

GUNNISON COUNTY, CO

Gunnison County Community Development Wildfire Planning

Community Planning Assistance for Wildfire

- Team of professionals from Wildfire Planning International, Headwater Economics & USFS Rocky Mtn Research Station
- Outreach and engagement process with local stakeholders + constituents
- Develop mapping tools and policy recommendations



Wildfire Risk

- Diverse range of fuel types, from high elevation forests to grass and sage
- Successful suppression and pine beetle infestation is driving fuel loading
- High potential for large wildfires
- Increasing damage from beetles
- Lack of public engagement—largest fire in past 50 years has been 1,400 acres



Responding to the Risk – CPAW Recommendations

- Define the Wildland Urban Interface (WUI) and Implement a WUI Risk Assessment Program
- Adopt the WUI Code and Update Land Use Regulations to Create a Resilient Approach to Development in the WUI
- Leverage Existing Plans to Support Wildfire Hazard and Regulatory Priorities across Gunnison County



Responding to the Risk – CPAW Recommendations

- **Insert maps of WUI, local and landscape maps here**

Fire Professionals

- **Engaged with wildfire and fire professionals in community including:**
 - **West Region Wildfire Council**
 - **USFS**
 - **Colorado State Forest Service**
 - **Emergency Management**
 - **Crested Butte Fire Protection District**
 - **Gunnison Fire Protection District**

West Region Wildfire Council

- **Science behind why adopt WUI, etc.**

Crested Butte Fire Protection District

- **Staff capacity to support program, recommendations, challenges**

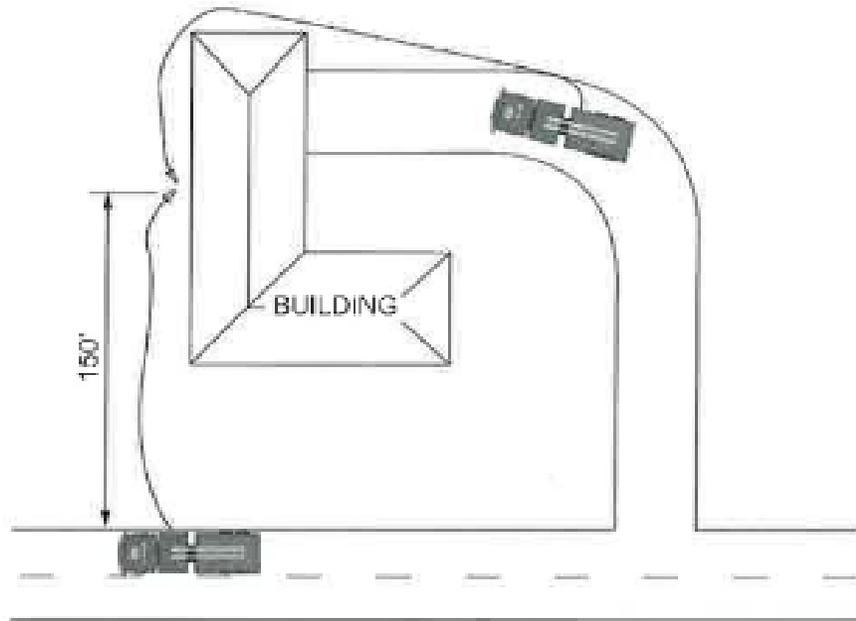
IWUI Code

- The International Wildland-Urban Interface Code (IWUIC) is one of 15 codes in the family of International Codes published by the International Code Council (ICC).
- The IWUIC establishes minimum requirements for land use and the built environment in designated wildland-urban interface areas using prescriptive and performance related provisions. It is founded on data collected from tests and fire incidents, technical reports and mitigation strategies from around the world.
- Defensible space management and ignition resistant construction materials can be required for structures within hazard zones.
- In County, site review and analysis will be needed in some areas.
- In municipalities review is expected to be less challenging. Landscaping standards may pose conflicts though.

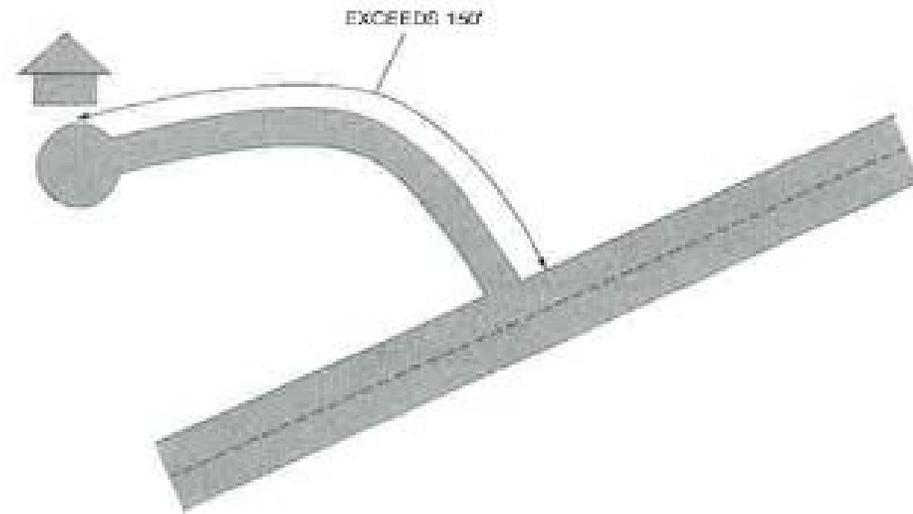
Access Requirements in the IWUI code

Driveways are required where any portion of an exterior wall of the 1st story of a building is located more than 150 feet from a fire apparatus access road.

- Minimum driveway width of 12 feet and unobstructed height of 13 feet 6 inches.
- Driveways in excess of 150 feet in length shall be provided with turnarounds.
- Driveways in excess of 200 feet in length shall be provided with turnouts and turnarounds.



**Commentary Figure 403.2
ACCESS TO WITHIN 150 FEET OF ALL
PORTIONS OF THE EXTERIOR WALL**



**Commentary Figure 403.2.2
TURNAROUND AT THE END OF A DRIVEWAY**

Water Supply in the IWUI code

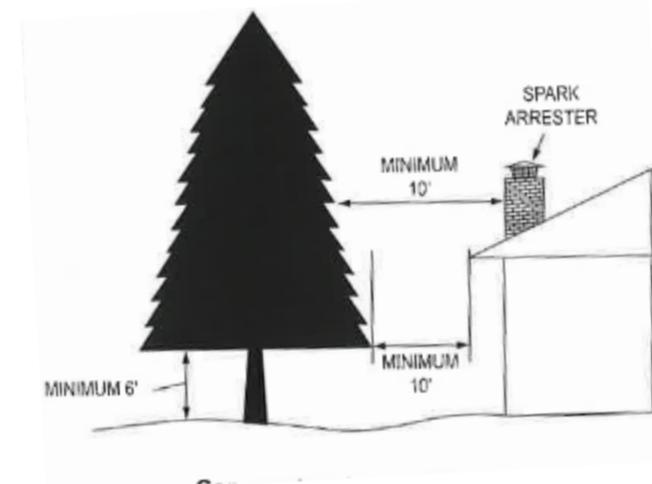
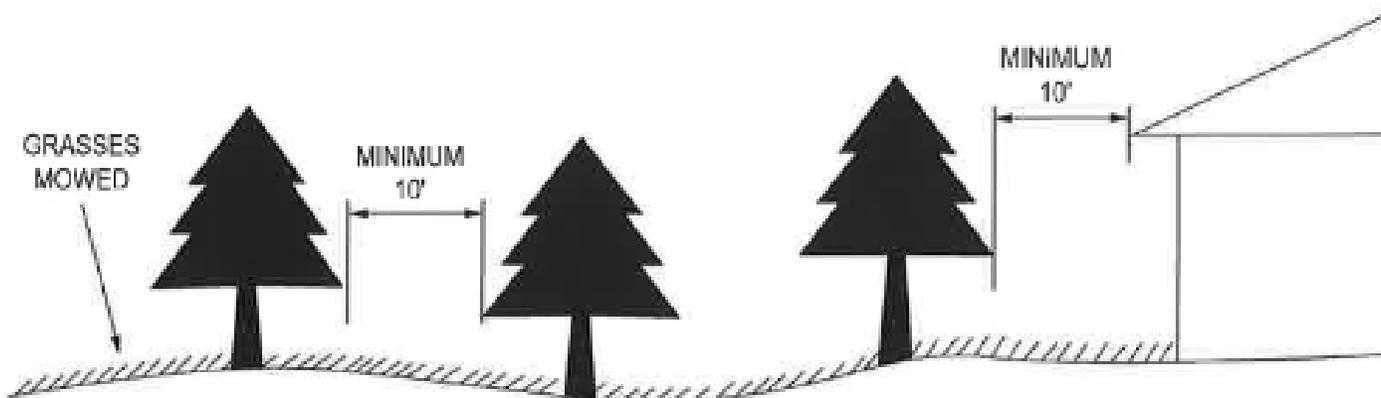
Water supply for fire fighting is not a requirement of the IWUI code, however, for a water supply to be considered conforming it needs to meet certain criteria.

- Located within 1,000 feet of the building as measured along an unobstructed line of travel.
- Maintain a minimum usable water volume at all times. Draft connection or hydrant.
- One- and two-family dwellings:
 - 1,000 gallons/minute for 30 minutes for buildings not exceeding 3,600sf
 - 1,500 gallons/minute for 30 minutes for buildings exceeding 3,600sf
 - 50% reduction in flow rate when a sprinkler system is installed
- Anything other than residential is 1,500 gallons/minute for two-hours. 75% reduction in flow rate for sprinkler



Fire Protection Requirements in the IWUI code

- ❖ Automatic Sprinkler Systems are required to be installed in new buildings required to meet the requirements for Class 1 ignition resistant construction.
- ❖ Defensible space: 30 feet for moderate hazard, 50 feet for high hazard, 100 feet for extreme hazard (or to the lot line).
 - Trees are allowed within the defensible space provided that the horizontal distance between crowns of adjacent trees and crowns of trees and structures, overhead electrical facilities or unmodified fuel is not less than 10 feet. Tree crowns within the defensible space shall be pruned to remove limbs located less than 6 feet above the ground.
 - Deadwood and litter shall be regularly removed from trees. Ornamental vegetative fuels or cultivated ground cover shall not provide a means of transmitting fire from growth to any structure.
- ❖ Firewood and combustible materials shall not be stored on decks or under eaves or overhangs.
- ❖ LP-gas containers shall be stored within the defensible space.



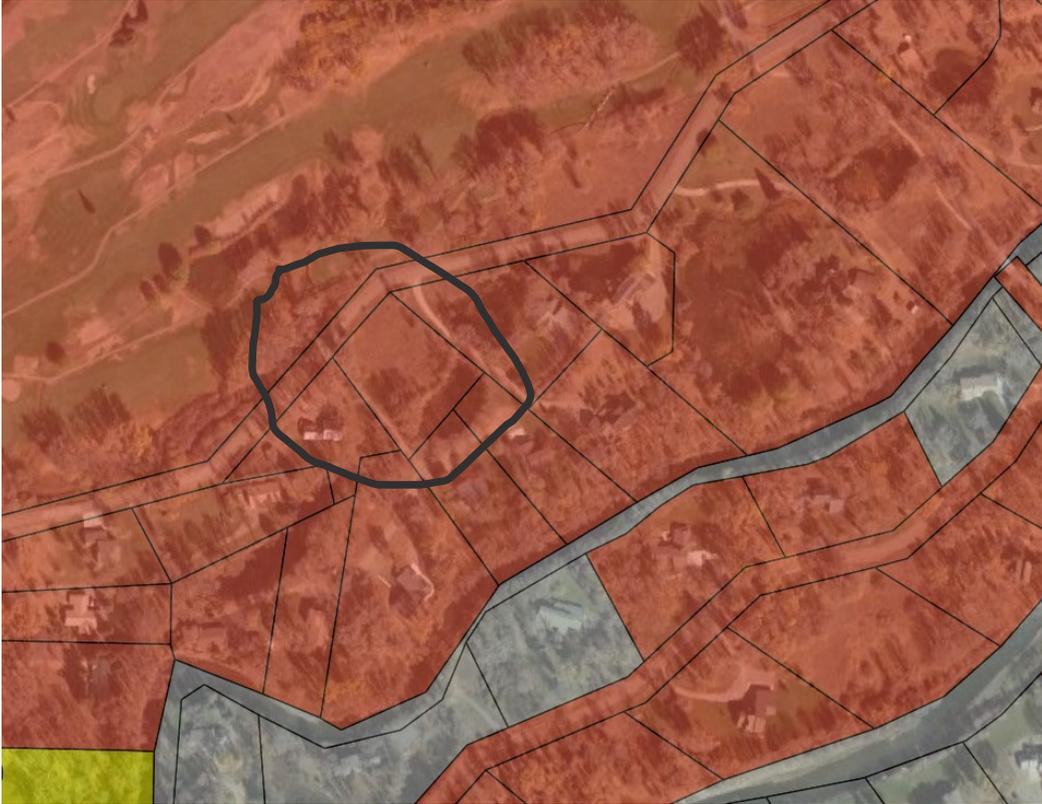
Ignition-resistant Construction and Material in the IWUI code

The fire hazard severity is used to categorize the level of ignition resistance required for construction. **Class 1** is the highest level of ignition resistance required and is applied in areas where the fire hazard is extreme or clearances for combustible vegetation are not maintained. **Class 2** is the middle level of ignition resistance. **Class 3** is the lowest level based on moderate fire hazard.

| | Class 1 | Class 2 | Class 3 |
|--|---|--|--|
| Roof | Class A assembly which includes, among other things, coverings of brick, masonry or an exposed concrete roof deck, ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile or slate installed on noncombustible roof decks, ferrous, copper or metals sheets installed without a roof deck on noncombustible framing, or 16oz/sf copper sheets installed over combustible roof decks. | Class A or noncombustible roof covering. Any space between the roof covering and roof deck, the space at the eave ends shall be firestopped to preclude the entry of flames or embers | Class B or non-combustible roof covering |
| Roof Valleys | Flashing not less than 0.019" (no.26 gage) corrosion-resistant metal. | Same as Class 1 | Same as Class 1 |
| Eaves and soffits | Protected on the underside by ignition-resistant materials or 1-hour fire-resistance-rated construction, 2" nominal lumber, 1" nominal fire-retardant-treated lumber, or 3/4" nominal fire-retardant-treated plywood | Combustible eaves, fascias, and soffits shall be enclosed with solid materials with a minimum thickness of 3/4". Exposed rafter tails shall not be permitted unless constructed of heavy timber materials. | |
| Gutters and downspouts | Non-combustible materials and a means to prevent the accumulations of leaves and debris | Same as Class 1 | Same as Class 1 |
| Exterior walls | 1-hour fire-resistance-rated, noncombustible materials, heavy timber (log walls), fire-retardant-treated wood, ignition-resistant materials (ASTM E84) | Same as Class 1 | |
| Underfloor enclosure | Underfloor areas shall be enclosed to the ground with exterior wall construction or the underside of exposed floors, structural columns, beams and supporting wall construction is 1-hour fire-resistance-rated, heavy timber, or fire-retardant-treated wood. | Same as Class 1 | Same as Class 1 |
| Decks and projections | 1-hour fire-resistance-rated construction, heavy timber, non-combustible materials, Fire-retardant-treated wood, or ignition-resistant materials | Same as Class 1 | |
| Decks projecting over a descending slope greater than 10% | Underfloor area enclosed to within 6" of the ground with exterior walls construction. | Same as Class 1 | |
| Exterior Glazing | Multi-layered panels, tempered, or 20-minute fire rated | Same as Class 1 | |
| Exterior Doors | Non-combustible, solid core wood at least 1 3/4" thick, or 20-minute fire-rated | Same as Class 1 | |
| Attic vents, foundation or underfloor vents or other ventilation openings | Not exceed 144 square inches each, covered with noncombustible corrosion-resistant mesh with openings not to exceed 3/4" or designed to prevent flame or ember into the structure. | Same as Class 1 | |
| Vent location | Not located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. | Same as Class 1 | |
| Exterior walls of detached accessory structures located less than 50 feet from a building containing habitable space | 1-hour fire-resistance-rated, heavy timber, log wall, or non-combustible materials or fire-retardant-treated wood on the exterior side. | Same as Class 1 | |

Example 1 : One-family dwelling near Dos Rios Golf Course

Vacant parcel was medium fuel with overgrown and unkept grasses, shrubs, and big cottonwood trees. Pre-development phase, vegetation was removed, trimmed, thinned and management plan will include ongoing maintenance.



Mitigation difficult class 6: tree on shallow slope according to CPAW.
Light fuel and Moderate hazard according to the WUIC



Water Supply to this site is conforming.

The defensible space fuel modification distance from the proposed dwelling is 30 feet or to the lot line, whichever is less. Trees are allowed within the defensible space, provided that the horizontal distance between crowns of adjacent trees and crowns of trees and structures, overhead electrical facilities or unmodified fuel is not less than 10 feet.

TABLE 503.1
IGNITION-RESISTANT CONSTRUCTION^a

| DEFENSIBLE SPACE ^c | FIRE HAZARD SEVERITY | | | | | |
|-------------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| | Moderate Hazard | | High Hazard | | Extreme Hazard | |
| | Water Supply ^b | | Water Supply ^b | | Water Supply ^b | |
| | Conforming ^d | Nonconforming ^e | Conforming ^d | Nonconforming ^e | Conforming ^d | Nonconforming ^e |
| Nonconforming | IR 2 | IR 1 | IR 1 | IR 1 N.C. | IR 1 N.C. | Not Permitted |
| Conforming | IR 3 | IR 2 | IR 2 | IR 1 | IR 1 | IR 1 N.C. |
| 1.5 × Conforming | Not Required | IR 3 | IR 3 | IR 2 | IR 2 | IR 1 |

- a. Access shall be in accordance with Section 403.
 b. Subdivisions shall have a conforming water supply in accordance with Section 402.1.
 IR 1 = Ignition-resistant construction in accordance with Section 504.
 IR 2 = Ignition-resistant construction in accordance with Section 505.
 IR 3 = Ignition-resistant construction in accordance with Section 506.
 N.C. = Exterior walls shall have a fire-resistance rating of not less than 1 hour and the exterior surfaces of such walls shall be noncombustible. Usage of log

The defensible space and water supply to this site are both conforming, therefore, Class 3 Ignition Resistant construction would be required. If a defensible space fuel modification distance of 45 feet could be provided, then no building ignition resistance materials would be required. Additionally, if the water supply was not 'conforming' then Class 2 Ignition Resistant construction would be required. Similarly, if the fuel modification was not 'conforming', the Class 2 would be required. If both the water supply and defensible space were nonconforming, then the Class 1 Ignition Resistant construction would be required.

Ignition Resistant Construction Class 3

- Roofs shall have a roof assembly that complies with not less than a Class B rating or an approved noncombustible roof covering.
- Roof valleys flashings shall not be less than 0.019" (No.26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36" wide underlayment consisting of one layer of 72 pound mineral-surfaced, nonperforated cap sheet.
- Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls except where the underside of the exposed floors and exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction, fire-retardant-treated wood, or heavy timber.
- Gutters and downspouts shall be constructed of noncombustible material and gutters shall be provided with an approved means to prevent the accumulation of leaves and debris.



As proposed, this dwelling meets the requirements of Ignition Resistant Construction Class 3.

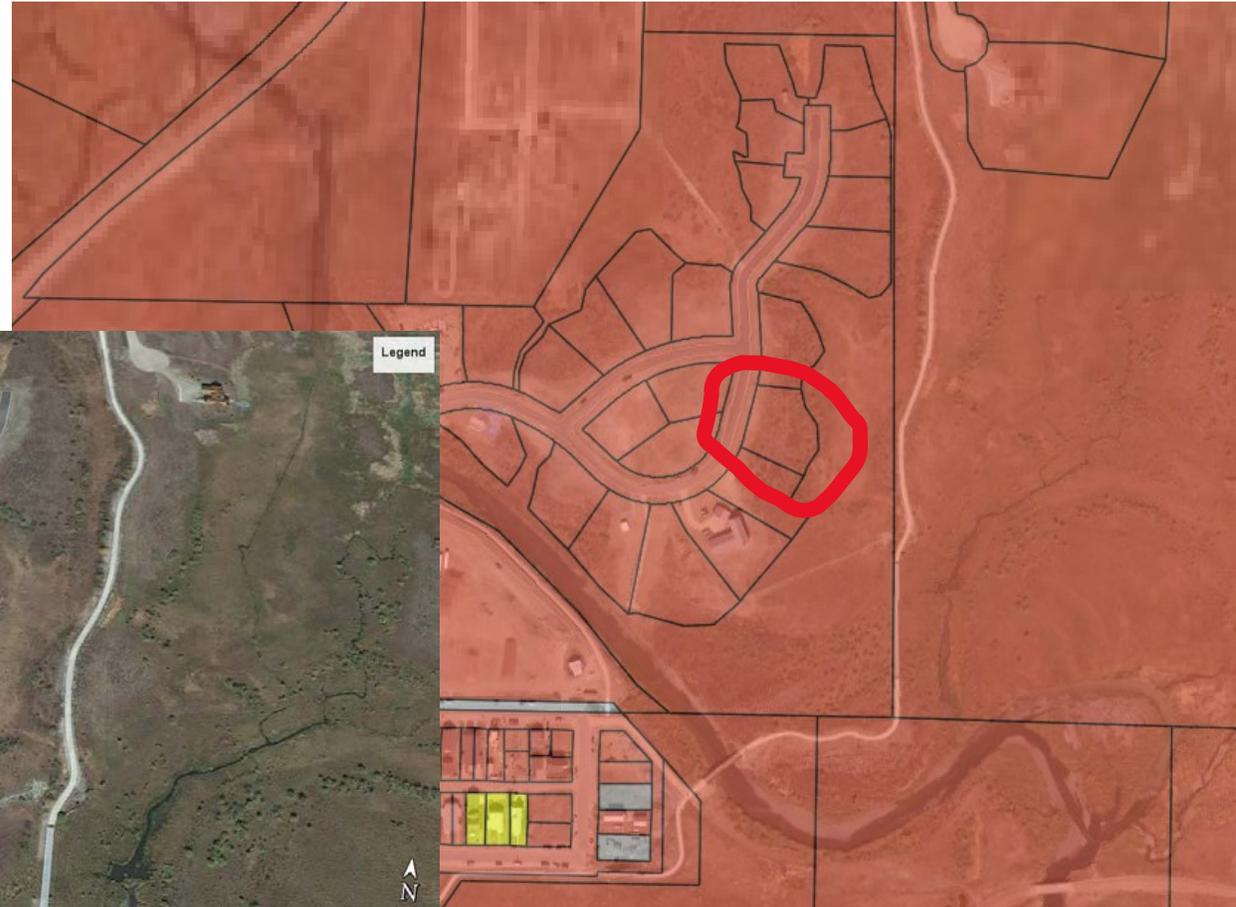
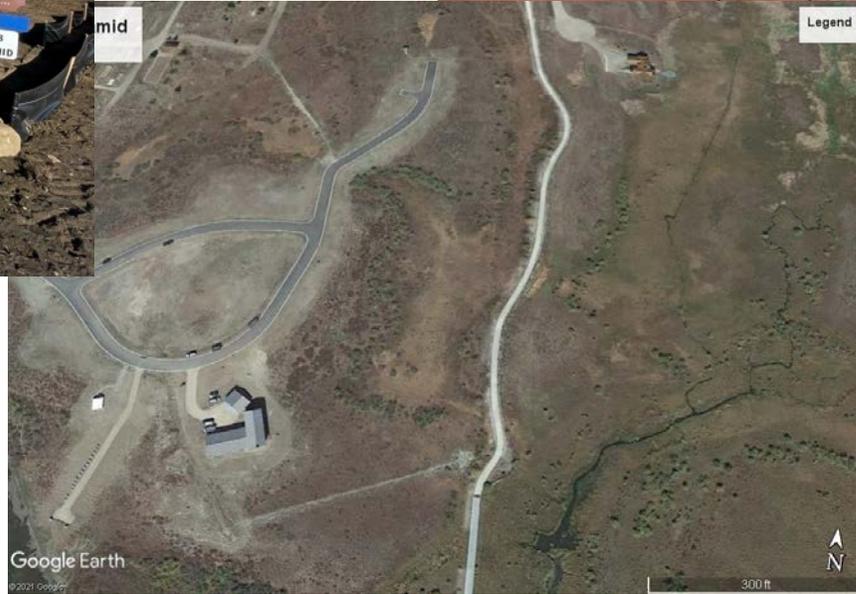
- The roof covering will be non-combustible metal.
- No roof valleys.
- No underfloor areas will be present that are not enclosed to the ground with exterior walls.
- No gutters.

Example 2: One-Family Dwelling at Aperture Subdivision



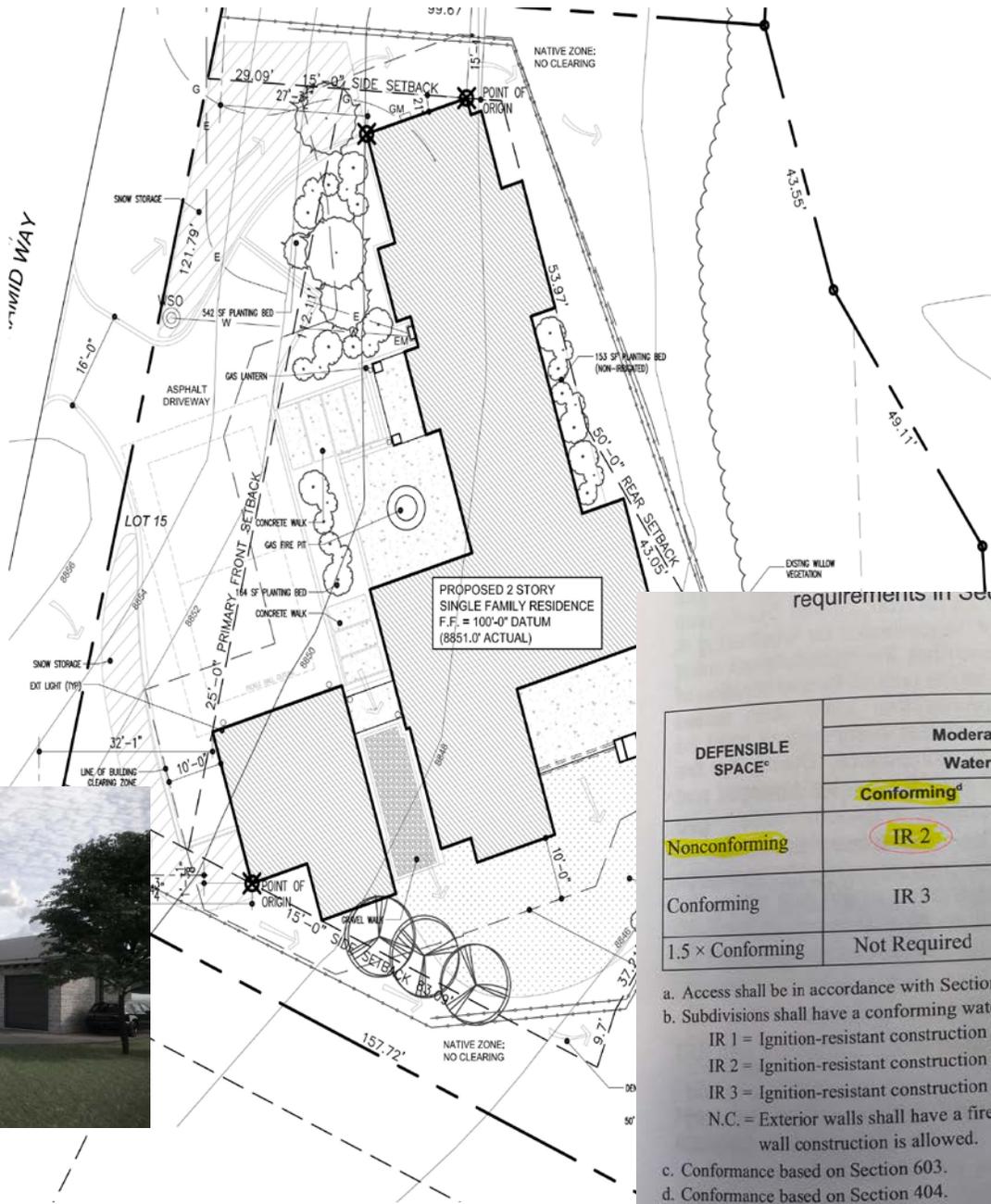
Light Fuel and Moderate Hazard according to the IWUI code classification.

Mitigation Difficulty Class 4: Shrub on shallow slope according to CPAW



At initial site inspection, parcel had willows and small shrubs mixed with grasses and forbs. In the pre-construction phase photo, much of the vegetation has been scraped.

As proposed, the development does not meet the requirements for a 'conforming' defensible space and would be considered 'non-conforming'. The property owners can choose to have either a conforming or non-conforming defensible space, however, the class of Ignition Resistant Construction will change depending.



Water Supply to this site is a hydrant within 1,000' that can deliver at least 1,000 gallons per minute for 30 minutes and is considered 'conforming'.

requirements in Section 603. requirements of the IBC or IRC as applicable.

**TABLE 503.1
IGNITION-RESISTANT CONSTRUCTION^a**

| DEFENSIBLE SPACE ^c | FIRE HAZARD SEVERITY | | | | | |
|-------------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| | Moderate Hazard | | High Hazard | | Extreme Hazard | |
| | Water Supply ^b | | Water Supply ^b | | Water Supply ^b | |
| | Conforming ^d | Nonconforming ^a | Conforming ^d | Nonconforming ^a | Conforming ^d | Nonconforming ^a |
| Nonconforming | IR 2 | IR 1 | IR 1 | IR 1 N.C. | IR 1 N.C. | Not Permitted |
| Conforming | IR 3 | IR 2 | IR 2 | IR 1 | IR 1 | IR 1 |
| 1.5 x Conforming | Not Required | IR 3 | IR 3 | IR 2 | IR 2 | IR 1 |

a. Access shall be in accordance with Section 403.
b. Subdivisions shall have a conforming water supply in accordance with Section 402.1.
IR 1 = Ignition-resistant construction in accordance with Section 504.
IR 2 = Ignition-resistant construction in accordance with Section 505.
IR 3 = Ignition-resistant construction in accordance with Section 506.
N.C. = Exterior walls shall have a fire-resistance rating of not less than 1 hour and the exterior surfaces of such walls shall be noncombustible. Usage of log wall construction is allowed.

c. Conformance based on Section 603.
d. Conformance based on Section 404.
e. A nonconforming water supply is any water system or source that does not comply with Section 404, including situations where there is no water supply for

Ignition Resistant Construction Class 2

- Roofs shall have a non-combustible roof covering or a Class A roof assembly rating.
- Valleys shall be not less than 0.019-inch (No.26 galvanized sheet gauge) corrosion-resistant metal installed over a minimum 36" wide underlayment of one layer of 72-pound mineral-surfaced, nonperforated cap sheet for the full length.
- Combustible eaves, fascias and soffits shall be enclosed with solid materials with a minimum thickness of ¾". Exposed rafter tails are not permitted unless constructed of heavy timber materials.
- Gutters and downspouts shall be constructed of noncombustible material and gutters shall be provided with an approved means to prevent the accumulation of leaves and debris in the gutter.
- Exterior walls of buildings or structures shall be constructed with one of the following methods:
 1. Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side.
 2. Approved noncombustible materials.
 3. Heavy timber or log wall construction.
 4. Fire-retardant-treated wood on the exterior side (labeled for exterior use).
 5. Ignition-resistant materials on the exterior side.
- Underfloor areas shall be enclosed to the ground with exterior walls OR the underside of exposed floors and structural columns, beams, and supporting walls shall be protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber or fire-retardant-treated wood.
- Exterior glazing shall be multilayered or tempered.
- Exterior doors shall be approved non-combustible construction, solid core wood at least 1.75" thick or have a fire protection rating of at least 20 minutes.

Continued.....

- Attic ventilation openings, foundation or underfloor vents or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Vents shall be covered with noncombustible, corrosion-resistant mesh with openings not to exceed 0.25" or shall be designed and approved to prevent flame or ember penetration.
- Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located not less than 10 feet from lot lines. Underfloor ventilation openings shall be located as close to grade as practical.
- Detached accessory structures located less than 50 feet from a building containing habitable space shall have exterior walls constructed with materials approved for not less than 1-hour fire-resistant-rated construction, heavy timber, log wall construction, or constructed with approved noncombustible materials or fire-retardant-treated wood on the exterior side.



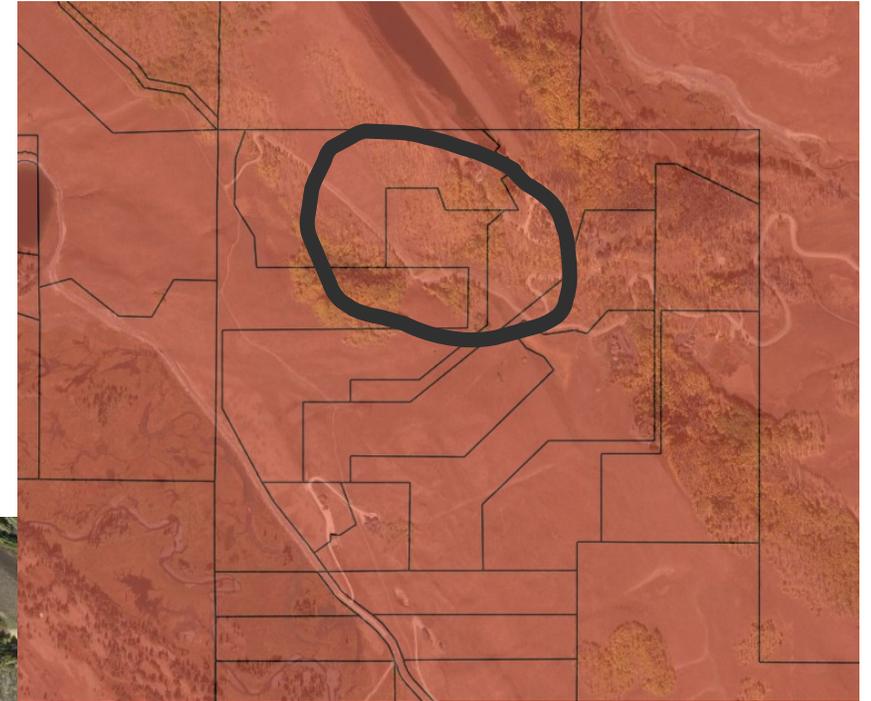
Does the proposed dwelling meet the requirements of Class 2 Ignition Resistant Construction? The roof covering is all 26 gauge steel, the soffits are enclosed with solid material at least 0.75" thick, exposed rafter tails are heavy timber, the gutter system is all 26 gauge steel, the exterior doors are all solid wood or non-combustible, the windows are all multi-layered glazing and meet the requirements.

More information will be needed about the following and a change in materials if not compliant:

1. The exterior wood siding is not specified as being fire-resistant or ignition-resistant.
2. Details on the underside of the breezeway roof construction connecting the dwelling to the garage.
3. Faux attic vents are called out on the plans. Additional info about any vent openings would be required.
4. Information on how the accumulation of leaves and debris will be prevented in the gutter system.

Example 3: One-family Dwelling and Guest Dwelling at Smith Hill

The site is on a moderate 25-30% slope with Aspen trees, grasses, and forbs. The building site has been cleared of Aspen trees (as seen in photo).



Heavy fuel and Extreme Fire Hazard Severity according to the IWUI code classification.

Mitigation difficulty class 7: tree on moderate slope according to CPAW



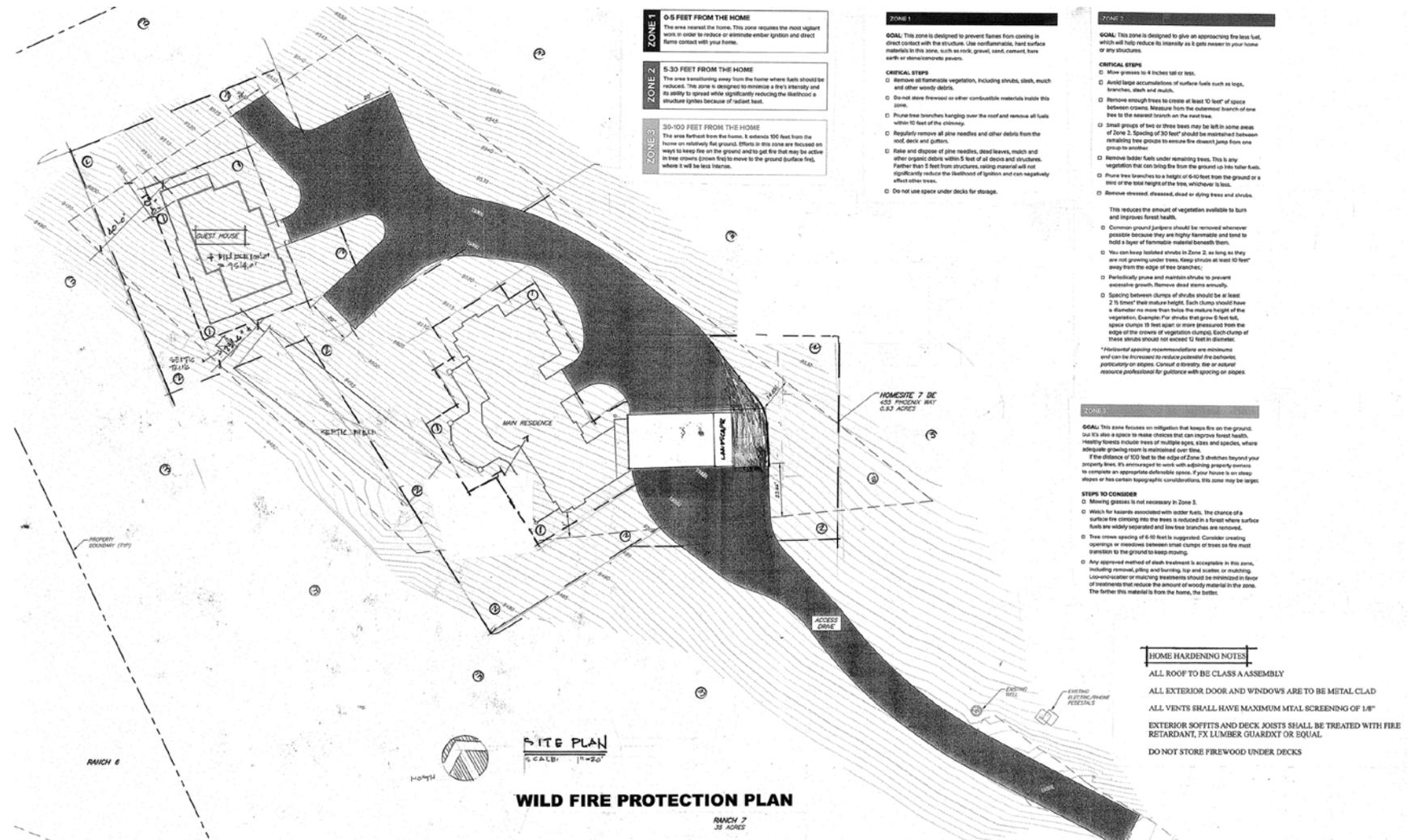
Google Earth

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400 ft

Reducing the Fire Hazard Severity

In the IWUI code, a vegetation management plan can reduce the hazard severity. A wildfire protection plan was developed for this site and the CSFS assisted in the review and assessment of this site and proposed plan. Much of the wildfire risk for this site comes in the form of a surface fire burning through the understory vegetation in the Aspen stands and adjacent grasses and forbs. An annual maintenance checklist should be performed within the 100 foot defensible space zone.



Water supply at the site is nonconforming.

In accordance with the adopted fire code, the CB Fire Protection District will verify and approve the installation of a residential fire suppression system and 10,000 gallons of outside water storage.

TABLE 503.1
IGNITION-RESISTANT CONSTRUCTION^a

Approved vegetation management plan reduces the Fire Hazard Severity from Extreme to High

| DEFENSIBLE SPACE ^c | FIRE HAZARD SEVERITY | | | | | |
|-------------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| | Moderate Hazard | | High Hazard | | Extreme Hazard | |
| | Water Supply ^b | | Water Supply ^b | | Water Supply ^b | |
| | Conforming ^d | Nonconforming ^e | Conforming ^d | Nonconforming ^e | Conforming ^d | Nonconforming ^e |
| Nonconforming | IR 2 | IR 1 | IR 1 | IR 1 N.C. | IR 1 N.C. | Not Permitted |
| Conforming | IR 3 | IR 2 | IR 2 | IR 1 | IR 1 | IR 1 N.C. |
| 1.5 × Conforming | Not Required | IR 3 | IR 3 | IR 2 | IR 2 | IR 1 |

^a Access shall be in accordance with Section 403.

^b Access with Section 402.1.

With the approved vegetation management plan, Ignition Resistant Construction Class 1 will be required. Without the approved vegetation management plan, non-combustible exterior wall material and a 1-hour fire-resistance rating which includes tempered glazing would have been required.

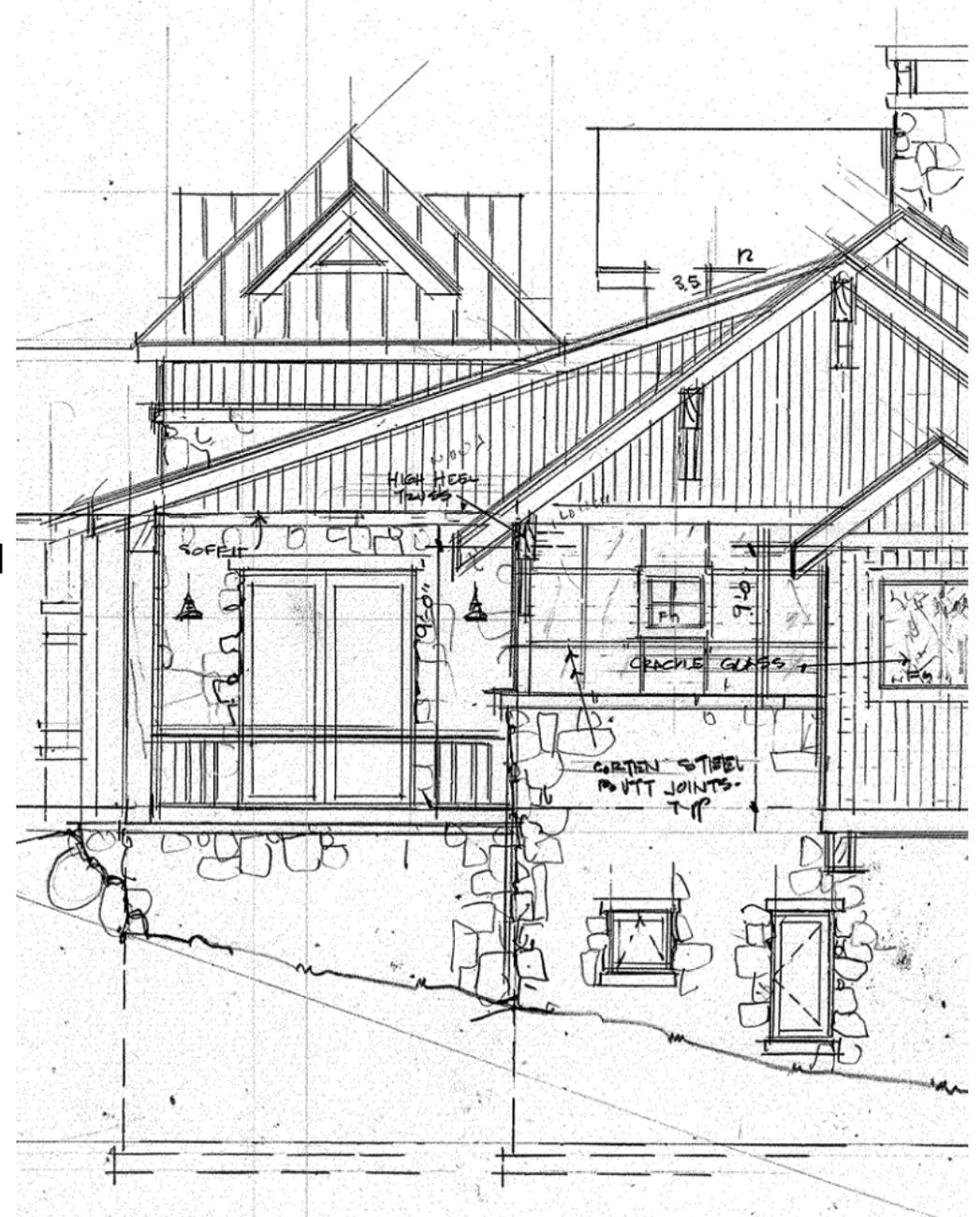
Additionally, if the vegetation management plan had included an additional 50 feet for the defensible space zone then the Ignition Resistant Construction Class could have been dropped to a Class 2.

Class 1 Ignition Resistant Construction

- Class A roof assembly is specified in the plans.
- Exterior windows are multi-layered.
- Exterior doors are either non-combustible or solid core wood at least 1.75" thick, or 20 minute fire-rated.

Additional information needed on the following:

- Roof valley flashing will need to be specified.
- Eave and fascia details will need to be specified.
- Gutters and downspouts will need to be specified.
- Exterior wall is mostly stone veneer, however, more information will be needed on the remainder specified as "1X6 siding" to show that its one of the following: 1-hour fire-resistance-rated, fire-retardant treated wood, or ignition-resistant materials.
- There are several decks including a second floor walk-out deck with a patio underneath. The construction will need to be protected by constructing with one of the following construction options: 1-hour fire-resistance-rated construction, heavy timber, non-combustible materials, fire-retardant-treated wood, and/or Ignition-resistant materials.
- Need additional information about ventilation openings and locations. They are not specified on the plans.



Anticipated Next Steps

- **Determine if municipalities are interested in joint adoption**
- **Outreach to general public (including contractors, homeowners, property managers, realtors, HOAs). Include info on hazards, insurance, costs of construction.**
- **Develop recommendations based on public and stakeholder input.**
- **Outline program elements and staffing resources**
- **Review WUI Code and identify possible amendments**
- **Propose recommendation to Gunnison County Planning Commission and possibly municipal councils.**



Contact



Cathie Pagano

Community & Economic Development Director

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Anticipated Next Steps

- **Work with partners at Colorado State Forest Service and West Region Wildfire Council to establish opportunities for public to implement defensible space and mitigation plans**
- **Train Community Development staff to fill gaps from partner agencies (site inspections to verify mitigation has been completed)**
- **Implement risk assessment program and adopt mapping tools**
- **Review Wildland Urban Interface Code and consider adoption with possible amendments (i.e. many residents do not have “adequate water supply” and requiring sprinklering for those residents may not be desired by County Commissioners)**
- **Update and align current plans (Strategic plans, Land Use Resolution, Hazard Mitigation Plans, CWPPs)**



Context

- **Population: 16,000**
- **Summer and winter tourist destination for recreation**
- **Geographically remote and mountainous**
- **Home to the threatened Gunnison Sage-Grouse**
- **Varied terrain from high desert sage brush to forested lands and high alpine**

