

Walla Walla County
Emergency Management Department

**Wildfire Risk Assessment
of the Wildland-Urban Interface**



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Walla Walla County Emergency Management Department

Introduction

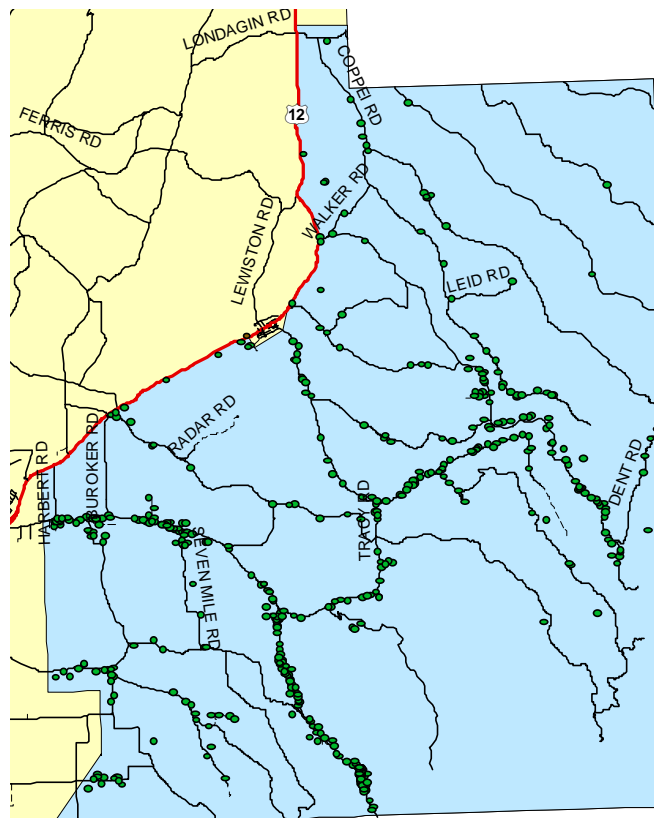
The Emergency Management Preparedness Assistance Grant (EMPAG) program was authorized by the Washington State Legislature in the State Fiscal Year 2007 budget. Walla Walla County received a portion of this grant from Washington State to conduct a Wildland Fire Risk and Hazard Severity Assessment covering a portion of the county.

In the fall of 2006, Walla Walla County Emergency Management Department contracted with Gunner Fulmer, City of Walla Walla firefighter, to conduct the survey. The purpose of the assessment was to determine where, if any, high-risk wildfire areas are located by conducting a structure-by-structure survey examining certain risk factors.

Only the foothills area of Walla Walla County was surveyed to determine the risk in the area of the county where development meets wildland.

Prior to initiation of the survey a news release was completed advising residents of the upcoming survey. A flyer was developed and distributed where possible.

With the help of Walla Walla County GIS, Emergency Management established a list of 487 potential structures in the identified area. Of the 487 structures identified in the Wildland Urban Interface (WUI), 52 were not surveyed due to properties being inaccessible (gated properties or the owner denied permission to survey) or due to the surveyor being unable to locate a structure. The result was that a total of 435 structures were surveyed:



ROAD SURVEYED	# OF STRUCTURES SURVEYED
Mill Creek Road	112
Lewis Peak Road	52
Biscuit Ridge Road	33
Kooskooskie Road	26
Scott Road	17
Blue Creek Road	16
South Fork Coppei	15
Hummingbird Place	14
Cottonwood Road	11
E. Highway 12	11
Russell Creek Road	10
Spring Creek Road	10
Five Mile Road	8
South Fork Russell Creek	7
Foster Road	6
Scenic Loop Road	6
Seven Mile Road	6
Blacksnake Ridge Road	5
Blue Jay Loop	5
Mud Creek Road	5
North Fork Coppei	5
Seaman Road	5

The standards for the survey were adopted from the *NFPA Standard for Protection of Life and Property from Wildland Fire*, using the standards in Wildland/Urban Interface Fire Hazard Assessment Methodology. Each of the areas was assessed and points were assigned to each element. The areas reviewed per the NFPA form were:

- Means of Access
- Vegetation
- Topography
- Additional Factors
- Roofing Assembly
- Building Construction
- Available Fire Protection
- Utilities Placement

In addition, Jim Brain, retired U.S. Department of Agriculture Forest Service Fire Manager, met with Emergency Management staff to develop additional survey criteria

consistent with FIREWISE¹ recommendations. These additions address vegetation and site improvements:

- a. Needles and other debris on roof
- b. Chimney does not have functional screen or spark arrestor cap
- c. Firewood stored within 30 feet of structure
- d. Overhanging deck of porches without screen or being closed in
- e. Ladder fuels present on trees within the 100 foot safety zone
- f. Evidence of burn barrels and/or pits being used on site
- g. Tree branches overhanging or within 10 feet of live power lines
- h. Siding material splitting, rough or otherwise highly flammable
- i. Roof overhangs or soffets open (capable of trapping burning material)
- j. Overstory tree crowns touching each other

The section with the most potential points was **vegetation**, with the highest possible score being 50 points. This reflects the importance of creation of defensible space to mitigate against wildfire destruction of structures.

The overall hazard assessment score ranking was adjusted to take into account the FIREWISE additions to the survey. Rankings were assigned based upon total assessment score:

- LOW HAZARD <40 points
- MEDIUM HAZARD 40 – 69 points
- HIGH HAZARD 70 – 112 points
- EXTREME HAZARD > 112 points

A copy of the form used is included with this report.

The results of the survey were entered into ESRI ArcMap to allow for mapping and data management.

¹ The national Firewise Communities program is a multi-agency effort designed to reach beyond the fire service by involving homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire - before a fire starts. <http://www.firewise.org/>

Summary Survey Results

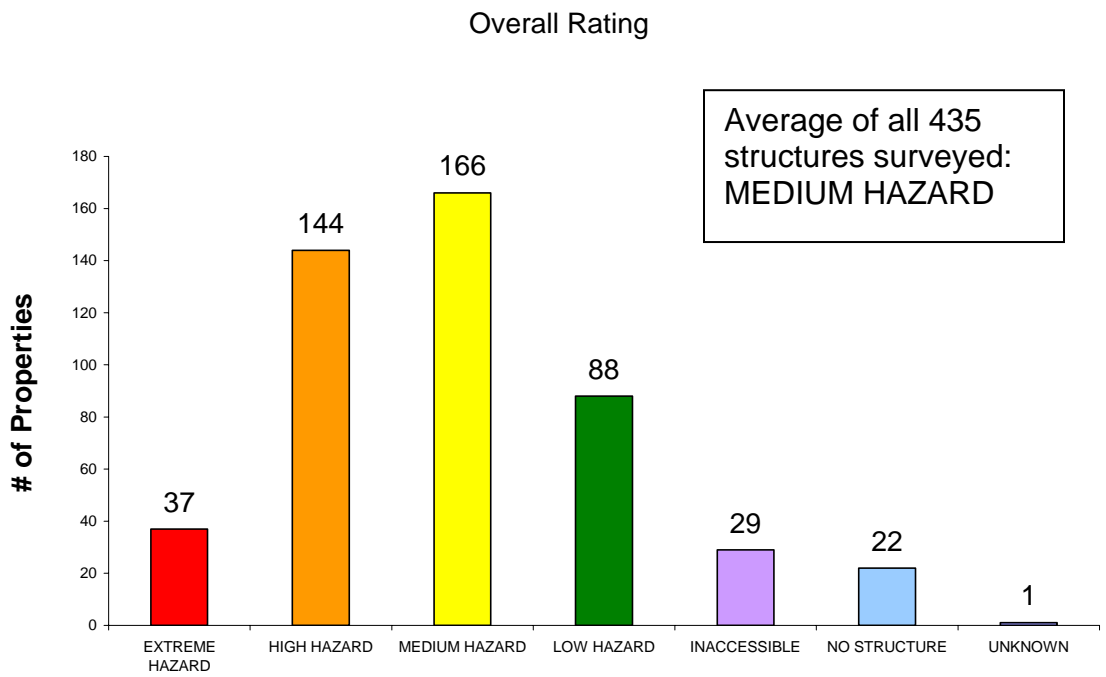
Overall Fire Risk Rating	# of Structures	% of Total
EXTREME HAZARD	37	8%
HIGH HAZARD	144	30%
MEDIUM HAZARD	166	34%
LOW HAZARD	88	18%
INACCESSIBLE	29	6%
NO STRUCTURE	22	4%
UNKNOWN	1	0%
Total # of Properties	487	

41.6% of the structures surveyed received an “Extreme Hazard” or “High Hazard” rating

80% rated as “Extreme Hazard”, “High Hazard” or “Medium Hazard”

The average total score for all structures surveyed resulted in a MEDIUM HAZARD rating of all of the survey.

The results for overall rating for all structures on the survey are as follows:

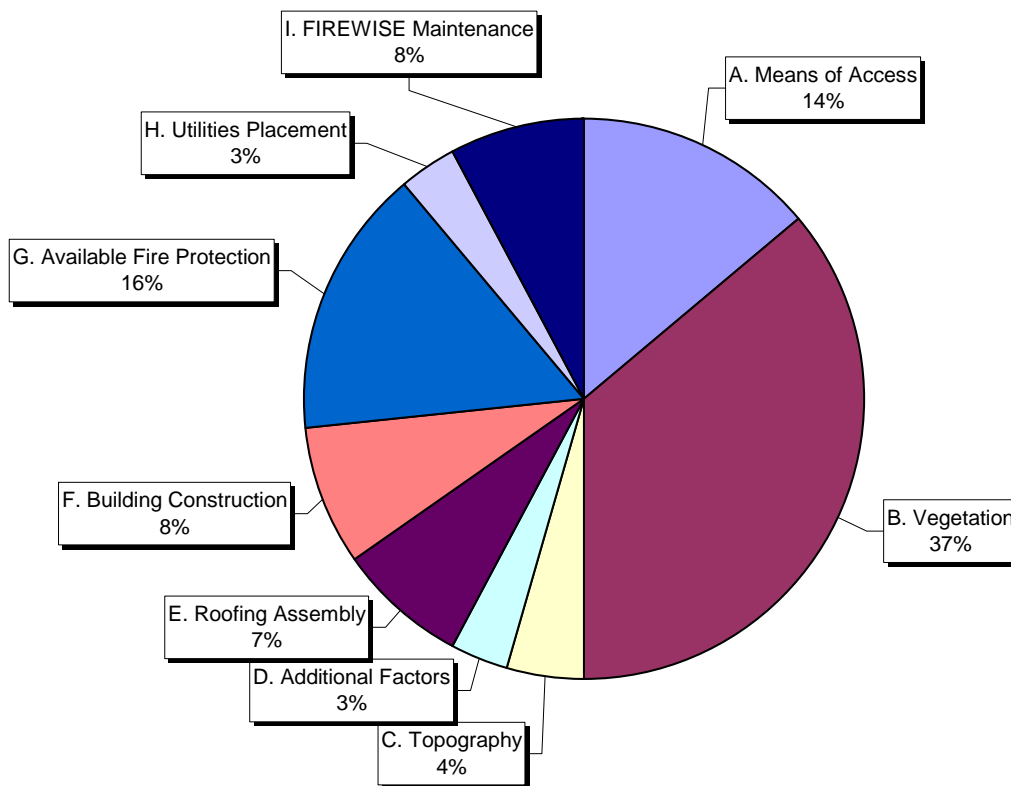


The average score of each of the survey areas was tallied and the percentage of the total average score was determined:

Survey Section	Average Score of 435 Structures Surveyed	% of Average Total Score
A. Means of Access	9	14%
B. Vegetation	24	37%
C. Topography	3	4%
D. Additional Factors	2	3%
E. Roofing Assembly	5	7%
F. Building Construction	5	8%
G. Available Fire Protection	11	16%
H. Utilities Placement	2	3%
I. FIREWISE Maintenance	5	8%

The average score for each of the survey sections by percentage of the average total score for ALL structures surveyed is shown here:

Results for All 435 Structures Surveyed
 % of Average Total Score by Survey Section



Review of EXTREME HAZARD Structures

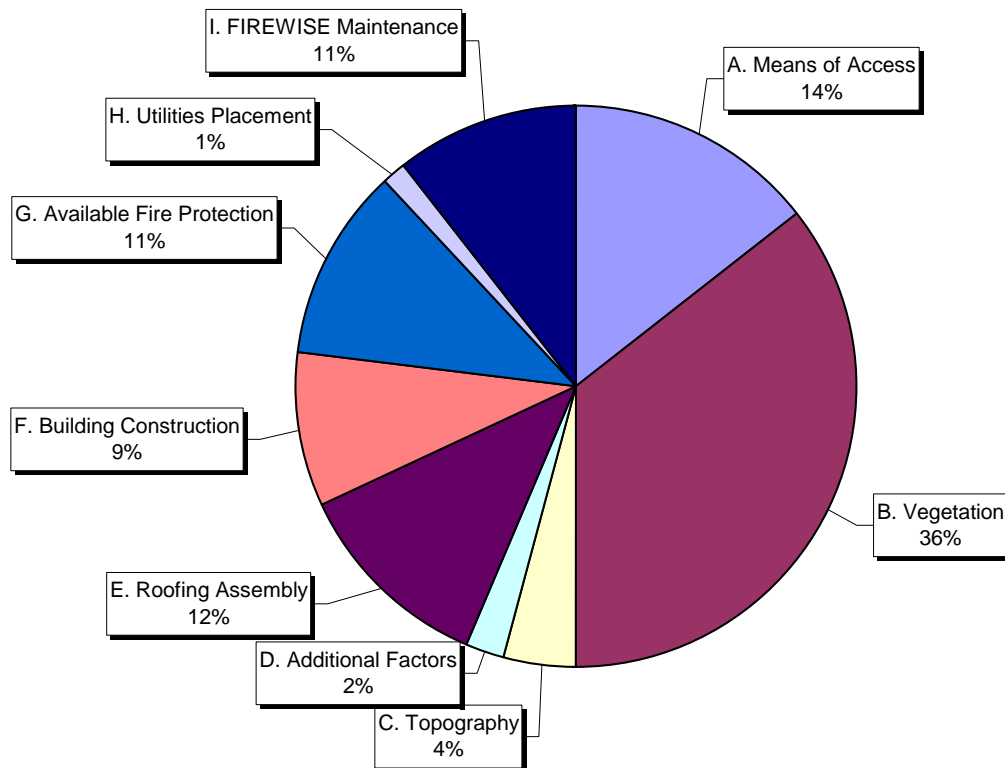
The following locations were identified for the 37 structures receiving an EXTREME HAZARD rating:

<u>ROAD SURVEYED</u>	<u># OF STRUCTURES</u>
South Fork Coppei	7
Lewis Peak Road	6
Scott Road	6
Mill Creek Road	4
Blacksnake Ridge Road	4
Kooskooskie Road	2
Biscuit Ridge Road	1
Blue Creek Road	1
Dent Road	1
E. Highway 12	1
Mud Creek Road	1
North Fork Coppei	1
Seaman Road	1
Whiskey Creek Road	1
Total # of Structures:	37

<u>Survey Section</u>	<u>Average Score of EXTREME HAZARD Structures</u>	<u>% of Average Total Score</u>
A. Means of Access	18	14%
B. Vegetation	45	36%
C. Topography	5	4%
D. Additional Factors	3	2%
E. Roofing Assembly	15	12%
F. Building Construction	11	9%
G. Available Fire Protection	14	11%
H. Utilities Placement	2	1%
I. FIREWISE Maintenance	14	11%

The average score for each of the survey sections by percentage of the average total score for the 37 EXTREME HAZARD structures is shown here:

Results for 37 EXTREME HAZARD Structures Surveyed % of Average Total Score by Survey Section



Most noteworthy of the data was that the average score for **vegetation** received by the structures receiving an EXTREME HAZARD rating. The average score for **vegetation** was 45, which is 36% of the average total score. Further examination of the **vegetation** score for these structures revealed that most of these structures received a very poor rating for having heavy fuel loading or thinning slash or logging debris less than 10 years old as well as many also having vegetation a distance of less than 30 feet from the structure.

The second area of concern among the structures receiving an EXTREME HAZARD rating was **means of access**. The average score for **means of access** was 18, which is 14% of the average total score.

Review of HIGH HAZARD Structures

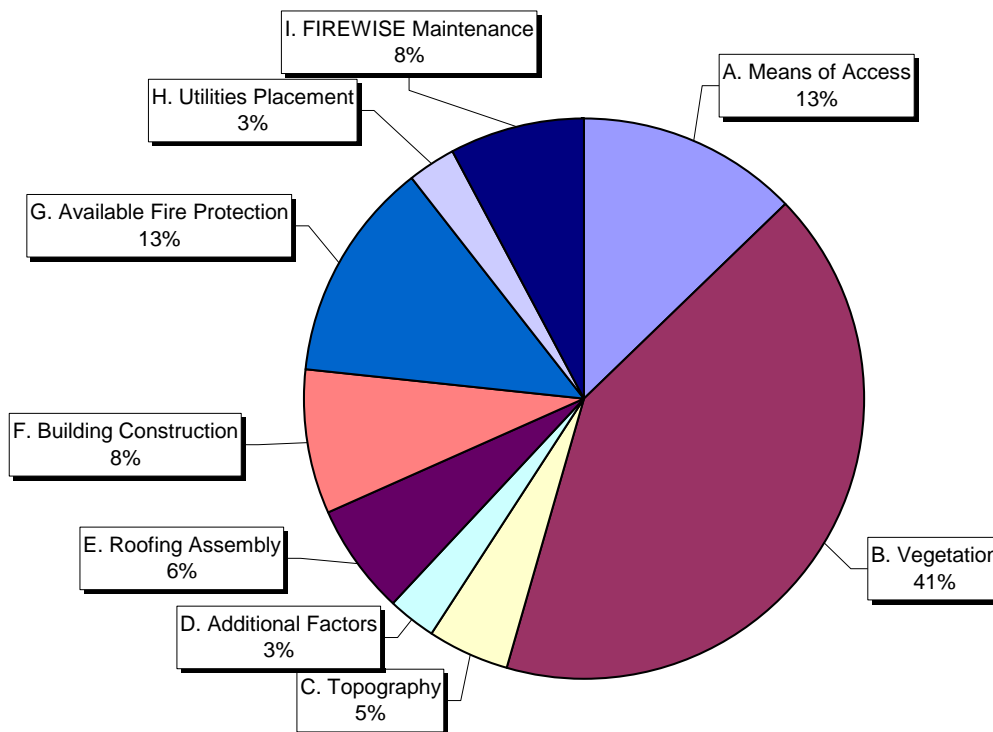
The following locations were identified for the 144 structures receiving a HIGH HAZARD rating:

<u>ROAD SURVEYED</u>	<u># OF STRUCTURES</u>
Lewis Peak Road	26
Mill Creek Road	18
Kooskooskie Road	17
Biscuit Ridge Road	9
Scott Road	8
Hummingbird Place	7
E. Highway 12	6
South Fork Coppei	6
Blue Creek Road	4
Foster Road	4
Mud Creek Road	4
Klicker Mountain Road	3
McKay Grade Road	3
Spring Creek Road	3
Tracy Road	3
Blue Jay Loop	2
Dent Road	2
Harrier Hill Road	2
Hooper Road	2
Jasper Mountain Road	2
Russell Creek Road	2
Scenic Loop Road	2
South Fork Russell Creek	2
Blacksnake Ridge Road	1
Clancy Road	1
Cottonwood Road	1
North Fork Coppei	1
Pikes Peak Road	1
Seaman Road	1
Seven Mile Road	1
Total # of Structures:	144

Survey Section	Average Score of HIGH HAZARD Structures	% of Average Total
A. Means of Access	11	13%
B. Vegetation	38	41%
C. Topography	4	5%
D. Additional Factors	3	3%
E. Roofing Assembly	6	6%
F. Building Construction	7	8%
G. Available Fire Protection	12	13%
H. Utilities Placement	2	3%
I. FIREWISE Maintenance	7	8%

The average score for each of the survey sections by percentage of the average total score for the 144 HIGH HAZARD structures is shown here:

Results for 144 HIGH HAZARD Structures Surveyed
 % of Total Average Score by Survey Section

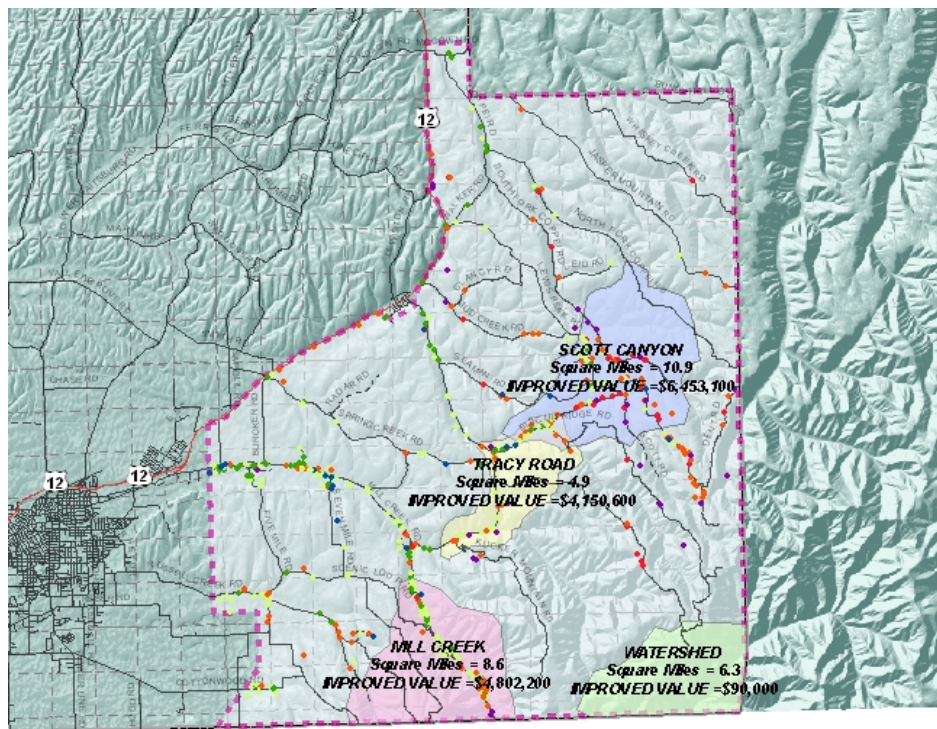


As with the structures which received an EXTREME HAZARD rating, most noteworthy of the data was the average score for **vegetation** received by the structures receiving a HIGH HAZARD rating. The average score for **vegetation** was 38, which is 41% of the average total score. Further examination of the **vegetation** score for these structures revealed that most of these structures received a poor rating for having moderate fuel loading or heavy fuel loading with many also having vegetation a distance of less than 30 feet from the structure.

The areas ranking second for areas of concern among the structures receiving a HIGH HAZARD rating was **means of access** and **available fire protection**. The average score for these two survey sections was 13% of the average total score.

Fire Risk Areas

Emergency Management consultation with Walla Walla Fire District #4 fire chief Rocky Eastman to determine areas of concern for fire risk. This information was mapped with the help of Walla Walla County GIS and valuations for improvements to the identified areas were calculated from current (May 2007) tax parcel information.



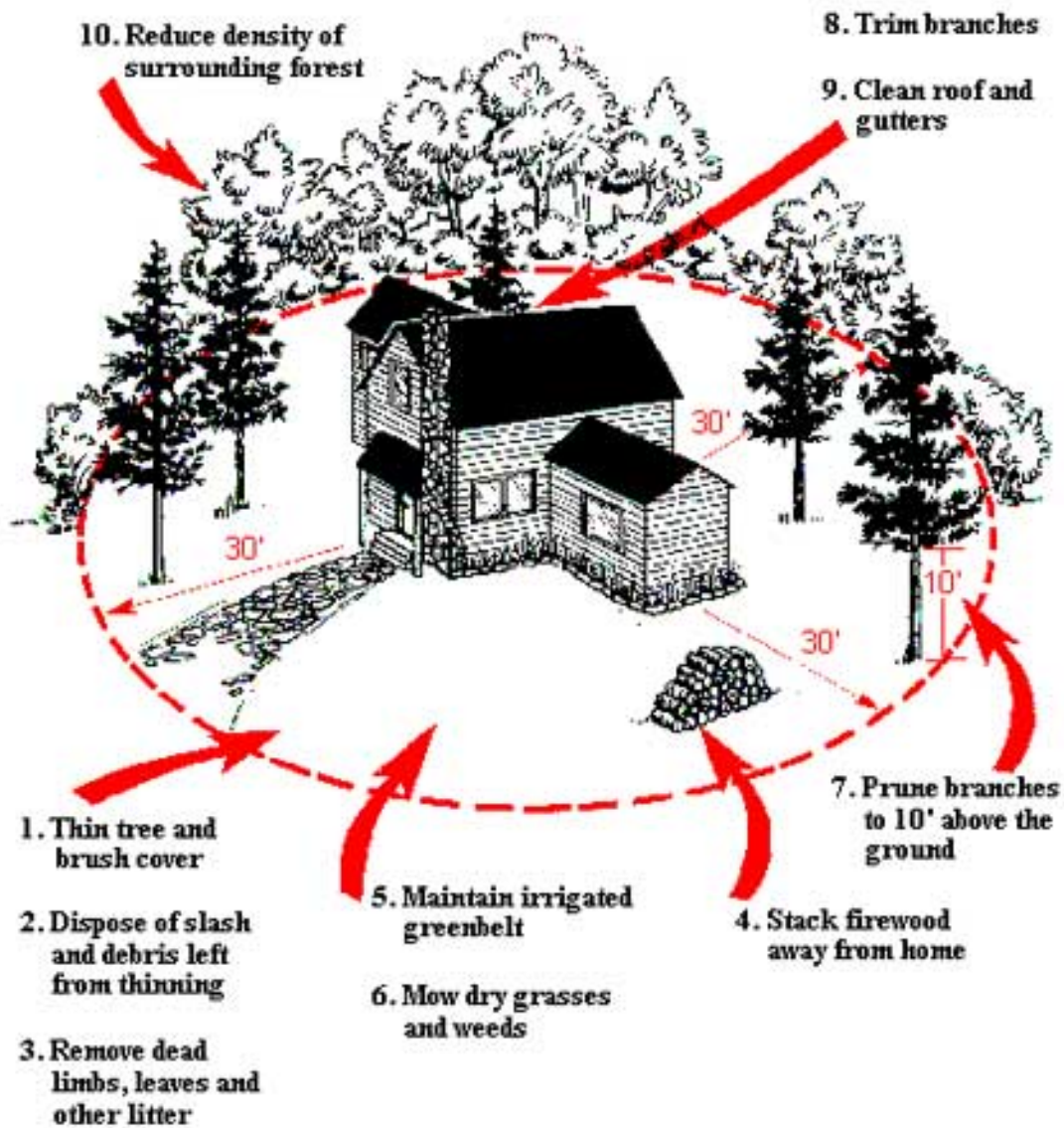
Mill Creek Road Area
 8.6 Square Miles
 Improved Value = \$4,802,200
 Tracy Road Area
 4.9 Square Miles
 Improved Value = \$4,150,600

Scott Canyon Area
 10.9 Square Miles
 Improved Value = \$6,453,100
 Walla Walla Watershed Area
 6.3 Square Miles
 Improved Value = \$90,000

Recommendations

1. Focus mitigation efforts on homeowners in these areas to encourage them to develop defensible space. *See next page for details on creation of defensible space.*
2. Seek ways to encourage owner mitigation.
3. Consider adopting land use and/or building code ordinances to reduce risk of structures to wildfire.
4. Encourage creating emergency water supply for those areas where emergency water is not readily available.

Defensible Space



Address:

ID:

Assign a value to the most appropriate element in each category and place the number of points in the column under score.

A. Means of Access	Points	Score
1. Ingress and Egress		
a. Two or More roads In/Out	0	
b. One Road In/Out	7	
2. Road Width		
a. \geq 7.3 m (24ft)	0	
b. \geq 6.1 m (20ft) and $<$ 7.3 m (24ft)	2	
c. $<$ 6.1 m (20ft)	4	
3. All Season Road Condition		
a. Surfaced Road, Grade $<$ 5%	0	
b. Surface Road, Grade $>$ 5%	2	
c. Non-Surface Road, Grade $<$ 5%	2	
d. Non-Surface Road, Grade $>$ 5%	5	
e. Other than all season	7	
4. Fire Service Access		
a. \leq 91.4 m (300ft) with turnaround	0	
b. $>$ 91.4 m (300ft) with turnaround	2	
c. $<$ 91.4 m (300ft) with no turnaround	4	
d. \geq 91.4 m (300ft) with no turnaround	5	
5. Street Signs		
a. Present [10.2 cm (4 inch) in size and reflectorized]	0	
b. Not Present	5	
B. Vegetation (Fuel Models)		
1. Characteristics of predominate vegetation within 91.4 m (300ft)		
a. Irrigated land	0	
b. Fuels are light. Mostly grasses and forbs. Scattered low brush	5	
c. Moderate fuel loading. Low brush, conifer reproduction, or hardwoods	10	
d. Heavy fuel loading. Dense brush, larger down material	20	
e. Thinning slash or logging debris less than 10 years old	25	
2. Defensible space. (Character of vegetation relative to the location of the structures being evaluated.)		
a. Vegetation treated for distance of over 100 feet from structure	1	
b. Vegetation treated for distance of 71 to 100 feet from structure	3	
c. Vegetation treated for a distance of 30 to 70 feet from structures	10	
d. Vegetation treated for a distance of less than 30 feet from structures	25	
C. Topography within 91.4 m (300ft) from the structure		
a. Slope $<$ 9%	1	
b. Slope 10% to 20%	4	
c. Slope 21% to 30%	7	
d. Slope 31% to 40%	8	
e. Slope $>$ 41%	10	
D. Additional Rating Factors (Rate all that Apply)		
1. Topographic factors that adversely affect wildland fire behavior		
a. No adverse topographic feature influences	0	
b.	3	
c. Structure located in chimney, ravine or steep side draw	5	
2. Area with history of higher fire of higher fire occurrence than surrounding area due to special situations such as heavy lightning, escaped debris burning and arson.		
a. Below average number of fires per 1000 acres per decade	0	
b. Average number of fires per 1000 acres per decade	3	
c. Above average number of fires per 1000 acres per decade	5	

	<u>Points</u>	<u>Score</u>
3. Areas that are periodically exposed to unusually severe fire weather and strong dry winds		
a. Located on lower 2/3 of northerly facing slope	0	
b. Located on upper 1/3 of a northerly facing slope	1	
c. Located on the lower 2/3 of a southerly facing slope	3	
d. Located on upper 1/3 of a southerly facing slope	5	
4. Separation of adjacent structures that can contribute to fire spread		
a. Individual structures are more than 100 feet apart	0	
b. Individual structures are from 70 to 100 feet apart	1	
c. Individual structures 30 and 70 feet apart	3	
d. Individual structures less than 30 feet apart	5	
E. Roofing Assembly		
a. Class A Roof	0	
b. Class B Roof	3	
c. Class C Roof	15	
d. Nonrated	25	
F. Building Construction		
1. Materials (predominate)		
a. Noncombustible/fire-resistive siding, eaves and deck.	0	
b. Noncombustible/fire-resistive siding and combustible deck	5	
c. Combustible siding and deck	10	
2. Building setback relative to slopes of 30% or more		
a. \geq 9.14 m (30ft) to slope	1	
b. \leq 9.14 m (30ft) to slope	5	
G. Available Fire Protection		
1. Water Source Availability		
a. Pressurized Water Source Availability		
a. 500 gpm hydrants 1000 feet or less apart	0	
b. 250 gpm hydrants 1000 feet or less apart	1	
b. Non-Pressurized water source availability (on site) pool, stream, pond, etc.		
a. Provides more than 250 gpm for continuous 2 hours (30,000 gal min)	3	
b. Provides less than 250 gpm for continuous 2 hours (10,000 gal min)	4	
c. Non-Pressurized water source availability (off site) pool, stream, pond, etc.		
a. Provides more than 250 gpm for continuous 2 hours (30,000 gal min)	5	
b. Provides less than 250 gpm for continuous 2 hours (10,000 gal min)	7	
c. No water available within 10 Mile round trip for engine or tender.	10	
2. Organized response resources		
a. Staffed Fire Station within 5 miles of structure	0	
b. Volunteer Fire Station within 5 miles of structure	2	
c. Staffed/Volunteer Fire Station within 5-10 miles	6	
b. Fire Station Greater than 10 miles of structure	10	
3. Fixed fire protection		
a. NFPA 13, 13R or 13D sprinkler system in place	0	
b. None	5	
H. Placement of Gas and Electric Utilities		
a. Both Underground	0	
b. One Underground, one above ground.	3	
c. Both Above ground	5	

I. Maintenance of FIREWISE compliant vegetation and site improvements.	<u>Points</u>	<u>Score</u>
a. Needles and other debris on roof	3	
b. Chimney does not have functional screen or spark arrestor cap	3	
c. Firewood stored within 30 feet of structure	3	
d. Overhanging deck or porches without screen or being closed in	3	
e. Ladder fuels present on trees within the 100 foot safety zone	3	
f. Evidence of burn barrels and/or pits being used on site.	3	
g. Tree branches overhanging or within 10 feet of live power lines	3	
h. Siding material splitting, rough or otherwise highly flammable	3	
i. Roof overhangs or soffets open (capable of trapping burning material)	3	
j. Overstory tree crowns touching each other	3	

<u>HAZARD ASSESSMENT</u>	<u>TOTAL POINTS</u>
Low Hazard	<40
Medium Hazard	40 -69
High Hazard	70-112
Extreme Hazard	>112

TOTAL SCORE:

RATING: