will be 1000 feet. See the referenced documents in Appendix C.

iv. Road Standards:

A. Roadways and driveways should have a minimum clear width of 12 feet for each lane of travel, not including shoulders. They should have a minimum clearance in height of 13 feet, 6 inches.

B. Roads should be constructed of an all weather surface that is capable of supporting all legal loads and as approved by the AHJ.

v. Grades should not exceed ten percent, except as approved by the AHJ.

vi. Bridges and Culverts

A. Bridges and culverts should be designed to accommodate high water flows, including 100-year flood flows in the Federal Emergency Management Agency National Flood Insurance Program, and constructed using accepted engineering practices. Bridges should be constructed to accommodate the heaviest legal load allowed. Load limits should be posted on all bridges.

B. Vegetation should be cleared to a minimum of five feet from around all bridges. Bridges should be constructed of noncombustible material.

vii. Property owners should provide emergency access to all open space within the subdivision. The access should be sufficient to provide access for wildland firefighting vehicles. The fire protection access should be approved by the AHJ.

viii. Roadside Fuel Reductions

A. All areas within five feet of each side of the driving surface on a public street or road should be cleared of all vegetation.

B. For private streets or roads, all areas within five feet on either side of the driving surface should be cleared of all vegetation.

b. **Gates**

i. The clear opening provided through gates should be two feet (0.61 m) wider than the traveled way.

- ii. All gates should be located a minimum of 30 feet (9.2 m) from the public right-of-way and shall not open outward.
- iii. Fire department personnel should have ready access to locking mechanisms on any gate that restricts access, or the gate should be constructed to "break away".

c. Signage

- i. All roads within a new subdivision should be identified with approved non-combustible, reflective road signs that meet the applicable local standard.
- ii. All residential or commercial structures within a new subdivision should be clearly identified prior to occupancy with address numbers that are plainly visible and legible from the street. Numbers should be a minimum of four inches in height and reflective.

5. Water Supply

a. Water Supply Requirements. Due to the wide variety of situations and levels of fire protection that exist across the state of Montana, the location of each development will present a unique set of challenges for the AHJ.

- i. Minimum GPM Requirements. Regardless of the delivery method or source water, for the purposes of the protection of residential structures the water system should be capable of being supplied on site at a minimum of 1,000 gpm for a minimum of 30 minutes. The AHJ will determine location or locations of tanks and hydrants as necessary to meet the threat from wildland fire.

b. Guidelines

- i. Water Supply Needs. Water supply needs may be satisfied by the use of:
 - A. pressurized water systems with hydrants as approved by AHJ;
 - B. draft sites from natural water sources such as ponds and streams as approved by the AHJ; and
 - C. storage tanks with dry hydrants as approved by the AHJ. The AHJ may suggest warning alarms in the event of lower than required water supplies.

ii. Draft Sites/Dry Hydrants

- A. Whether the water source is manmade or natural, dry hydrants should be installed at all draft sites. The design, construction, locations, access and maintenance plans for these sites should be approved by the AHJ.
- B. The draft site should have emergency vehicle access from an access road constructed in accordance with access requirements (see means of access). Fire department access points should either be located along an access road or along an approved driveway that does not exceed 150 feet (45.720 meters) in length.
- C. Access to fire department draft sites should be designed to ensure that access roads and driveways are not obstructed. Accessibility should be provided in such a manner that responders will be able to withdraw water without having to go through extraordinary measures such as knocking down fences, etc.
- D. Water sources should have a minimum annual water level or flow sufficient to meet the adequate water supply needs as suggested by these Guidelines. This supply should not be rendered unusable because of freezing or seasonal low water. Adequate water flow and rights for access to the water source should be ensured in a manner acceptable to the AHJ.
- E. Aquatic and Riparian Area Habitat Protection. In order to protect aquatic and riparian area habitats, landowners and the AHJ are strongly encouraged to consult with the local Montana Fish, Wildlife and Parks fisheries biologist in making plans to utilize a natural water source as a water supply for fire protection purposes.

iii. Pressurized Hydrant Systems. Pressurized hydrant systems should have a minimum usable water volume as determined by these guidelines. This water source should be equipped with an approved hydrant or hydrants. The water level of the water source should be maintained by rainfall, water pumped from a well, or by seasonal high water of a stream or river. The design construction, capacity, location, water level maintenance, and access should be approved by the AHJ.

iv. Manmade Storage Systems (Tanks/Cisterns). Manmade storage systems should have a minimum usable water volume as determined by these Guidelines. This water source should be equipped with an approved hydrant or hydrants. The water source should have a mechanism to maintain the water level at its capacity. This may be accomplished by rainfall, water pumped from a well, or by seasonal high water of a stream or river. The design construction, location, water level maintenance, access and access maintenance should be approved by the AHJ.

v. Testing and Maintenance

- A. Water sources, draft sites, hydrants, and other fire protection equipment suggested by these Guidelines should be subject to periodic tests as required by the AHJ.
- B. All such equipment installed under the provisions of these Guidelines should be maintained in an operative condition at all times and should be repaired or replaced where defective. Additions, repairs, alterations, and servicing of such fire protection equipment and resources should be in accordance with standards approved by the AHJ.
- C. Defensible space of not less than 30 feet should be provided around water tank structures, water supply pumps, and pump houses. Portions of trees and other combustible vegetation within 30 feet of the facilities should be removed.
- D. Water supply facilities in the WUI dependent on electrical power to meet water supply demands should provide standby power systems to ensure that an uninterrupted water supply is provided. The standby power source should be capable of providing power for a minimum of two hours.
 - I. When approved by the AHJ, the standby power suggestion may be waived when the primary power service is underground.
 - II. Standby power is not suggested when the water supply facility serves no more than one single family dwelling.

vi. Modifications

- A. For a minor subdivision or for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire flow is impractical, the fire flow requirements may be modified downward by the AHJ.
- B. Fire flow may be modified upward by the AHJ where conditions indicate an unusual susceptibility to group fires or conflagrations. An upward modification should not be more than twice that suggested for the building or buildings under consideration.
- C. Water supply points may be developed at a single location or at a number of locations within the vicinity of the development. The location or locations should be determined in concert with the AHJ in order to best support suppression activities by the AHJ.

6. **Alternative Development.** The AHJ may approve, or recommend approval of an alternative development proposal when the overall design, as proposed by the applicant, meets or exceeds the intent of these Guidelines and is not detrimental to public health, safety, and welfare.

7. **Miscellaneous**
 - a. **Mapping of Fire Protection Features.** The subdivider should provide a detailed site map, including all fire protection features (i.e., access roads, hydrants systems, water supply points, etc. installed in the development) to the AHJ.

 - b. **Maintenance of Equipment and Features**
 - i. All fire protection equipment and features should be properly maintained to provide at least the same level of performance and protection as designed.

 - ii. Maintenance should be ensured by whatever mechanism that is acceptable to the AHJ, upon final plat approval.

SECTION II: GUIDELINES FOR WILDLAND-URBAN INTERFACE ZONING REGULATIONS

A. INTRODUCTION

These Guidelines provide a list of recommendations that can be incorporated into city/county zoning regulations for issues such as maintenance of vegetation management on existing lots, the construction of driveways on existing lots, and the development of lots in subdivisions. While it is recognized that it may be difficult or impossible to enforce these Guidelines on existing developments, all efforts should be made to utilize these as much as possible on existing lots in order to best protect the lives, homes and investments.

These Guidelines may be adopted as part of the regulations for a new zoning district, as an amendment to regulations for an existing zoning district or regulations for an overlay zoning district.

B. PURPOSE

1. The purpose of these Guidelines is to provide a means to protect the public health, safety, and welfare by establishing recommendations for development within a Wildland-Urban Interface zoned area to:
 - a. reduce threats to life safety, property, and resources by improving access to and defensibility of developments, homes, and other property in wildland-urban interface (WUI) areas;
 - b. minimize the potential of spreading fire from wildland areas to structures and from structure fires to wildland areas, and permit efficient suppression of fires;
 - c. encourage development and construction standards that apply to the construction, alteration, moving, or change of use of residential, commercial, and accessory structures, with the intent to reduce the threat of loss of life and property due to wildland fires encroaching on developed areas;
 - d. identify the appropriate use of cul-de-sacs, hammer head turnarounds, and turnouts on streets and roads providing legal and physical access to subdivisions with the intent to provide better emergency access to remote areas;
 - e. encourage homeowners and neighborhoods to plan, create and maintain defensible space that utilizes fire resistant construction and landscaping;

- f. encourage the provision for, and development of water supply systems and suitable access for firefighting crews and apparatus, with the intent to increase the resources available to such crews and minimize the spread of a wildland or structure fire; and
 - g. educate property owners, residents, and people that they have a responsibility for prevention of wildland fire on their own property pursuant to 76-13-115(6) and 76-13-212, MCA. In order for an AHJ to institute these Guidelines as a regulatory document, a few changes must be made to the language. The word "should" must be changed to "shall", "discourage" must be changed to "prohibit", and "recommend" changed to "require".
2. This section is not intended to replace or duplicate subdivision review nor to require the mitigation of off-site impacts on water supply systems or roads.
 3. This section is not intended to require the retrofit of roads or water supply features on existing lots of record. Fuel mitigation guidelines should be applicable.

C. **AUTHORITY**

These Guidelines may apply to development within zoned areas as allowed by Title 76, chapter 2, parts 1, 2 and 3, MCA. These Guidelines may be used to establish a stand-alone wildland-urban interface zoning district, incorporated into an existing zoning district, establish a WUI zoning district that overlays an existing zoning district or districts, or establish a WUI zoning district that partially overlays an existing district or districts.

D. **APPLICABILITY**

1. These Guidelines apply to:
 - a. construction of streets, roads, or driveways used as legal and physical access to developments; and
 - b. the construction of residential, commercial, or accessory structures, the alteration of 25 percent or more of a structure, or the moving or change of use for existing residential, commercial or accessory structures located within the boundaries of the WUI as determined by the AHJ.
2. Accessory structures should be exempt from these regulations, except when located within the defensible space.

E. **GUIDELINES**

1. **Fuel Mitigation**

a. **Defensible Space**

- i. Any new construction or the alteration, moving, or change of use of an existing residential or commercial structure should be required by zoning to establish a minimum protection zone based on the attached guideline chart (see Appendix B, Defensible Space Guidelines).
- ii. All accessory structures within the defensible space should meet the fire resistive construction techniques established by the DLI.
- iii. Single specimens of trees, ornamental vegetation, cultivated groundcover (such as green grass, ivy, or similar plants), or native grasses and weeds trimmed to a maximum height of four inches, should be allowed provided any such plants do not form a means of readily transmitting fire.

b. Vegetation Management

- i. Areas adjacent to streets, roads, and driveways should be treated to meet the recommendations in a.iii. above, with the exception of single specimens of trees.
 - A. For driving surfaces, all areas within five feet of each side of the driving surface should be cleared.
 - B. For streets or roads, all areas within five feet of each side of the driving surface should be cleared of all vegetation.

2. Site Development and Building Construction Standards

- a. **Steep Slopes.** Structures in new subdivisions should not be sited in areas where the slope exceeds 30 percent as measured before disturbance or alteration. Any lot proposed for development within a zoning district that has slopes that exceed 30 percent, should designate on the lot layout in the application for a zoning compliance approval, a building envelope or no-build area that provides for a building site on slopes less than 30 percent.
- b. **Fire Chimneys.** Buildings and building sites are discouraged within ravines or other topographical features which constitute "fire chimneys", and within 150 feet of the apex of "fire chimneys". Any proposed lot with a "fire chimney" located on the lot should have a no-build area/zone designated on the face of the final plat for the subdivision that prohibits future development within "fire chimneys" and within 150 feet of the apex of "fire chimneys".
- c. **Construction of Residential, Commercial, or Accessory Structures.** The construction of new residential, commercial, or accessory structures and the substantial improvement, relocation, and replacement of existing structures should consider the allowed construction techniques developed or adopted by the AHJ.

- d. **Vegetation Management Plan.** A vegetation management plan should be developed and approved by the AHJ prior to any new construction or alteration, moving, or change of use of an existing residential or commercial structure on an existing lot.
 - i. The plan approved by the AHJ should be implemented prior to the construction of any new structures or the alteration, moving, or change of use of an existing structure on an existing lot.
 - ii. The plan should address vegetation management to meet the following goals:
 - A. to protect life and property;
 - B. to reduce the potential for a fire on improved property from spreading into wildland fuels and from a fire in wildland fuels from spreading into improved property or structures. This also applies to reducing the potential for a fire spreading to or from adjacent lands;
 - C. to provide safe working areas for emergency responders fighting fire; and
 - D. to maintain important native plant communities, the ecological processes that influence them, and consistency with fish and wildlife habitat conservation goals. Consulting with biologists in the preparation and implementation of the vegetation management plan is strongly encouraged.
 - iii. All areas within five feet of each side of a driveway should be cleared of vegetation prior to the construction of any new structures or the alteration, moving, or change of use of an existing structure on an existing lot.

3. **Means of Access**

The majority of non-firefighter deaths during wildland fires occurs during evacuation or attempts to escape from a fire front. Access to developed areas requires that public and private roads, bridges, and driveways be properly constructed to provide for safe ingress and egress for fire personnel and equipment and the public.

Streets and roads providing legal and physical access to lots and other improvements that help ensure access should address the following. These access Guidelines apply to all means of access public or private.

a. **Applicable to New Subdivisions**

- i. Legal and physical access to the lots in all subdivisions, approved but not yet built upon, should be provided by a minimum of two approach

routes, located as remotely from each other as possible to assure more than one escape route for residents and access routes by emergency vehicles. In addition, it is encouraged that developments plan for, and connect to, adjoining properties and their road systems.

- A. Subdivisions that cannot provide a minimum of two approach routes are discouraged. However, they may be allowed if developers can mitigate the risks by use of one or more of the following measures, and when approved by the AHJ:
 - I. larger defensible spaces;
 - II. fuel breaks along the roadways;
 - III. turnouts and pull outs;
 - IV. cul-de-sacs and/or hammer head turnarounds;
 - V. increased flows of fire protection water supply;
 - VI. interior fire sprinklers;
 - VII. exterior fire-retardent sprinkler systems; and/or
 - VIII. safety zones.
- ii. Fire Apparatus Access. All subdivisions should be designed to ensure that fire apparatus have access to within 150 feet of all portions of the buildings constructed on the lots in a proposed development.
- iii. Road Standards
 - A. Roadways should have a minimum clear width of 12 feet for each lane of travel, not including shoulders. They should have a minimum clearance in height of 13 feet, 6 inches.
 - B. Roads should be constructed of an all weather surface that is capable of supporting all legal loads and as approved by the AHJ.
- iv. Grades should not exceed ten percent, except as approved by the AHJ.
- v. Bridges and Culverts
 - A. Bridges and culverts should be designed to accommodate high water flows and constructed using accepted engineering practices. Bridges should be constructed to accommodate the heaviest legal load allowed. Load limits should be posted on all bridges.
 - B. Vegetation should be cleared to a minimum of five feet from around all bridges. Bridges should be constructed of noncombustible material.
- vi. Emergency Access. Property owners should provide emergency access to all open space within a subdivision. The access should be sufficient to provide access for wildland firefighting vehicles. The fire

protection access should be approved by the AHJ.

vii. **Roadside Fuel Reductions**

- A. All areas within five feet of each side of the driving surface on a public street or road should be cleared of all vegetation.
- B. For private streets or roads, all areas within five feet of each side of the driving surface should be cleared of all vegetation.

b. **Applicable to Existing Lots/Tracts of Record**

- i. Fire apparatus should have access to within 150 feet of all portions of the buildings constructed on the lots.
- ii. Adequate turn-around area for fire apparatus should be provided if a dead-end driveway exceeds 150 feet in length.
- iii. New roads/driveways necessary to serve the new or altered building should be constructed of an all weather surface that is capable of supporting all legal loads and as approved by the AHJ. Roadways should have a minimum clear width of 12 feet for each lane of travel, not including shoulders. The road/driveway should have a minimum clearance height of 13 feet, 6 inches.
- iv. For lots that have only one approach route, a larger defensible space or fuel breaks may be required by the AHJ.
- v. For private streets or roads or driveways that provide direct access to the building lot, clearance of all vegetation to a minimum of five feet from each edge of the driving surface of the private road easement or driveway should be established and maintained.

c. **Gates**

- i. The clear opening provided through gates should be two feet (0.61 m) wider than the traveled way.
- ii. All gates should be located a minimum of 30 feet (9.2 m) from the public right-of-way and should not open outward.
- iii. Fire department personnel should have ready access to locking mechanisms on any gate that restricts access or the gate should be constructed to "break away".

d. **Signage**

- i. All roads should be identified with approved non-combustible, reflective road signs that meet the applicable local standard.

- ii. All residential or commercial structures should be clearly identified with address numbers that are plainly visible and legible from the street prior to occupancy.

4. **Alternative Development.**

The AHJ may approve or recommend approval of an alternative development proposal when the overall design, as proposed by the applicant, meets or exceeds the intent of these Guidelines and is not detrimental to public health, safety, and welfare.

5. **Miscellaneous - Maintenance of Equipment and Features**

- a. All fire protection equipment and features should be properly maintained to provide at least the same level of performance and protection as originally designed.
- b. Maintenance should be ensured through the use of whatever mechanism is acceptable to the AHJ.

SECTION III: FINANCIAL ASSISTANCE FOR DEVELOPMENT WITHIN THE WILDLAND/URBAN INTERFACE

A. CRITERIA FOR FINANCIAL ASSISTANCE

Section 76-13-104(8)(b), MCA, provides that DNRC must adopt administrative rules addressing development in the wildland-urban interface (WUI), including but not limited to criteria for providing grant and loan assistance to local government entities to encourage adoption of Guidelines for development in the (WUI).

In order to qualify for certain grant and loan assistance, local government entities must adopt a Community Wildfire Protection Plan (CWPP) or its equivalent, and the Guidelines for Subdivision Regulations or their equivalent, by October 1, 2010. These grant and loan assistance criteria apply only to grants and loans for fuel mitigation actions, fire prevention, and infrastructure improvements associated with development in the (WUI). Current DNRC grant programs affected include the *Western States Wildland Urban Interface* mitigation grants and the *Community Wildfire Protection* grants.

Current wildland fire suppression assistance, including grants of equipment, the provision of wildland firefighter training, funds appropriated to suppress wildland fires, and funds allocated via the federal Volunteer Fire Assistance or Rural Fire Assistance programs, are not affected by the grant and loan assistance criteria set forth above.

APPENDIX A

HOMEOWNER'S CODE OF RESPONSIBILITY RESPONSIBILITIES OF PROPERTY OWNERS IN THE WILDLAND-URBAN INTERFACE

Property owners, residents, and visitors in areas threatened by wildfire have a responsibility for their own life safety. Understanding the risks of living or being in the wildland-urban interface (WUI) is part of that responsibility.

The two keys to your survival and that of your property are early preparedness and clear decision-making at the time of the threat. Perform fuels mitigation: create survivable space areas around your buildings. You must also prepare yourself. Learn some of the risks of staying or evacuating. Evaluate whether you are physically and emotionally prepared to stay, and whether other family members will be able to cope with evacuating (including possibly leaving someone behind) or staying. This will enable you to make good decisions during a wildfire threat.

A. PREPARING YOUR PROPERTY

In order for your assets, structures, and property to have the best opportunity to survive a wildfire and to be defended safely, these basic principles must be followed.

1. Assets, structures, and property have to be properly prepared and maintained **before** a wildfire threatens them. Utilize the Guidelines in this document to assist in preparation. If you have further questions, contact your local fire district or department.
2. Do not assume firefighters will be readily available to defend your property. Prepare your property to survive a major wildfire without firefighter intervention. You must have good access, fire-resistant structures and landscaping, an adequate water supply, and a safe area ready in advance. This will also make defending your property more effective whether you are defending it yourself or receive assistance from firefighters.

B. CREATING A FIRE PLAN

Develop a plan to address your own options for dealing with a wildfire threatening your assets, structures, and property.

1. Know where fire is likely to be a threat to your property and evaluate how to access or exit your property safely.
2. Learn and evaluate the risks of evacuating on mid-slope roads and roads where heavy fuel loads are present.

3. Understand weather patterns and the likely effects weather will have. That knowledge will help you decide whether you should evacuate or stay at your property.
4. Know where your safe zones are.

C. EVACUATING

Evacuate early if you have any doubts about the survivability of your property, your personal safety, and your physical and/or mental ability to stay. Know likely evacuation routes. Make sure everyone knows evacuation plans such as the location you and/or your family will evacuate to in case you are split up for any reason, including someone staying behind. Keep in mind that one of the highest risks during a wildfire is traveling on evacuation routes and roads. Even during an early evacuation, fire can cut off your evacuation route. Listen to the advice of local law enforcement and fire protection officers and make your decisions accordingly.

D. CONCLUSION

The decision whether to stay or go is yours. You have a legal right to remain and defend your property. Every situation is different and has to be evaluated at the time of the threat. What is right for you might not be right for someone else under the same circumstances. However, you must be confident you are making the best possible decision for your safety and that of your family and others involved with you. Property preparation and educating yourself and your family on the dangers of staying or evacuating during a wildfire will make that possible.

PROTECTION ZONE GUIDELINES

Zones	Requirements	Recommendations	Comments
Zone A - Structure Zone			
0-5 feet from structure	<ul style="list-style-type: none"> *Maintain non-combustible ground material 2 to 3 feet around structure (Planting beds, rock gardens, pavers, gravel or bare soil). *Fire resistant plants required (See <i>Fire Resistant Plants for Montana Landscapes and Fire and Your Landscape</i>). *Remove all pine needles & flammable ground materials. *Prune tree limbs and branches within 10 feet of the roof. *Remove tree limbs and branches within 10 feet of chimney. *Use <i>Firewise</i> construction and landscaping concepts in this zone. 	<ul style="list-style-type: none"> * Maintain low combustible ground covers. * Minimize flammable vegetation in this zone provided it: <ul style="list-style-type: none"> - does not touch or overhang the home; - is not a species that retains dead material or deposits excessive quantities of ground fuel; and - is located far enough away from the home so that they will not ignite the home by direct flame contact or radiant heat emission. *Seasonally: <ul style="list-style-type: none"> - keep roof and rain-gutters clear of needles and leaves; and - store firewood outside the landscape zone during fire season. 	Wildland fire is the #1 threat to the residents of Montana. The goal in this zone is to reduce the potential home ignition sources. What is done now will greatly enhance structure survivability and fire fighter safety.
Zone B - Landscape Zone			
6-30+ feet from structure	<ul style="list-style-type: none"> *Maintained lawn or mowed grass (3-4"). *Remove pine needles and flammable ground materials. *Prune all trees so the lowest limbs are at least 6 to 10 feet above the ground. *Min 30 feet between crowns of native trees or "clumps", (max 5 feet trees/clump). *Maintain 20 feet between planting islands & groups of shrubs. 	<ul style="list-style-type: none"> * Keep lawns watered, (as conditions allow). * Consider planting beds, rock gardens, xeriscaping and fire resistant plants. * Use bedding plants (<18 inches high). * Consider non-flammable landscape material. * If a moderate or high hazard area, consider fire-resistant materials for patio furniture and other accessories around the home. * Keep patio cushions inside the home when not in use during periods of high fire potential. 	The goal in this zone is to reduce radiant heat and to provide the critical space where fire fighters might be deployed to defend the home.
Zone C - Forest/Wildland Transition Zone			
From 31 feet to 100+ feet from home	<ul style="list-style-type: none"> *Mow the grassy fuels annually. *Preferred densities for native trees: <ul style="list-style-type: none"> - spacing – 20 feet X 20 feet *Remove all ladder fuels. *Maintain 20 feet between crowns of native trees or "clumps" (max 5 trees/clump). *20 feet between planting islands. *Prune native tree limbs 15 feet from ground or 1/3 of live crown, which ever is less. 	<ul style="list-style-type: none"> * Consider a mixture of deciduous and coniferous trees. Most deciduous trees do not support high intensity fires. * Provide added protection with "fuel breaks", such as driveways, gravel walkways, and lawns. * Provide access through fences for fire apparatus access to your remaining property. * Consider coordination with neighboring properties. * Store firewood and other combustibles in this Zone. * Recommend modifying the fuels to the property line for lots ≤ 2.5 acres. 	Treatment in this zone will create conditions unfavorable for a crown fire, and transition the wildland fire to a ground fire. Tree spacing is intended to reduce the ability to sustain a crown fire and to provide a radiant heat barrier to the residence.

Definitions:

Clumps means groups of trees where crowns are less than 10 feet apart.

Crown means the outer edge of tree or "clumps" of trees.

Native trees means Lodgepole Pine, Ponderosa Pine, Douglas Fir, Rocky Mountain Juniper, Spruce, and Quaking Aspen.

Pine needle removal means to rake only down to the decomposing layer to avoid erosion problems.

Ladder fuels means vegetation of different heights, close enough to allow a surface fire to spread vertically to the top of a tree.

PROTECTION ZONE GUIDELINES

Zones	Requirements	Recommendations	Comments
Zone D - Property Perimeter Buffer			
120+ foot wide buffer around perimeter	<ul style="list-style-type: none"> *Remove heavy accumulations of woody debris, such as piles of stem wood or branches. *Preferred densities for native trees: <ul style="list-style-type: none"> - spacing – 15 feet X 15 feet *Remove all ladder fuels. *Maintain 15 feet between crowns of native trees or "clumps" (max 5 trees/clump), *10 feet between planting islands. 	<ul style="list-style-type: none"> * Prune native tree limbs min. 8 to 15 feet from ground or 1/3 of crown, which ever is less. * Coordinate with neighboring properties. * Treat entire perimeter of property. 	Consistent application of these treatments will create conditions where a crown fire could be transformed into a ground fire, slowing its rate of spread and creating an opportunity for fire suppression resources to safely respond. This zone starts at the property line and comes in a minimum of 120 feet.

Definitions:

Clumps means groups of trees where crowns are less than 10 feet apart.

Crown means the outer edge of tree or "clumps" of trees.

Native trees means Lodgepole Pine, Ponderosa Pine, Douglas Fir, Rocky Mountain Juniper, Spruce, Quaking Aspen.

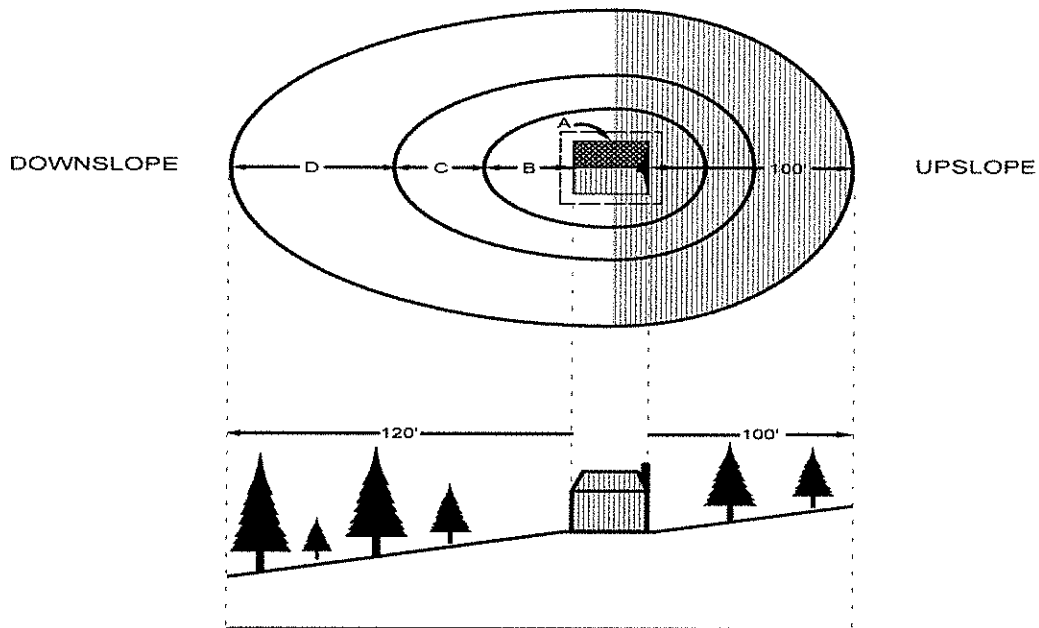
Pine needle removal means to rake only down to the decomposing layer to avoid erosion problems.

Ladder fuels means vegetation of different heights, close enough to allow a surface fire to spread vertically to the top of a tree.

Appendix B

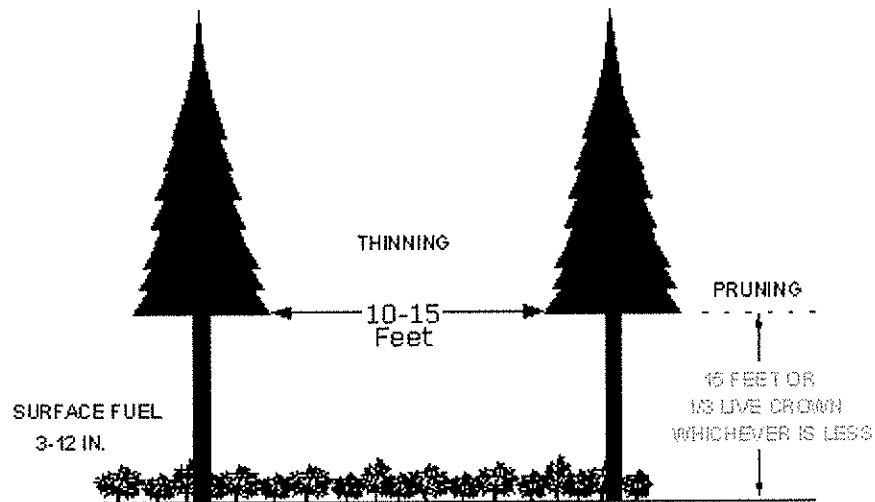
Defensible Space Guidelines

As slope increases, the need for larger defensible spaces increases. This chart indicates the minimum suggested distances from the structure or structures to be protected by the defensible space zones. Each of these distances indicates concentric rings spreading out from Zone A.



Percent Slope	Zone B Minimum	Zone C Minimum	Zone D Minimum
0-10	10 feet	20 feet	70+ feet
10-20	15 feet	25 feet	80+ feet
20-30	20 feet	30 feet	100+ feet

Thinning and Pruning



1. Thin trees to 10-15 feet between crowns.
2. Prune limbs on all remaining trees to 15 feet or 1/3 of total crown height, whichever is less.
3. Maintain surface vegetation at 12 feet or less.

**APPENDIX C
SOURCES**

PUBLICATIONS	
Available From (Organization)	Publication
Montana DNRC Fire and Aviation Bureau 2705 Spurgin Road Missoula, MT 59804 (406) 542-4250	<i>Fire Risk Rating For Existing and Planned Wildland Interface Developments in Montana</i>
International Code Council 4051 West Flossmoor Road Country Club Hills, IL 60478-5795 www.iccsafe.org/cs/	<i>International Wildland/Urban Interface Code</i> <i>International Fire Code</i>
National Fire Protection Association (NFPA) 1 Batterymarch Park Quincy, Massachusetts 02169-7471 www.nfpa.org/	<i>NFPA 1, Fire Code</i> <i>Annex H</i> <i>Annex I</i> <i>NFPA 1141 Standard for Fire Protection Infrastructure for Land Development in Suburban and Rural Area.</i> <i>NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting</i> <i>NFPA 1144, Standard for Reducing Structure Ignition Hazards from Wildland Fire</i>
U.S. Fire Administration 16825 S. Seton Ave. Emmitsburg, MD 21727 www.usfa.dhs.gov/	<i>Water Supply Systems and Evaluation Methods Vol. I & II</i>
Montana State University Extension Office 416 Culbertson Hall, Montana State University–Bozeman Bozeman MT 59717 www.montana.edu/wwwpb/pubs/mt200101AG.pdf	<i>Fire-Resistant Plants for Montana Landscapes</i>
WEBSITES	
Organization	Website
Firewise	www.firewise.org
FireSafe Montana	www.firesafemt.org/index.php
Keep Montana Green	www.keepgreen.org

