

Humboldt County

Community Wildfire Protection Plan

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Executive Summary

The Healthy Forests Initiative was announced by the White House in 2002 to implement the core components of the *National Fire Plan Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Cohesive Strategy*. The Plan calls for more active forest and rangeland management to reduce the threat of wildland fire in the wildland-urban interface, the area where homes and wildland meet.

This report was prepared specifically for the communities within Humboldt County, Nevada that were identified in the 2001 Federal Register list of communities at risk within the vicinity of federal lands that are most vulnerable to the threat of wildfire. The communities assessed in Humboldt County are listed in Table 1-1.

The Nevada Department of Forestry contacted Humboldt County Emergency Management who assembled a project team of experts in the fields of fire behavior and suppression, natural resource ecology, ranch management, county management, and geographic information systems (GIS) to review the assessment for each Humboldt County community listed in the Federal Register. The Nevada Division of Forestry (NDF) Project Team spent several days inventorying conditions in Humboldt County and completing the primary data collection and verification portions of the risk assessment.

This report describes in detail the data and information collected, analyzed, and considered during the assessment of each community. The general results are summarized in Table 1-1. Five primary factors that affect potential fire hazard were assessed to arrive at the community hazard assessment score:

- community design,
- construction materials,
- defensible space,
- suppression capabilities, and
- physical conditions that affect fire behavior, such as the
 - vegetative fuel load and
 - topography.

Information on fire suppression capabilities and responsibilities for Humboldt County communities was obtained from local Fire Chiefs and agency Fire Management Officers. Fire Specialists on the NDF Project Team assigned an ignition risk rating for each community of low, moderate, or high. The rating was based upon several factors:

- historical ignition patterns,
- the opinions of local, state, and federal fire agency personnel,
- field visits to each community, and
- professional judgements based on experience with wildland fire ignitions in Nevada.

Table 1-1 – Community Risk and Hazard Assessment Results

COMMUNITY	PRIMARY COMMUNITY TYPE	SURROUNDING ENVIRONMENT RATING	COMMUNITY HAZARD RATING	DWELLINGS
Artemisia	Residential-Mixed	Moderate	High (136)	80
Denio/Denio Junction	Residential-Mixed	Moderate	High (102)	67
Golconda	Residential-Stick built	Moderate	High (128)	136
Grass Valley	Residential-Stick built	Moderate	High (107)	1882
Herschel	Residential-Mixed	Moderate	High (119)	79
Jungo	Residential-Mixed	Moderate	Moderate (94)	35
McDermitt	Residential-Mixed	Moderate	Moderate (91)	80
Orovada	Residential-Mobile	Moderate	High (107)	40
Paradise Ranchos (Paradise Hills)	Residential-Mixed	Moderate	High (140)	80
Paradise Valley	Residential-Mixed	Moderate	High (105)	50
Prairie-Dog	Residential-Mixed	High	High (145)	30
Rose Creek	Residential-Mobile	Moderate	High (110)	215
Valmy	Residential-RV	Moderate	High (123)	55
Winnemucca	Residential-Mixed	Moderate	Moderate (97)	3538
Fort McDermitt	Intermix	Low to High	N/A ²	High ³

²N/A - This information was not provided in the SWCA report

³This rating was based upon similar community hazard assessment procedures reported in the SWCA (2003) report.

Existing Situation

The community wildfire hazard rating is high in the majority of communities due primarily to fire ignition history, wildfire history, and annual grasses invasion that adds to the fire hazard. The hazard rating in Jungo, McDermitt, and Winnemucca is moderate primarily because of sparse brush and agricultural buffer zones.

Fire Protection within Humboldt County is provided by all-volunteer fire departments operating within NRS 414 Fire Protection Districts that are funded primarily by *ad valorem* and other tax revenues.

Denio Pueblo Fire District

Golconda Fire Protection District
Grass Valley Fire Protection District
McDermitt Fire Protection District
Orovada Fire Protection District
Paradise Valley Fire Protection District
Valmy Fire Protection District
Winnemucca City Fire Protection District
Winnemucca Rural Fire Protection District

Two exceptions to the all-volunteer status in Humboldt County is the Winnemucca Rural Fire Department and the Winnemucca City Fire Department both with a career Fire Chief. Volunteer firefighters may not always be available to respond to wildfires, especially during normal work hours. These Fire Districts respond when called but work within several constraints that impact that response; acreage included within the districts, water availability for suppression, number of responders, and response times.

In the case that a fire occurs during hours when volunteers are unable to respond, the Bureau of Land Management Winnemucca District Office (WDO) has cooperative agreements with all Humboldt County volunteer fire departments to provide wildland fire suppression equipment and personnel. (WDO) has 64 trained fire personnel and 34 seasonal employees. Seasonal employment spans the dates of June through September. The equipment available from the BLM, listed in Section 4.1.1 of this report, is stationed throughout the WDO across 5 Fire Stations, and ready for dispatch within minutes of notification of a wildfire during business hours. After hours dispatch response will typically be within 15 minutes.

The BLM maintains and staffs a seasonal aviation base located at the Winnemucca airport, hosting a minimum of 2 Single Engine Air Tankers (known as SEATs), and the capability to reload and support several other firefighting aircraft to include helicopters, smokejumpers and aerial supervision planes.

The Humboldt-Toiyabe National Forest, Santa Rosa Ranger District (SRRD) relies on the BLM for wildfire response within the SRRD. There is a current Service-First Agreement in place between the 2 federal agencies which provides the framework and funding for the BLM to provide for suppression responsibility on the SRRD. This includes staffing the Paradise Valley Guard Station during the fire season.

The Nevada Division of Forestry has begun to station staff at the former Conservation Honor Camp located in the Rose Creek area. These personnel will offer support to County fire-fighting efforts.

The Bureau of Indian Affairs has a suppression agreement with the BLM statewide that provides the funding and framework for BLM Districts to provide direct wildland fire suppression services on the various Native American Indian Reservations throughout the state. This would include Ft. McDermitt, Summit Lake, and the Winnemucca Indian Colony in Humboldt County. Winnemucca City Fire Department also responds to the Winnemucca Indian Colony when necessary.

Rangeland Fire Protection Associations (RFPAs) are non-profit associations formed for the purpose of protecting rangeland from wildfire (NRS 472.200). These RFPAs can petition the county commissioners for approval and be established by as few as two persons who own, lease, produce agriculture on or occupy property may petition to create a RFA (NRS 474.323).

Within Humboldt County there is one RFPA (Wildfire Support Group, Inc). In addition there is an agreement of support from two Oregon RFPAs; the Blue Mountain RFPA and the Fields Andrews RFPA. Both of these RFPAs provide support to the northern central and western areas of Humboldt County. See Maps 1-3 in Appendix E.

The Central Nevada Interagency Dispatch Center (CNIDC) located in Winnemucca provides unified dispatch services for the Winnemucca and Battle Mountain BLM District Offices, the US Forest Service Santa Rosa, Austin, and Tonopah Ranger Districts.

Humboldt County has an extensive wildfire history. As detailed in Table 3-2, approximately 1,374,499 acres were burned between 2003 to 2022. Much of the county is prone to summer thunderstorms with dry lightning, which is a primary ignition risk. Another prominent wildfire hazard throughout much of Humboldt County is the vast expanses of annual grasses. This grass growth of cool season annual grasses depends on fall and spring moisture: greater volumes of fuel occur in high moisture years, and less in years with below normal precipitation, especially spring moisture. Annual grasses are highly flammable and provide a readily ignited fuel bed, a fast-advancing fire front, when winds occur, and a continuous layer of fuel that ladders fire into adjacent shrubs and any other flammable material it contacts.

Recommendations

Many homeowners in Humboldt County have been aggressive in establishing and maintaining appropriate defensible space around their residences; others have not. Many of the recommendations in this report focus on efforts that can be easily initiated by homeowners to enhance the fire safe nature of their homes and communities. Homeowners and the management of their property are the first line of defense for preventing the loss of property and lives. In large outbreaks, they may be the only defense available for their property.

Residents in Denio need to reduce high, dense sagebrush and other fuels within the community. In Grass Valley, Paradise Valley, Paradise Ranchos, and Winnemucca, residents should maintain better defensible space around homes, outbuildings, livestock corrals, and haystacks. Fuel breaks and fuel reduction treatments and fuel modification zones around communities and critical infrastructure have been recommended all of the assessed communities to be implemented cooperatively by public land agencies, Humboldt County, and property owners. The details for this type of project will include the coordination of multiple stakeholders, commercial vendors, and applications for funding sources to bring the project to fruition. This will include fuel reduction actions on approx. 570 acres (235 miles) around the perimeter of the communities. In addition to the totality of the project, will need to be designed a maintenance program to ensure the long-term viability of the mitigation of the fuel breaks. See maps in Appendix E.

Another project that has been discussed are annual “clean-up days” for the communities listed within this plan. This project would be an opportunity organized and implemented jointly with the appropriate fire district and Humboldt County. The events should include the use of chippers to assist the residents in clean-up, maintenance of defensible space, and reuse ideas for the chipped materials. The implementation of this proposal will be dependent on securing grant funding.

In some areas, street and address signage needs improvement so that firefighters can easily locate homes at risk under low visibility conditions during a fire. Improvement of this signage is vital to accurate response by all emergency agencies; fire, law enforcement, and medical. Coordination discussions will be conducted with community members and emergency personnel to determine the best products to improve the sign visibility.

Fire engine and tanker refill points should be preemptively identified / developed in areas that do not have fire hydrants to aid in suppression efforts. Many new developments within the County are planned or under development. Adjacent fuels mitigation needs to be considered as these projects are developed.

The adoption and enforcement of regulations that address community fire safety in the wildland-urban interface and include mandatory fuel reduction treatments and annual maintenance for all new development must be a high priority for future planning. Discussions with County leadership has begun to develop the county codes necessary to identify and protect the Wildland Urban Interface. The County must ensure that fire safe community recommendations, such as those listed in Appendix F, are adopted in Humboldt County.

To control the spread of annual grasses in the future, burned areas must be reseeded with appropriate and competitive species promptly following fire suppression. Other mechanisms to control annual grasses should be employed in conjunction with seeding and rehabilitation efforts such as cheatgrass-targeting herbicides to allow for better establishment of desirable species. Defensible space zones and fuel reduction treatment areas must be mowed or over time will kill most perennials, if they are on site; grazed prior to seed set; and/or treated with a pre-emergent herbicide to deplete the annual grass seed in the soil. Annual grass control treatments often take two or more years to be successful. After initial treatment, reseeding the area with native and climatically adapted species will aid in reducing annual grasses from the landscape.

There is no way to completely eliminate the threat of wildfire in the wildland-urban interface. Close and continued coordination between citizens, local fire departments, Humboldt County, the Nevada Division of Forestry, the US Forest Service, the Bureau of Land Management, the Bureau of Indian Affairs, and the RFPAs is crucial for successful implementation of necessary fuel reduction projects to improve fire safety in the wildland-urban interface communities throughout Humboldt County. Recommendations in this report are intended to:

- Encourage defensible space as a first priority.
- Implementation of larger fuel reduction projects where needed to reduce the hazards inherent in wildland-urban interface areas.
- Increase public awareness of wildfire risks and hazards in communities, and what homeowners can do to reduce those risks and hazards.
- Promote community-wide involvement to effectively reduce the risk of wildfire ignitions in and near communities.

To be most effective, fire safe practices need to be implemented on a community-wide basis. When neighbors work together, much more can be accomplished to make a community more fire safe.

Acknowledging the need for ongoing fuels management on public and private lands is the first step toward fire safe living in a wildfire-prone environment. One logical action for long-term community safety from wildfire requires a permanent commitment to the enforcement of fire safe ordinances at the local level. A second action is fuels management which includes regular monitoring and evaluation of fuel conditions and proactive maintenance or implementation of

additional fuel reduction treatments as development continues to encroach at the wildland-urban interface.

Any of the following agencies or organizations can be contacted for further information and assistance:

- Nevada Division of Forestry Fire Program Manager
Ron Bollier 775-684-2500
- Nevada Association of Counties NVNACO@nvnaco.org 775-883-7863
- Bureau of Land Management – NV State Office NV BLM State Fire Management Officer
Donovan Walker 775-861-6400
- Humboldt-Toiyabe National Forest H-T Supervisors Office Fire Staff Officer
Supervisors Office gwensanchez@usda.gov 775-331-6444

INTRODUCTION

1.1 PROJECT STRUCTURE

The Healthy Forests Restoration Act (HFRA) of 2003 provides the impetus for wildfire risk assessment and planning at the county and community level. HFRA refers to this level of planning as Community Wildfire Protection Plans (CWPP). The CWPP allows a community to evaluate its current situation with regards to wildfire risk and devise ways to reduce risk for protection of human welfare and other important economic or ecological values. The CWPP may address issues such as community wildfire risk, structure flammability, hazardous fuels mitigation, and non-fuels mitigation, community preparedness, and emergency procedures. The Project Team provided the collection of information used for the development of the CWPP and its implementation in Humboldt County.

The focus of the Humboldt County CWPP is county-wide. The plan emphasizes the communities at risk within the vicinity of federal lands that are most vulnerable to the threat of wildfire as identified in the 2001 Federal Register (Appendix G). Human life and welfare are values at risk to wildfire because of the buildup of hazardous fuels around communities and structures, poor emergency vehicle ingress and egress, major transportation routes and traffic flow, a large area to cover with the fire authorities, and volunteer (part-time) fire suppression authorities. Throughout the County, there are scattered small communities and ranches with houses and out-buildings without structural fire protection. Other economic values at risk include businesses, farmland, ranchland, grazing land, hunting and other recreational land, historic and cultural sites, and critical infrastructure.

The Nevada Department of Forestry contacted Humboldt County Emergency Management who assembled a project team of experts in the fields of fire behavior and suppression, natural resource ecology, ranch management, county management, and geographic information systems (GIS) to review the assessment for each Humboldt County community listed in the Federal Register. The Nevada Division of Forestry (NDF) Project Team spent several days inventorying conditions in several communities within Humboldt County and completing the primary data collection and verification portions of the risk assessment.

The specific goals of the Nevada Community Risk/Hazard Assessment Project are to:

- Assess the wildfire hazards present in each community on the Federal Register list of communities at risk in Nevada.
- Identify firefighting resource needs (e.g. equipment and infrastructure).
- Conduct fuel hazard mapping for high fuel hazard communities.
- Describe proposed risk and hazard mitigation projects in enough detail to aid communities in applying for future implementation funds.
- Distribute assessment results and proposed mitigation project descriptions to each County in a format that will be easily updated and useful for public meetings and other public education activities.

Wildland fire is the highest rated hazard in Humboldt County. During the 19-year period of 2003 to 2022, there were 941 ignitions encompassing 1,374,499 acres for an average of 50 fires destroying 72,342 acres per year. 37 percent of wildfires were the result of natural causes, while 54 percent were human-caused, and 9 percent had undetermined causes. Even though these fires have been predominantly in areas without residents or other structures, the economic impact to agriculture and environments remains substantial.

Numerous agencies and individuals were involved in the planning and implementation of this effort. Special thanks and acknowledgement are given to:

- Bureau of Land Management (BLM)
- Nevada Division of Forestry (NDF)
- University of Nevada Cooperative Extension (UNCE)
- Humboldt County Emergency Manager
- Humboldt County Commissioner
- County residents and ranchers
- Humboldt Communities
- Fire Chiefs county-wide

1.2 COMMUNITIES ASSESSED

Fourteen communities in proximity to federal lands within Humboldt County were identified in the Federal Register (66 FR 160) and are included in this assessment:

- Artemisia
- Denio/Denio Junction
- Golconda
- Grass Valley
- Herschel
- Jungo
- McDermitt
- Orovada
- Paradise Ranchos
- Paradise Valley
- Prairie-Dog
- Rose Creek
- Valmy
- Winnemucca Proper

Humboldt County has several agricultural ranch communities that face a greater risk of economic loss from damage to agricultural commodities (e.g. livestock, hay, and crops) than risks to residential structures. General recommendations for rural ranch communities have been developed to address hazards that are unique to the private lands in remote settings.

There may be additional rural areas or small subdivisions within Humboldt County that were not included on the Federal Register list, but are included in the scope of this project. Conditions in and around some of these communities may warrant future individual hazard/risk assessment. However, many of the recommendations developed for similar communities in this report may apply to additional areas.

1.3 COMMUNITIES NOT CURRENTLY ASSESSED

1.3.1 Summit Lake

Summit Lake, located in the northwest part of Humboldt County, is Paiute tribal land. There is no residential community on the property and no one currently lives there. The risk/hazard assessment was not completed for Summit Lake because it is not a residential community.

1.3.2 Fort McDermitt Reservation

SWCA Environmental Consultants (2003) was contacted to conduct a Wildfire Hazard Assessment and Mitigation Plan for the Primary Residential Community on the Fort McDermitt Reservation on behalf of the Bureau of Indian Affairs in January 2003. The assessment covered the 16,831 acres of the Fort McDermitt Reservation within Nevada.

SWCA assessed community design, physical conditions, existing fuel conditions, fire behavior factors, ignition risks, and fire suppression and protection resources. The following activities were recommended:

- Defensible space of at least seventy feet surrounding residences
- Fuel reduction to cover 976 acres in two phases over three years
- Maintenance and inspection of fire hydrants
- Installation of water tanks
- Construction, maintenance, and improvement of street signs and residential addresses
- Public education

1.3.3 Winnemucca Indian Colony

Contact with tribal leaders was attempted with no response. The Project Team is attempting to work through the BLM BIA personnel to gather information.

METHODOLOGY

2.1 PROJECT TEAM

The Project Team was composed of experts in the fields of fire behavior and suppression, geographic information systems (GIS), and natural resource ecology who collaborated to complete a Community Risk/Hazard Assessment for each community. The Project Team included BLM and NDF fire specialists with extensive wildland fire prevention and suppression experience in Nevada, NDF Fire Adapted Nevada Coordinator, and University of Nevada Reno (UNR) natural resources specialists experienced in the Great Basin environment. The depth of knowledge of the Project Team was deepened through the addition of County government leadership, local ranchers, and Fire Protection District Fire Chiefs.

The Team used standardized procedures developed from the *Draft Community Wildland Fire Assessment for Existing and Planned Wildland Residential Interface Developments in Nevada* during the assessment process (Nevada's Wildland Fire Agencies, Board of Fire Directors, April 2001; revised 2002). This approach incorporates values for fuel hazards, structural hazards, community preparedness, and fire protection capabilities into an overall community rating.

2.2 Base Map Data Collection

The Project Team compiled and reviewed existing statewide geospatial data to create field maps for recording baseline data and data verification. Data sources for the maps were the Nevada Division of Forestry and the Bureau of Land Management. Datasets and sources utilized are listed below:

- Land Ownership
- Vegetation Classes
- Fuel Types
- Fire History
- Rangeland Fire Protection Associations
- Greenstrip Projects
- Community Sites (Appendix C)

Maps are located in Appendix E.

2.2.1 Wildfire History

Wildfire history was mapped using Bureau of Land Management, <https://www.nifc.gov/fire-information/statistics>, US Forest Service, <https://www.fs.usda.gov/main/htnf/fire>, and Nevada Division of Forestry, <https://nevadaresourcesandwildfireinfo.com>, datasets that identify wildfire perimeters on federally managed lands covering the past 19 years. This dataset is updated at the BLM Nevada State Office at the end of each fire

season from information provided by each Nevada BLM Field Office. The dataset is the central source of historical GIS fire data used for fire management and land use planning on federal lands.

Fires that occur on private lands are generally recorded on paper maps and have not been consistently included in federal agency GIS datasets. Additional fire locations identified during interviews with local fire personnel were recorded on the field maps where possible and added to the project wildfire perimeter dataset. In addition to the fire perimeter information, point data for all fire ignitions within Nevada from 2003-2022 was obtained from the Nevada Fire Intel within the National Interagency Fire Center (NIFC) of Boise, ID. This dataset includes an ignition point coordinate and an acreage component as reported to NIFC through a variety of agencies.

The wildfire history and ignition history data were used to formulate risk ratings and to develop recommendations specific to areas that have been repeatedly impacted by wildland fires. Observations made from the Project Team and comments from local fire agency personnel were also used to develop recommendations in areas without recent wildfire activity where a significant buildup of fuels or expansion of urban development into the interface area represents a growing risk.

2.3 Community Risk/Hazard Assessment

The wildland-urban interface is the place where homes and wildland meet. This project focuses on identifying risks and hazards in the wildland-urban interface areas countywide by assessing each community individually. Site-specific information for each community was collected during field visits conducted between March 1, 2023, and April 30, 2023. The predominant conditions recorded during these site visits were used as the basis for the Community Risk and Hazard Assessment ratings. See Community Risk/Hazard Assessment reports in Appendix D.

To arrive at a score for the community, five primary factors that affect potential fire hazard were assessed: community design, construction materials, defensible space, fire suppression capabilities, and physical conditions that affect fire behavior such as fuel loading and topography. A description of each of these factors and their relative importance in developing the overall score for the community is provided below. Individual community score sheets presenting the point values assigned to each element in the hazard assessment are provided at the end of each community assessment.

Community Design

Many aspects of community design can be modified to make a community more fire safe. Factors considered include:

- **Interface Condition** Community safety is affected by the density and distribution of structures with respect to the surrounding wildland environment. Four interface condition classes are used to categorize the wildland-urban interface.

- **Access.** Design aspects of roadways influence the hazard rating assigned to a community. A road gradient of greater than five percent can increase response times for heavy vehicles carrying water. Roads less than twenty feet in width often impede two-way movement of vehicles and fire suppression equipment. Hairpin turns and cul-de-sacs with radii of less than 45 feet can cause problems for equipment mobility. Adequately designed secondary access routes and loop roads in a community can lower a hazard rating. Visible, fire-resistant street and address identification and adequate driveway widths also reduce the overall community wildfire hazard rating.
- **Utilities.** Poorly maintained overhead power lines can be a potential ignition source for wildfires. It is important to keep power line corridors clear of flammable vegetation, especially around power poles and beneath transformers. Keeping flammable vegetation cleared from beneath power lines and around power poles reduces potential hazards from damaged power lines. Power failures are especially dangerous to a community without a back-up energy source. Many communities rely on electric pumps to provide water to residents and firefighters for structure protection and fire suppression.

Construction Materials

While it is not feasible to expect all structures in the wildland/urban interface area to be rebuilt with non-combustible materials, there are steps that can be taken to address specific elements that strongly affect structure ignitability in the interface area. Factors considered in the assessment include:

- **Structure Building Materials.** The composition of building materials determines the length of time a structure could withstand high temperatures before ignition occurs. Houses composed of wood siding and wood shake roofing are usually the most susceptible to ignitions. Houses built with stucco exteriors and tile, metal, or composition roofing are able to withstand much higher temperatures and longer heat durations, thereby presenting a much lower ignition risk from firebrands or the proximity to advancing flames when defensible space conditions are adequate.
- **Architectural Features.** Unenclosed or unscreened balconies, decks, porches, eaves, or attic vents on homes can create drafty areas where firebrands and embers can accumulate, smolder, and ignite, rapidly spreading fire to the house. A high number of houses within a wildland-urban interface area with these features imply a greater hazard to the community.

Defensible Space

The density and type of fuel around a home determines the potential fire exposure and the potential for damage to the home. A greater volume of trees, shrubs, dry weeds and grass, woodpiles, and other combustible materials near the home will ignite more readily, produce more intense heat during a fire, and increase the threat of losing the home. Defensible space is one of the factors that homeowners can most easily

manipulate in order to improve the chances that a home or other property avoids damage or complete loss from a wildfire.

Suppression Capabilities

Knowledge of the capabilities or limitations of the fire suppression resources in a community can help the residents take action to maximize the resources available.

Factors considered in the assessment include:

- **Availability, Quantity, and Training Level of Firefighting Personnel** When a fire begins in or near a community, having the appropriate firefighting personnel available to respond quickly is critical to saving structures. Whether there is a local paid fire department, volunteer department, or no local fire department impacts how long it takes for firefighters to respond to a reported wildland fire or a threatened community.
- **Quantity and Type of Fire Suppression Equipment.** The quantity and type of available fire suppression equipment has an important role in minimizing the effect of a wildfire on a community. Wildland firefighting requires specialized equipment.
- **Water Resources.** The availability of water resources is critical to fighting a wildland fire. Whether there is a community water system with adequate flow capabilities, or whether firefighters must rely on local ponds or other drafting sites affects how difficult it will be for firefighters to protect the community. Additionally, communities served by water systems that are dependent upon electricity for operation may be left defenseless in the event of a power outage and backup power generation is not in place.

Physical Conditions

Physical conditions include slope, aspect, topography, fuel type, and fuel density. With the exception of changes to the fuel composition, the physical conditions in and around a community cannot be altered to make the community more fire safe. Therefore, an understanding of how these physical conditions can influence the behavior of a fire is essential to planning effective preparedness activities such as fuel reduction treatments.

Physical conditions considered in the assessment include:

- **Slope, Aspect, and Topography.** In addition to local weather conditions, slope, aspect, and topographic features are also used to predict fire behavior. Steep slopes greatly influence fire behavior. Fire usually burns upslope with greater speed and longer flame lengths than on flat areas. Fire usually burns downhill at a slower rate and with shorter flame lengths than in upslope burns. West and south facing aspects are subject to more intense solar exposure, which preheats vegetation and lowers the moisture content of fuels. Canyons, ravines, and saddles are topographical features that are prone to higher wind speeds than adjacent areas. East facing slopes in the Great Basin routinely experience strong down slope winds in the afternoon that can rapidly push fires down slope. Fires pushed by winds grow at an accelerated rate compared to fires burning in non-

windy conditions. Homes built mid-slope, at the crest of slopes, or in saddles are most at risk due to wind-prone topography in the event of a wildfire.

- **Fuel Type and Density.** Vegetation type, fuel moisture values, and fuel density around a community affect the potential fire behavior. Areas with thick, continuous, vegetative fuels carry a higher hazard rating than communities situated in areas of irrigated, sparse, or non-continuous fuels. Several consecutive years of above normal precipitation will result in excessive cheatgrass growth and ground litter, ranging as high as two to four tons per acre. In Humboldt County, where a large percentage of BLM administered lands have converted to cheatgrass following wildfires, these conditions, in combination with steep slopes or high winds, can create a situation in which the worst-case fire severity scenario can occur. Photographs of representative fuel types in the interface area throughout Humboldt County are provided in Appendix C.

2.3.3 Fuel Hazard Mapping

Fuel hazard maps were initially generated by the Bureau of Land Management Nevada and Utah State Offices. A total of 65 vegetation types were mapped statewide and reclassified into four wildfire hazard categories (low, moderate, high, and extreme) based on the anticipated fire behavior for each vegetation cover type.

The Project Team visited high and extreme hazard communities and verified the BLM fuel hazard information by comparing the hazard ratings on the existing fuel hazard map to vegetation, slope, and aspect conditions directly observed in the field. Where necessary, changes to the ratings were drawn on the maps and used to update the wildfire hazard potential layer of the project database.

2.4 Interviews with Fire Personnel

The Project Team interviewed local fire department personnel and local fire management officers to obtain information on wildfire training, emergency response time, personnel and equipment capability and availability, evacuation plans, pre-attack plans, and estimates of possible worst-case scenarios. Local fire personnel reviewed maps showing the history of wildfires to ensure that local information on wildfires was included. A list of fire agency personnel contacted for information used in the assessments is included in Appendix D.

2.5 Recommendation Development

A wide variety of treatments and alternative measures can be used to reduce ignition risks, mitigate fire hazards, and promote fire safe communities. Proposed recommendations typically include physical removal or reduction of flammable vegetation, increased community awareness of the risk of fires and how to reduce those risks, and coordination among fire suppression agencies to optimize efforts and use of resources.

3.0 Description of the County

3.1 Demographics, Location, Topography, and Climatic data

Humboldt County is located in northern Nevada, adjacent to the Oregon border and immediately east of Washoe County, Nevada. Humboldt County is approximately 6.2 million acres in size. A jurisdictional summary of land management administration is provided in Table 3-1 and presented on Figure 3-1. The majority of land within Humboldt County is administered and managed by federal agencies. See Map 4 in Appendix F.

Table 3-1. Land Management Acreage within Humboldt County

Land Administrator	Acreage
BLM	4,382,343
USFS	275,283
BIA	22,226
USFWS	371,641
Private	1,117,728
Other (water, etc.)	8,003
<i>Source: BLM land ownership GIS database.</i>	

Elevations within the county range from 4,500 feet in the valley bottoms to 9,700 feet at Granite Peak in the Humboldt-Toiyabe National Forest. Primary mountain ranges include the Black Rock Range, the Santa Rosa Range, and the Sonoma Range. There are several smaller mountain groups throughout the county. Major valleys are the Kings River Valley and the Quinn River Valley. The Black Rock desert lies in the southwestern portion of the county.

In 2022, the 2020 United States Census the population for Humboldt County at 17,285 persons. The Nevada Department of Employment, Training, and Rehabilitation listed mining, trade, government, and service industries as the major employers in the County (Governor's Office of Economic Development, 2004).

3.2 Wildfire History

Humboldt County has the highest incidence of wildfire in Nevada. Total acres burned from 2003-2022 are 1,374,499. Table 3-2 summarizes the fire histories and fire ignitions by year. This table illustrates the fire history in Humboldt County. Fires that occur on private lands are predominantly recorded on paper maps and are often not included in the GIS datasets. Where possible, anecdotal information from fire professionals and local residents was added to the database information. See Map 6 in Appendix E.

Table 3-2. Summary of Available Fire Occurrence Data and Estimated Acreage, 2003-2022

YEAR	Number of Fires	Total Fire Acreage	Year	Number of Fires	Total Fire Acreage
2003	23	1466	2014	50	1750
2004	24	872	2015	42	381
2005	27	20,446	2016	52	1958
2006	76	72,881	2017	80	44,363
2007	53	55,611	2018	72	449,462
2008	28	2106	2019	70	10,592
2009	23	119	2020	35	2471
2010	23	1219	2021	25	61
2011	68	115,395	2022	45	16,380
2012	59	537,020	2023	23	40
2013	66	39,946	2024	69	22,207

Source: Fire ignition and vase acreage data provided by the Nevada Fire Intel of the National Interagency Fire Center, Boise, ID. Additional fire history information provided by BLM Nevada State Office and USFS Supervisor's Office.

3.2.1 Ignition Risk Factors

Wildfire ignition risks fall into two categories: natural and human caused. Human caused ignitions can come from a variety of sources such as burning material thrown out of vehicle windows or ignited during auto accidents, off-road vehicles, railroads, arcing power lines, agricultural fires, unattended campfires, debris burning in piles or burn barrels, target shooting, and fireworks. The ignition source records for Humboldt County indicate that for 941 fire incidents recorded, 346 (37%) were due to natural causes, 508 (54%) were human caused, and 89 (9%) were of unknown origin.

3.2.2 Fire Ecology

The science of fire ecology is the study of how fire contributes to plant community structure and species composition. A "fire regime" is defined in terms of the average number of years between fires under natural conditions (fire frequency), and the amount of dominant vegetation replacement (fire severity). Natural fire regimes have been affected throughout most of Nevada by twentieth century fire suppression policies. Large areas that formerly burned with high frequency but low intensity (fires more

amenable to control and suppression) are now characterized by large accumulations of unburned fuels, which once ignited, will burn at higher intensities.

Big sagebrush is the most common plant community in Nevada with an altered fire regime, now characterized by infrequent, high-intensity fires. Sagebrush requires ten to twenty or more years to reestablish on burned areas. During the interim these areas can provide the conditions for establishment and spread of invasive species and in some cases inhibit sagebrush reestablishment. The most common invasive species that reoccupies burned areas in northern Nevada is cheatgrass.

Effect of Cheatgrass on Fire Ecology

Cheatgrass is a common introduced annual grass that aggressively invades disturbed areas, especially burns. Replacement of a native shrub community with a pure stand of cheatgrass increases the susceptibility of an area to repeated wildfire ignitions, especially in mid to late summer when desiccating winds and lightning activity are more prevalent. The annual production, or volume of cheatgrass fuel produced each year is highly variable and dependent on winter and spring precipitation. In a normal or above normal precipitation year, cheatgrass can be considered a high hazard fuel type. In dry years cheatgrass poses a low fire behavior hazard because it tends to burn with a relatively low intensity. In every year dried cheatgrass creates a highly flammable fuel bed that is easily ignited with the propensity to rapidly burn into adjacent cover types that may be characterized by more severe and hazardous fire behavior. The ecologic risk of a fire spreading from a cheatgrass stand into adjacent unburned native vegetation is that additional disturbed areas are thereby opened and vulnerable to cheatgrass invasion. Associated losses of natural resource values such as wildlife habitat, soil stability, and watershed functions are additional risks.

Mowing defensible space and fuel breaks annually before seeds mature will reduce cheatgrass growth and reproduction over time. Use of pre-emergent herbicides can have the same effect. Early season livestock grazing prior to and during flowering is another mechanism for depleting the seed bank. It may take years of intensive treatment with any of these efforts to fully eliminate cheatgrass from being a dominant component of the vegetation, but it is a necessary process in order to return the landscape to a natural fire cycle and reduce the occurrence of large, catastrophic wildfires.

3.3 Natural Resources and Critical Features Potentially at Risk

Critical features at risk of loss during a wildfire event can be economic assets such as agricultural and industrial resources or cultural features, such as historic structures, archaeological sites, and recreation-based resources.

3.3.1 Historical Registers

There are sixteen sites in Humboldt County listed on the National Register of Historical Places. The Nevada State Register of Historical Places lists on site. The effects of fire on cultural and historical resources depend upon site-specific factors such as fuels, terrain, and cultural or historical buildings or resources present. Archeological sites and historic trails are not necessarily vulnerable to wildfire impacts. The historic resources that lie in the wildland-urban interface that could be negatively impacted by wildfire are summarized in Table 3-3.

Table 3-3. At Risk Historical Places in Humboldt County

SITE	LOCATION	SOURCE REGISTER
Last Supper Cave	Denio	Nevada Register of Historic Places
Golconda School	Golconda	National Register of Historic Places
Micca House	Paradise Valley	National Register of Historic Places
Paradise Valley Ranger Stations	Paradise Valley	National Register of Historic Places
Silver State Flour Mill; aka Adams Mill, Martin Creek Mill	Paradise Valley	National Register of Historic Places
Andorno Station	Winnemucca	Nevada Register of Historic Places
Cumley-Richardson House	Winnemucca	National Register of Historic Places
George G. Berry House	Winnemucca	National Register of Historic Places
Humboldt County Courthouse	Winnemucca	Nevada Register of Historic Places
Humboldt River Bridge	Winnemucca	Nevada Register of Historic Places
Martin Hotel	Winnemucca	Nevada Register of Historic Places
W.C. Record House	Winnemucca	National Register of Historic Places
U.S. Post Office-Winnemucca	Winnemucca	Nevada Register of Historic Places
Winnemucca Grammar School	Winnemucca	Nevada Register of Historic Places
Winnemucca Hotel	Winnemucca	National Register of Historic Places
Applegate-Lassen Trail	Rye Patch NW to state line	National Register of Historic Places

3.3.2 Natural Resources and Recreation

Humboldt County offers a wide range of outdoor recreation opportunities that depend on healthy rangelands and environments. Camping, fishing, hunting, touring, hiking and wildlife viewing are some of the outdoor activities that contribute to local economies.

Sheldon National Wildlife Refuge

The Sheldon National Wildlife Refuge lies in the northwest portion of Nevada, in Humboldt and Washoe Counties. The US Fish and Wildlife Service administers over 0.5 million acres in the Refuge, which provide yearlong or seasonal habitat for pronghorn antelope, bighorn sheep, mule deer, sage grouse, and many other species. The refuge includes old ranches and homesteads, geothermal hot springs, waterfalls, narrow gorges, and expansive tablelands. Preparedness planning and fuels management would benefit the protection and maintenance of critical wildlife habitat and cultural resources.

Lahontan Cutthroat Trout Natural Area

The Lahontan Cutthroat Trout Natural Area is 12,216 acres in size and lies just south of the Sheldon National Wildlife Refuge, adjacent to the Summit Lake Reservation. The Natural Area was established in 1973, to ensure the preservation of the Lahontan cutthroat trout. A wildfire in the watersheds that support Lahontan cutthroat trout streams could adversely impact fish habitat. Loss of vegetation would lead to increased runoff, erosion, and sedimentation of critical spawning habitat and fisheries.

3.3.3 Sensitive Species

There is one plant federally listed as endangered, the Osgood Mountains milkvetch; and one fish federally listed as threatened, the Lahontan cutthroat trout, with potential habitat in Humboldt County. Project implemented to protect habitat for these species require formal consultation with the US Fish and Wildlife Service. An additional 17 species are protected by Nevada State legislation and are identified in Table 3-4. The Nevada Natural Heritage Program, the Nevada Division of Forestry, and the Nevada Department of Wildlife should be consulted regarding specific concerns and potential mitigation to minimize impacts to state-listed species prior to the event of a catastrophic wildfire or in the implementation of projects intended to reduce the threat of wildfires to a community.

Table 3-4. Federal and State Listed Flora and Fauna At Risk in Humboldt County

SCIENTIFIC NAME	COMMON NAME	LEGISLATION
PLANTS		
Astragalus yoder-williamsii	Osgood Mountains milkvetch	ESA listed endangered; NRS 527.260.300
Opuntia pulchella	Sand cholla	NRS 527.060.120
FISH		

Oncorhynchus clarki henshawi	Lahontan cutthroat trout	Moderately vulnerable
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Eremichthys across	Desert dace	Moderately vulnerable
Siphateles Alvordensis	Alvord Chub	Highly vulnerable
MAMMALS		
Lasiurus blossevillii	Wester red bat	Moderately vulnerable
Sorex preblei	Prebles shrew	Highly vulnerable
Neotamias amoenus celeris	Humboldt yellow-pine chimpunk	Moderately vulnerable
BIRDS		
Accipiter gentilis	Northern goshawk	Moderately vulnerable
Antigone canadensis tabida	Greater sandhill crane	Moderately vulnerable
Centrocercus urophasian	Greater sage grouse	Highly vulnerable
Leucosticte atrata	Black rosy-finch	Extremely vulnerable
Leucosticte tephrocotis	Gray-crowned rosy-finch	Highly vulnerable
Pelecanus Erythrorhynch	American white pelican	Moderately vulnerable
Riparia riparia	Bank Swallow	Moderately vulnerable
Spizella breweri	Brewers sparrow	Moderately vulnerable

3.3 Previous Fire Hazard Reduction Projects

3.4.1 Wildfire Support Group

The Wildfire Support Group was formed in 2001 in Humboldt County to provide additional resources for initial attack on wildfires. Local ranchers are often the first to observe lightning strike ignitions in remote areas far away from fire departments. A group of citizens in Humboldt County were trained for initial attack in cooperation with the Bureau of Land Management Winnemucca Field Office. A second objective of the Wildfire Support Group is to participate in grazing trials to develop treatments for cheatgrass control. With careful monitoring and evaluation it is anticipated that this project will identify a variety of grazing practices that can be refined and used on a broader scale for fuel reduction and maintenance in the Great Basin. Prescribed grazing can be an effective tool for many communities to reduce fuels in the wildland-urban interface. See Map 1 in Appendix F.

3.4.2 Fort McDermitt Reservation

SWCA Environmental Consultants (2003) was contacted to conduct a Wildfire Hazard Assessment and Mitigation Plan for the Primary Residential Community on the Fort McDermitt Reservation on behalf of the Bureau of Indian Affairs in January 2003. The assessment covered the 16,831 acres of the Fort McDermitt Reservation within Nevada.

SWCA assessed community design, physical conditions, existing fuel conditions, fire behavior factors, ignition risks, and fire suppression and protection resources. The following activities were recommended:

- Defensible space of at least seventy feet surrounding residences
- Fuel reduction to cover 976 acres in two phases over three years
- Maintenance and inspection of fire hydrants
- Installation of water tanks
- Construction, maintenance, and improvement of street signs and residential addresses
- Public education

3.4.3 Multi-Agency Collaborative Fuel Reduction Treatments

The Bureau of Land Management Winnemucca Field Office, the Bureau of Indian Affairs, Nevada Division of Forestry, and the Nevada Department of Transportation have been working together to install and maintain fuel reduction treatments, fuel breaks, and greenstrips throughout Humboldt County. The primary treatments that have been used are mowing and reseeding disking along highway rights-of-way and road corridors. See Map 8 in Appendix F.

4.0 County-Wide Assessment Results

4.1 COUNTY-WIDE RISK AND HAZARD ASSESSMENT OVERVIEW

The Project Team evaluated the fourteen communities in Humboldt County from March 1 to April 30, 2023. The Fort McDermitt community assessment was completed by SWCA (2003). Inventory and analyses of community design aspects (roads, signage, utility infrastructure), defensible space conditions, construction materials, architectural features, wildland-urban interface characteristics, fuel types, and fuel hazards resulted in an overall hazard rating for each community. The overall risk and hazard conditions for each community are summarized in Table 4-1.

Table 4,1 Community Risk and Hazard Assessment Results

COMMUNITY	PRIMARY COMMUNITY TYPE	SURROUNDING ENVIRONMENT RATING	COMMUNITY HAZARD RATING	DWELLINGS
Artemisia	Residential-Mixed	Moderate	High (136)	80
Denio/Denio Junction	Residential- Mixed	Moderate	High (102)	67
Golconda	Residential-Stick built	Moderate	High (128)	136
Grass Valley	Residential-Stick built	Moderate	High (107)	1882
Herschel	Residential-Mixed	Moderate	High (119)	79
Jungo	Residential-Mixed	Moderate	Moderate (94)	35
McDermitt	Residential- Mixed	Moderate	Moderate (91)	80

Orovada	Residential-Mobile	Moderate	High (107)	40
Paradise Ranchos (Paradise Hills)	Residential-Mixed	Moderate	High (140)	80
Paradise Valley	Residential-Mixed	Moderate	High (105)	50
Prairie-Dog	Residential-Mixed	High	High (145)	30
Rose Creek	Residential-Mobile	Moderate	High (110)	215
Valmy	Residential-RV	Moderate	High (123)	55
Winnemucca	Residential-Mixed	Moderate	Moderate (97)	3538
Fort McDermitt	Intermix	Low to High	N/A ²	High ³

²N/A - This information was not provided in the SWCA report

³This rating was based upon similar community hazard assessment procedures reported in the SWCA (2003) report.

4.1.1 Wildfire Protection Resources

The Bureau of Land Management administers the largest land base in Humboldt County. As such, The BLM generally manages the wildland-urban interface areas, responds to wildland fires, and is responsible for reducing fuel hazards adjacent to communities. Initial attack on wildfires in Humboldt County is provided by local volunteer fire departments. The BLM has cooperative agreements with each volunteer fire department in Humboldt County and has entered into a Memorandum of Understanding with the Wildfire Support Group for initial attack of wildfires on public lands. (Refer to Section 3.4.1 for background on the Wildfire Support Group.)

The Central Nevada Interagency Dispatch Center in Winnemucca dispatches Bureau of Land Management and US Forest Service fire suppression resources and also provides logistical support for additional interagency partners such as the US Fish and Wildlife Service and the Bureau of Indian Affairs. Federal agency resources are commonly relocated to areas of high activity during a fire season. The actual resources sent to a specific incident are dependent on fire activity and available personnel and equipment. The types of wildfire suppression resources available from the BLM Winnemucca Field Office are summarized in Table 4-2. The BLM Winnemucca Field Office has 25 trained fire suppression personnel and fifty seasonal employees. All BLM Winnemucca Field Office firefighters receive training to meet National Wildfire Coordinating Group qualifications. The US Forest Service Santa Rosa Ranger District has one Type 4 engine available to respond to fires in the vicinity of Paradise Valley, and one Type 4 engine from the BLM is assigned to this station during fire season. Additional resources are available upon request through the dispatch system. The local wildfire suppression resources available for each community are detailed in subsequent community chapters.

Table 4.2 BLM Winnemucca Field Office Wildfire Suppression Resources

Type of Equipment	Amount available	Cooperation Partner (Resource Location)
Super Heavy Engines	4	BLM NV-WID (Winnemucca)

Heavy Engines	3	NDF Northern Region
Heavy Engines	2	NDF Western Region
Heavy Engines	2	BLM NV-Winnemucca
Heavy Engines	2	BLM NV-WID (Lovelock)
Heavy Engines	2	BLM NV-WID (McDermitt)
Heavy Engines	1	BLM NV-WID (Paradise Valley)
Heavy Engines	4	BLM NV-BMD
Light Engines	2	NDF Northern Region
Light Engines	1	NDF Western Region
Light Engines	1	BLM NV-WID (Winnemucca)
Water Tenders	1	NDF Northern Region
Water Tenders	2	BLM NV-WID (Winnemucca)
Fire Crew	1 (7-10 personnel)	NDF Northern Region (Ely/Carlin)
Fire Crew	2	NDF Western Region (Carson City)
Fire Crew	2	NDF South (Pioche)
Dozer Modules	2	BLM NV-BTM
Dozer Modules	3	BLM NV-WID (Winnemucca)
BCs	2	BLM NV-WID (Winnemucca)
BCs	1	BLM NV-WID (Lovelock)
BCs	2	BLM NV-BTM

Source: Results of a joint meeting with BLM-WID and NDF

4.1.2 Detection and Communication

Fires are reported in Humboldt County through 911 calls to the Humboldt County Sheriff's Office. The Humboldt County Sheriff's Office Emergency Dispatch in Winnemucca notifies the local Volunteer Fire Departments and the Central Nevada Interagency Dispatch Center of the fire. The Humboldt County Sheriff's Office has access to state mutual aid frequencies, and the radio system is compatible with neighboring agencies. Fires are communicated to the BLM Winnemucca Field Office and the US Forest Service Santa Rosa Ranger District through the Central Nevada Interagency Dispatch Center.

The BLM Winnemucca Field Office has cooperative agreements and annual operating plans with all Humboldt County Fire Departments that outline how the BLM will conduct fire suppression activities. The BLM Winnemucca Field Office has recently changed their run card system from paper-based to the "WildCAD" (Computer Aided Dispatch) system. When a fire is reported, the system identifies the daily fire hazard level (low, moderate, high, extreme) and assigns the appropriate available BLM equipment and personnel to the incident. The system also identifies potential fire suppression resources from local volunteer fire departments and the Wildfire Support Group.

4.1.3 Community Preparedness

Humboldt County has an active Local Emergency Planning Committee and has adopted an emergency plan that includes a hazardous materials response plan. The County also has an all-risk disaster response plan that is updated annually. The plan is routinely

updated to reflect the inherent disasters related to wildfire, and especially those mentioned in the worst case wildfire scenario mentioned listed for each community.

Every first Friday in 2024, the Frontier Coalition hosted a community networking breakfast for support agencies and programs within the County. Humboldt County Emergency Management attended several of these breakfasts, made presentations, and distributed information.

On January 17, 2024, Humboldt County Emergency Management conducted a general emergency preparedness presentation at the Pleasant Senior Center in Winnemucca. Topics such as shelter in place, go-kits, communication plans, evacuation plans, and important documentation were discussed. Each attendee left the session with a packet of information and contact numbers to use in case of an emergency.

In September 2024, Humboldt County Emergency Management hosted a community wildfire preparedness event in partnership with Nevada Division of Forestry, Bureau of Land Management, Red Cross, and University of Nevada Reno. The meeting was publicized through multiple information sources; County website, Great Basin Newspaper, Facebook and radio announcements, and was attended by 32 members from Winnemucca and surrounding communities. The event focused on the importance of Fire Adapted Communities and planning efforts made by local and state agencies to update the CWPP. Attendees learned about fuels mitigation, local fire response, and home hardening practices aimed at Protecting their properties from catastrophic wildfire.

5.0 Community Specific Reports

(All listed reports are included in Appendix D)

5.1 Artemisia

5.2 Denio/Denio Junction

5.3 Golconda

5.4 Grass Valley

5.5 Herschel

5.6 Jungo

5.7 McDermitt

5.8 Orovada

5.9 Paradise Ranchos (Paradise Hills)

6.0 Paradise Valley

- 6.1 Prairie-Dog
- 6.2 Rose Creek
- 6.3 Valmy
- 6.4 Winnemucca Proper

APPENDICES

APPENDIX A – Glossary of Terms

APPENDIX B – Community Wildfire Assessment Rating System

APPENDIX C – Community Risk-Hazard Reports

APPENDIX D – Fuel Types

APPENDIX E – Maps

Map 1 – WSG

Map 2 – Fields-Andrews RFPA

Map 3 – Blue Mountain RFPA

Map 4 – Ownership

Map 5 – Regime Classes

Map 6 – Fire history

Map 7 – Vegetation classes

Map 8 – Green strips

APPENDIX F – Recommended Mitigations

APPENDIX G – 2001 Federal Register – Urban Wildland Interface
Communities Within the Vicinity of Federal Lands That

Are at High Risk from Wildfire

TABLES

Table 3-1 Land Management Acreage Within Humboldt County

Table 3-2 Summary of Available Fire Occurrence Data and Estimated Acreage, 1980-2003

Table 3-3 At Risk Historical Places in Humboldt County

Table 3-4 Federal and State Listed Flora and Fauna At Risk in Humboldt County

Table 4-1 Humboldt County Risk/Hazard Assessment Results

Table 4-2 BLM Winnemucca Field Office Wildfire Suppression Resources

Appendix A

Glossary of Terms Used in Wildfire Management and Scientific Plant Names

Glossary of Terms Used in Wildfire Management

Agency: Any federal, state, or county government organization with jurisdictional responsibilities.

Air Attack: The deployment of fixed-wing or rotary aircraft on a wildland fire to drop retardant or suppressant, shuttle and deploy crews and supplies, or perform aerial reconnaissance of the overall fire situation. Can also refer to the person functioning as air attack officer and directing aerial operations.

All-Risk County Plan: Similar to a pre-attack (pre-fire) plan but encompasses action plans for responding to all types of natural and human caused emergencies such as earthquakes, floods, structure fires, hazardous materials situations, terrorism, train and vehicle accidents.

Annual Grass Treatment: The purpose of this treatment is to reduce the volume of flashy fuels associated with annual grass growth (e.g. cheatgrass and red brome). Fuel reduction can be accomplished by chemical treatment or mechanical removal of plant biomass. Pre-emergent herbicides can be applied near residential areas at the proper rates and following all label instructions to inhibit seed germination. After plants have started growth, mowing annual grasses before seed maturity reduces the amount of fine fuels during the summer fire season, limits seed production, and reduces the potential for annual grass in the following year. Repeated mowing over several years should reduce the density of the annual grass in the long term.

Aspect: Direction toward which a slope faces.

Biomass Utilization and Disposal: Biomass utilization is an alternative to open pile burning or landfill disposal. It results in the use of the natural resource for beneficial purposes such as firewood, wood chips, compost, and other products. If residents

cannot find an alternative to burning, then proper burning procedures should be followed.

Brush Fire: A fire burning in vegetation that is predominantly shrubs, brush, and scrub growth.

Buffer Zones: An area of reduced vegetation that separates wildland areas from vulnerable residential or business developments. This barrier is similar to a greenbelt in that it is often used for another purpose such as agriculture or recreation, or parks or golf courses.

Classic Interface: Structures abut native vegetation with a clear line of separation between structures and the wildland vegetation along roads and fences. The fuels do not extend into the developed areas.

Cooperative Fire Protection Agreement:

Contain a Fire: A fuel break around the fire has been completed. This break may include natural barriers such as a river or road, and/or fireline built by hand, and/or fireline constructed mechanically.

Control a Fire: The complete extinguishment of a fire, including spot fires. Fireline has been strengthened so that flare-ups from within the perimeter of the fire will not break through the line.

Crown Fire: The movement of fire through the crowns or tops of trees or shrubs more or less independently of the surface fire. A fire is said to be crowning when the flames get up into the tops of trees and spreads.

Defensible Space: Defensible space is defined as a minimum of a 30-foot area around houses and other structures where vegetation has been significantly modified or removed. The purpose of creating defensible space is to reduce the risk of losing homes and other property improvements to a wildfire (Smith and Adams, 1991).

Defensible space is especially important in communities with structures directly adjacent to wildland vegetation, as in the intermix or rural interface conditions, where wildfires can spread quickly through the wildland fuels, threatening homes and lives.

Dispatch Center: A facility from which resources are directly assigned to an incident.

Dry Lightning Storm: Thunderstorm in which negligible precipitation reaches the ground. Also called a dry storm.

Duff: The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil.

Extreme Fire Behavior: “Extreme” implies a level of fire behavior characteristics that ordinarily precludes methods of direct control action. One or more of the following are usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, a strong convection column. Predictability is difficult because such fires often exercise influence on their environment and behave erratically, sometimes dangerously.

Fine Fuels: Fast-drying fuels, generally with a comparatively high surface area-to-volume ratio, which are less than ¼-inch in diameter and have a timelag of one hour or less. These fuels ignite readily and are rapidly consumed by fire when dry.

Fire Behavior: The manner in which a fire reacts to the influences of fuels, weather, and topography.

Firebrands: Pieces of burning materials carried on the wind ahead of an advancing wildfire that, in extreme cases, can ignite spot fires up to a mile removed from the flame front.

Firebreak: A strip of land cleared of brush and trees down to the mineral soil

Fire Front: the part of a wildland fire in which continuous flaming combustion is taking place. Unless otherwise specified the fire front is assumed to be the leading edge of the fire perimeter. In ground fires, the fire front may be mainly smoldering combustion.

Fire Hazard: As used this report, vegetative factors that affect the intensity and the rate a fire spreads as well as urban factors that can facilitate or inhibit public safety and the containment of a fire in an interface area.

Fire Perimeter: The entire outer edge of boundary of a fire, which may contain within it substantial areas of unburned fuels.

Fire Regime: A term used by fire ecologists to describe the recurrence and intensity of fire relative to a specific plant community.

Fire Risk: Potential ignition sources and factors that facilitate ignition of wildfires.

Flash Fuels: Fuels such as grass, leaves, pine needles, ferns, tree moss, and some types of slash, flash fuels or flashy fuels ignite readily and are consumed rapidly when dry. Also called fine fuels.

Fuel Bed: In a research setting, an array of fuels usually constructed with specific loading, depth, and particle size to meet experimental requirements; also commonly used to describe the fuels composition in natural setting.

Fuelbreaks: Fuelbreaks are constructed in strategic locations where a cover of dense, heavy, or flammable vegetation has been permanently changed to one of lower fuel volume or reduced flammability. Fuelbreak construction may include removing,

controlling and possible replacing highly flammable vegetation with more fire resistant species. Ridge top fuelbreaks should have continuous length and width, which requires long-range planning.

A fuelbreak network system could be used to protect critical watersheds while more remote areas might have narrower fuelbreaks that might serve as anchor points for prescribed fires. A fuelbreak strategy can be effective even if fuelbreaks are not connected.

Fuel Loading: The amount of fuels present expressed quantitatively in terms of weight per unit area.

Fuel Reduction Treatment: This treatment involves strategically locating blocks of land near communities where flammable vegetation has been permanently changed to one of lower fuel volume or reduced flammability.

Fuel Type: An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

Greenstrips: Greenstrips are usually non-irrigated linear bands of open space on private or public land (usually a minimum of 300 feet wide) that serve as a buffer zone between wildland and adjacent urban development to promote safer environments. These areas are usually seeded to establish vegetation that is relatively fire resistant or slow burning and with shortened flame lengths. Seedlings also decrease soil erosion and prevent invasion of noxious weeds and other aggressive plants such as cheatgrass and Russian knapweed.

Ground Fuels: All combustible materials below the surface litter, including duff, tree or shrub roots, punking wood, peat, sawdust, and other materials that can support a glowing combustion without flame.

High Hazard Day: Also known as a “red flag day”, a combination of conditions such as low humidity (<15%), high winds (>25%), and low fuel moisture create a high probability of ignition and subsequent increased fire intensity. Various agencies have different trigger points to establish a “high hazard day”.

Initial Attack: The actions taken by the first resources upon arrival at a wildfire to protect lives and property and prevent further expansion of the fire.

Intermix Interface: Structures are scattered throughout the wildland, with no clear boundary between the wildland vegetation and the community.

Ladder Fuels: Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help start and continue crowning on a fire.

Mutual Aid: Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request by furnishing personnel and equipment. This is a cornerstone of the Statewide Master agreement for Fire Management.

Occluded Interface: This condition is usually within towns and cities where there are small islands of wildlands fuels such as parks or open space. There is a clear boundary between the community and the wildland vegetation.

Operating Plans:

Pre-Attack Plan: Also known as a pre-fire plan. A plan written in anticipation of a fire in a given community or specific area. This plan is made readily available to all local agencies and typically lists expected need and availability of initial and extended attack resources, includes radio frequencies, name and number of contact person for each agency, and identifies the staging base, incident command post, evacuation center, location of water resources, and additional details unique to the locality being described.

Red Card Certification: A fire qualifications management system used by many state and all federal wildland fire management agencies to ensure that individuals are qualified to fight wildland fires.

Rural Interface: Clusters of structures such as ranches or summer homes are widely spaced, sometimes more than a mile apart. The rural homes are surrounded by the wildland vegetation with no clear line of separation between the fuels and homes.

Shaded Fuelbreaks: A shaded fuel break is created by altering surface fuels, and increasing the height of the base of the live crown, and opening the canopy by removing a portion of the woody plants in the treatment area. This type of fuel

break spans a wide range of understory and overstory prescriptions. Construction methods include mechanical thinning, manual biomass removal, and the use of prescribed fires.

Structure Fire: Fire burning any part or all of any building or structure.

Volunteer Fire Department (VFD): A fire department of which some or all members are unpaid.

Water Tender: A ground vehicle capable of transporting water in the field, generally used to supply engines.

Wildland Fire: Any non-structure fire, other than prescribed fire, that occurs in a wildland area.

Wildland-Urban Interface: The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

SOURCES:

1. **FIREWISE:** Glossary of Terms
2. **National Fire Plan:** Glossary of Terms
3. **Utah Department of Natural Resources Division of Forestry, Fire and State Lands.** 2001. Fuel load reduction treatments along the wildland-urban interface: Community level protection support document for National Fire Plan project in Utah and Nevada.

Dominant Vegetation of the Wildland-Urban Interface, Humboldt County

Common Name	Scientific Name
Trees	
Cottonwood	<i>Populus fremontii</i>
Elm	<i>Ulmus</i> sp.
Russian Olive *	<i>Elaeagnus angustifolius</i>
Tamarisk *	<i>Tamarix ramosissima</i>
Shrubs	
Greasewood	<i>Sarcobatus vermiculatus</i>
Mountain Sagebrush	<i>Artemisia tridentata</i> ssp. <i>Vaseyana</i>
Rabbitbrush	<i>Chrysothamnus</i> sp.
Shadscale	<i>Atriplex confertifolia</i>
Willow	<i>Salix</i> sp.
Wood's Rose	<i>Rosa woodsia</i>
Wyoming Sagebrush	<i>Artemisia tridentata</i> ssp. <i>Wyomingensis</i>
Grasses / Forbs	
Cattails	<i>Typha</i> sp.

Crested Wheatgrass	<i>Agropyron cristatum</i>
Cheatgrass *	<i>Bromus tectorum</i>
Great Basin Wildrye	<i>Leymus cinereus</i>
Halogeton *	<i>Halogeton glomeratus</i>
Medusa Head Rye *	<i>Taeniatherum caput-medusae</i>
Russian Thistle *	<i>Salsola kali</i>
Saltgrass	<i>Distichilis spicata</i>
Sandberg Bluegrass	<i>Poa sandbergii</i>
Bottlebrush Squirreltail	<i>Elymus elymoides</i>

*Invasive non-native species

All scientific names taken from: Hickman, J.C. editor. 1993. *The Jepson Manual: Higher plants of California*. University of California Press, Berkely, CA.

Appendix B

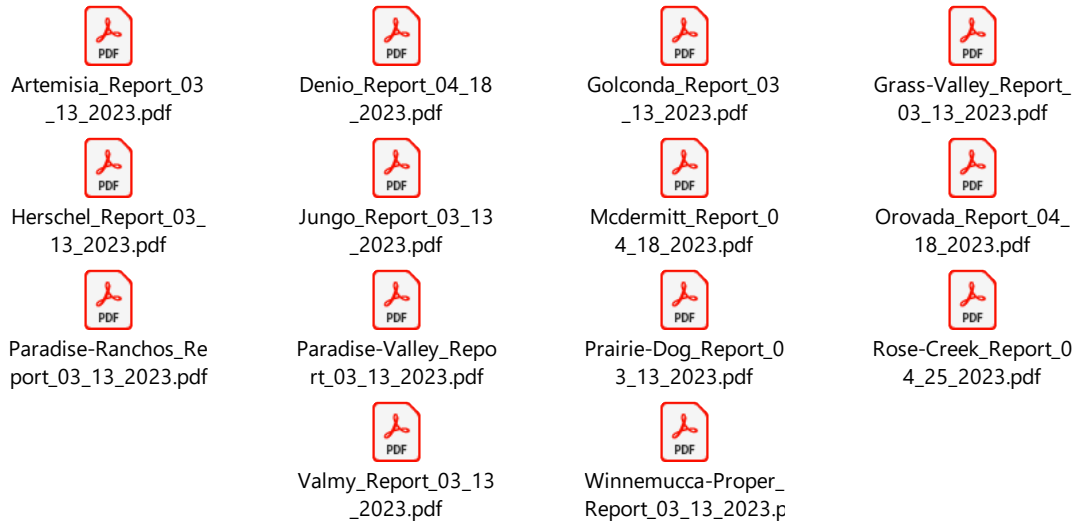
Community Wildfire Assessment Rating System

Community Design	Score
1. Ingress/Egress	
Two or more primary roads	1
One Road	3
One-way road in, one-way out	5
2. Width of Primary Road	
>24 ft	1
>20 ft and <24 ft	3
<20 ft	5
3. Accessibility	
Road grade 5% or less	1
Road grade more than 5%	3
4. Secondary Road Terminus	
Loop roads, cul-de-sac w/outside turning radius of 45' or greater	1
Dead-end roads 200' or less in In length	3
Dead-end roads grater than 200' in length	5
5. Street Signs	
Present 90-100%	1
Present 75-89%	3
Present <75%	5
6. Address Signage	
Present 90-100%	1
Present 75-89%	3
Present <75%	5

Defensible Space	Score
1. Average Lot Size	
10 acres or larger	1
1 to 10 acres	3
< 1 acre	5
2. Defensible Space	
70% or more adequate	1
30-70% adequate	3
<30% adequate	5

Appendix C

Community Risk-Hazard Reports (double click on icon to open a report)



In person interviews were conducted by both Humboldt County and NDF personnel with the Fire Chiefs of the following Fire Districts:

Denio Pueblo Fire District	Golconda Fire Protection District
McDermitt Fire Protection District	Orovida Fire Protection District
Paradise Valley Fire Protection District	Valmy Fire Protection District
Winnemucca City Fire Protection District	
Winnemucca Rural / Humboldt Fire Protection District	
Wildfire Support Group	

Appendix D

Representative Fuel Types



Photo 1. Denio Junction. Previously burned areas dominated by cheatgrass and annual mustard were considered a low fuel hazard.



Photo 2. Golconda. Dense shrubs near the railroad tracks increase the ignition risk. A fuel reduction treatment is recommended along the railroad corridors.



Photo 3. Golconda. Near the east side subdivision. Note the sparse fuel loading and discontinuity of the fuel bed in this area of the community.



Photo 4. Orovada. Unburned areas around Orovada that are dominated by big sagebrush or other brush were considered a moderate fuel hazard. Brush types with a prevalent cheatgrass component have the potential for more hazardous conditions in wet years that favor annual plant growth. Irrigated agricultural lands (background) function as greenstrips around rural home sites.



Photo 5. Paradise Valley. Sagebrush fuel type with a continuous cheatgrass understory represents a moderate fuel hazard in dry years that could become a high fuel hazard in wet years with increased cheatgrass production.



Photo 6. Paradise Valley. Vegetation here on the south side of the area consists of four-wing saltbush, sagebrush, rabbitbrush, Great Basin wildrye, and cheatgrass, estimated at 3-4 tons per acre.

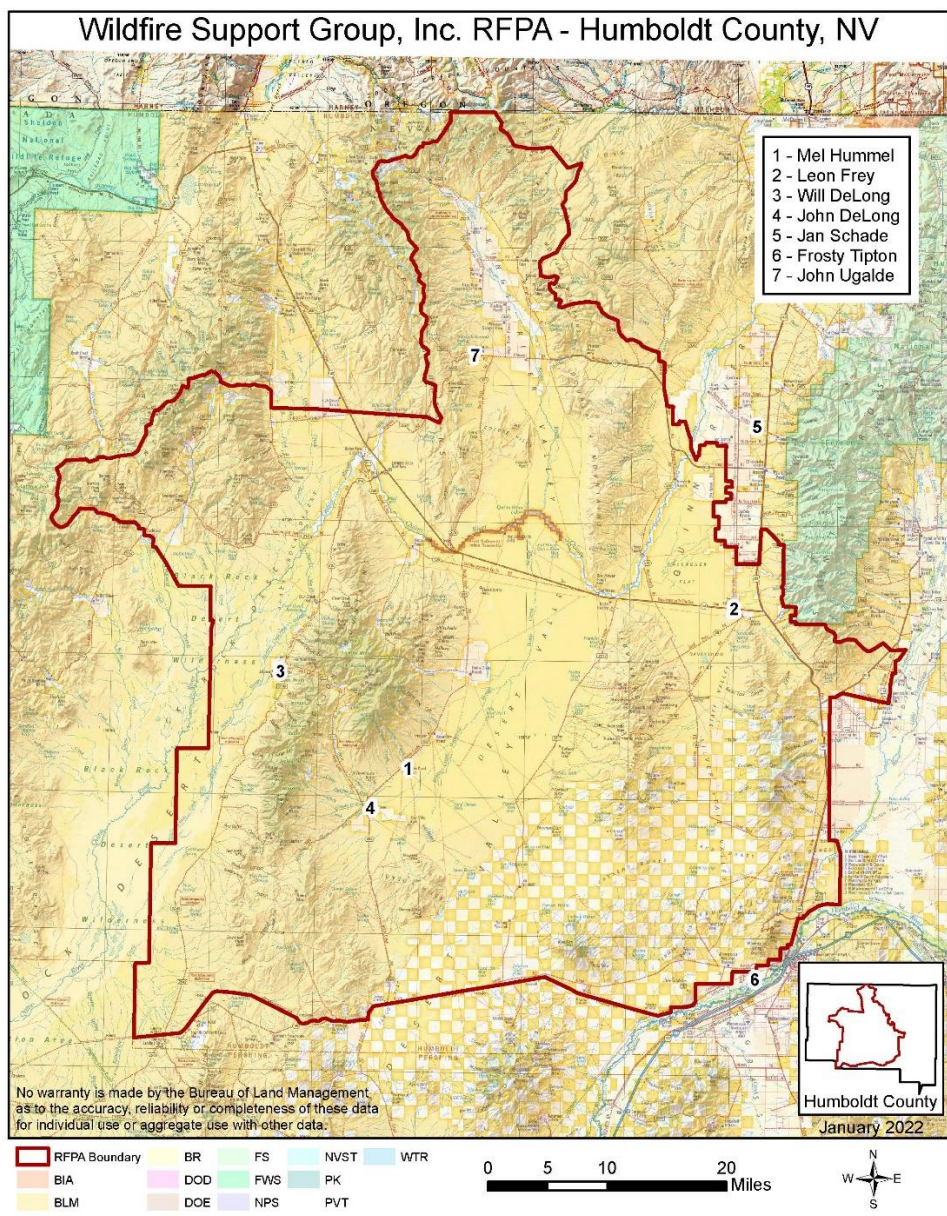


Photo 7. Valmy. Russian knapweed invasion.

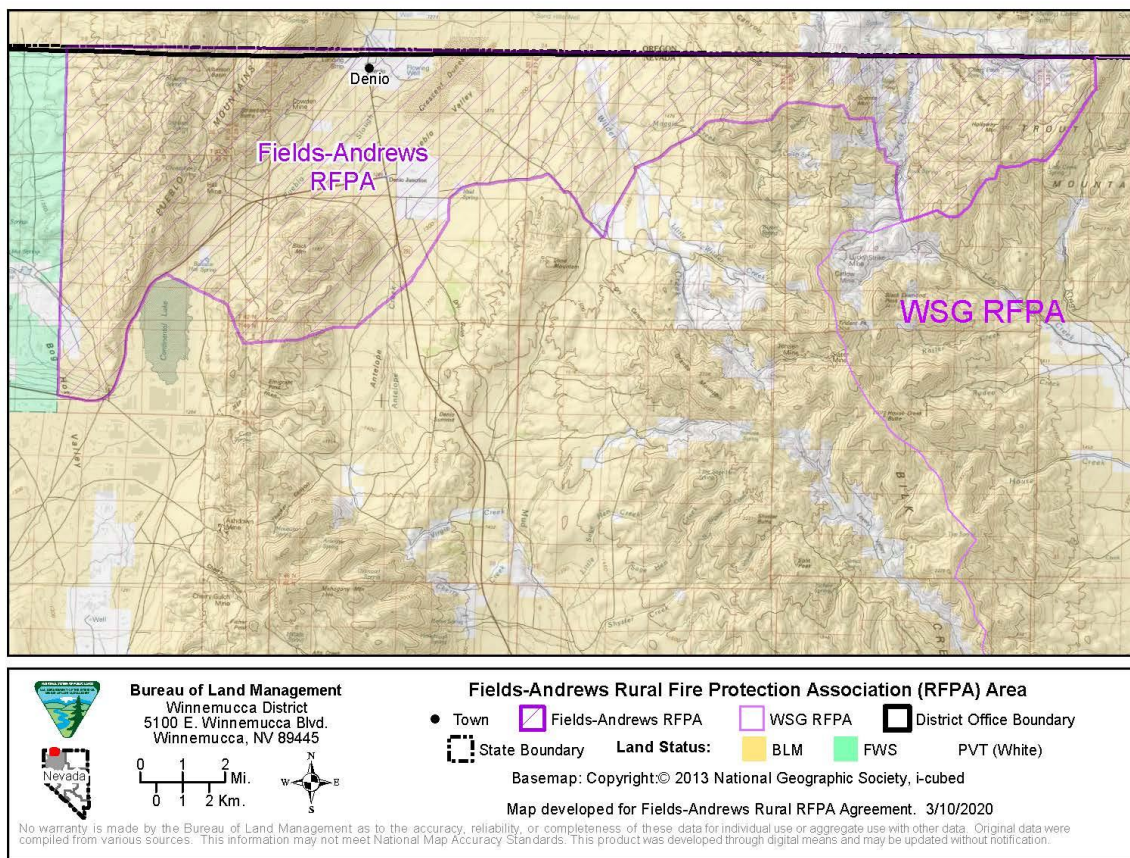


Photo 8. Valmy residences with weeds along fencelines and yard debris.

Appendix E

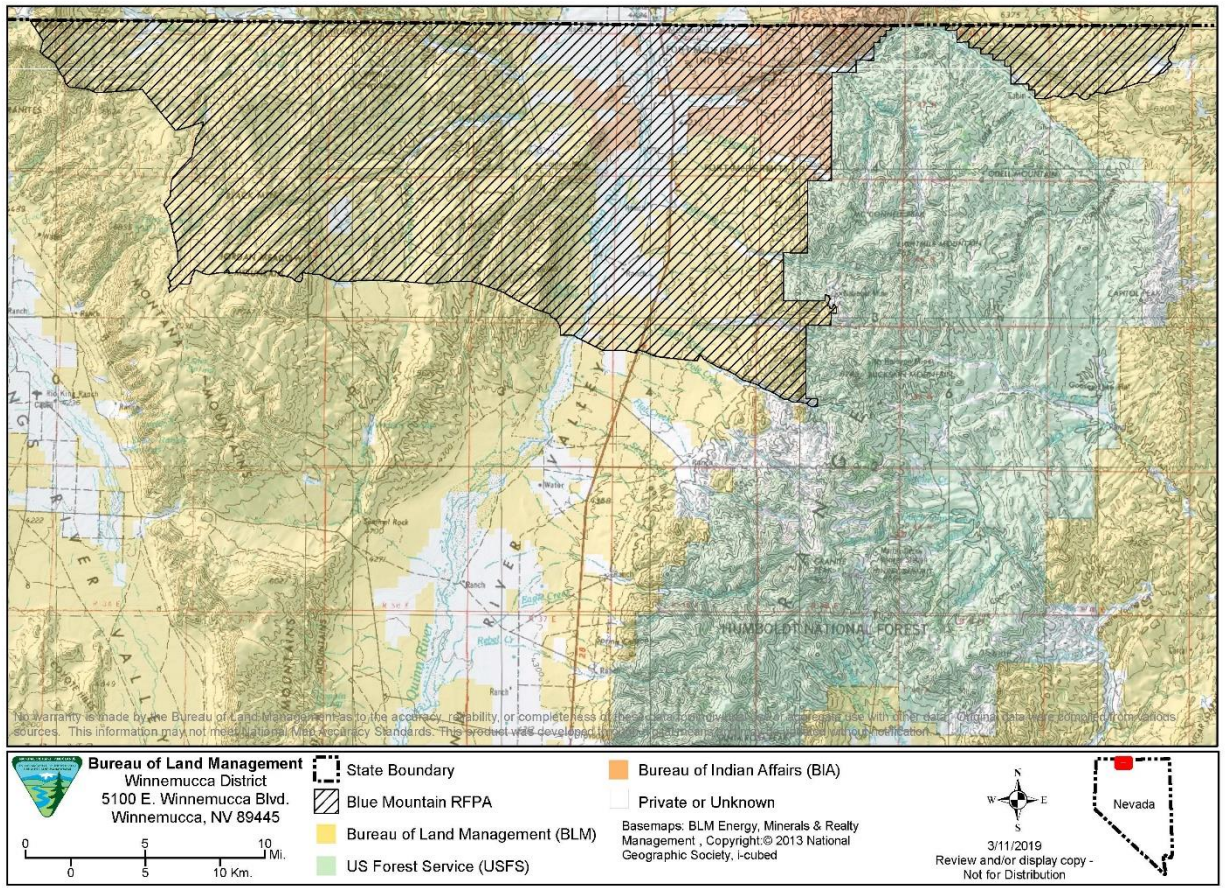


Map 1 – Wildfire Support Group

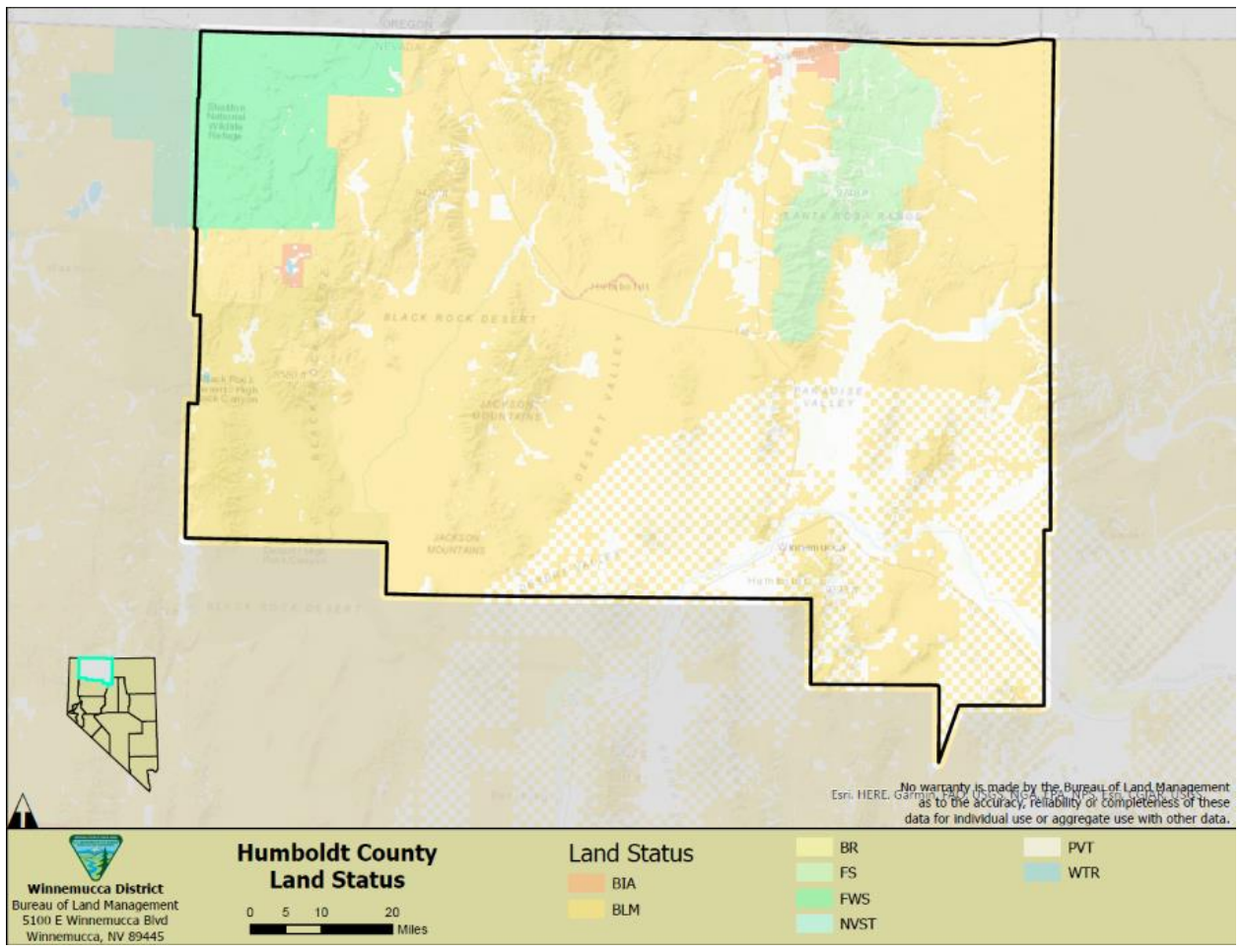


Map 2 – Fields-Andrews Rangeland Fire Protection Association Oregon support area to Humboldt County

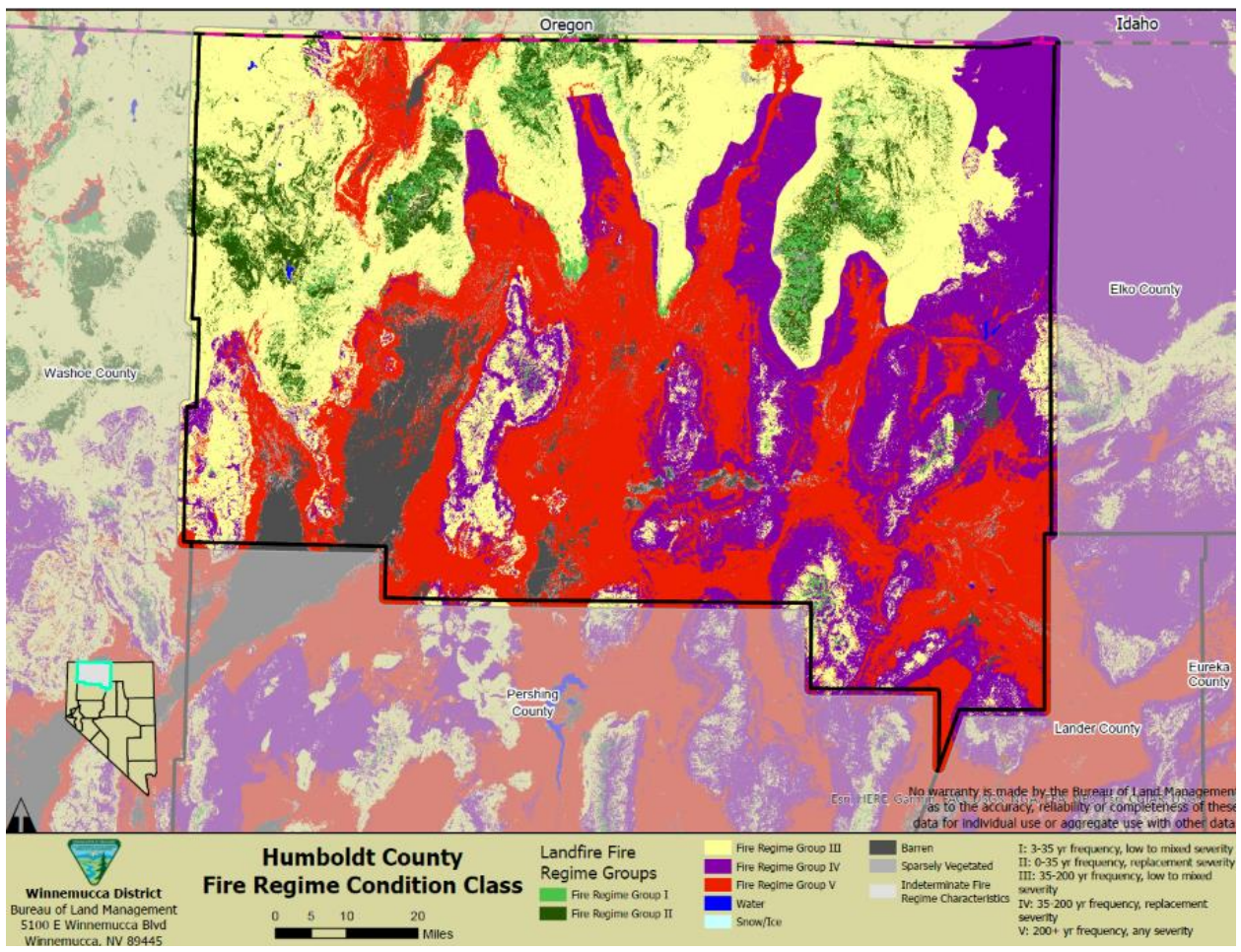
2019 Blue Mountain RFPA - NV Response Area - Humboldt County



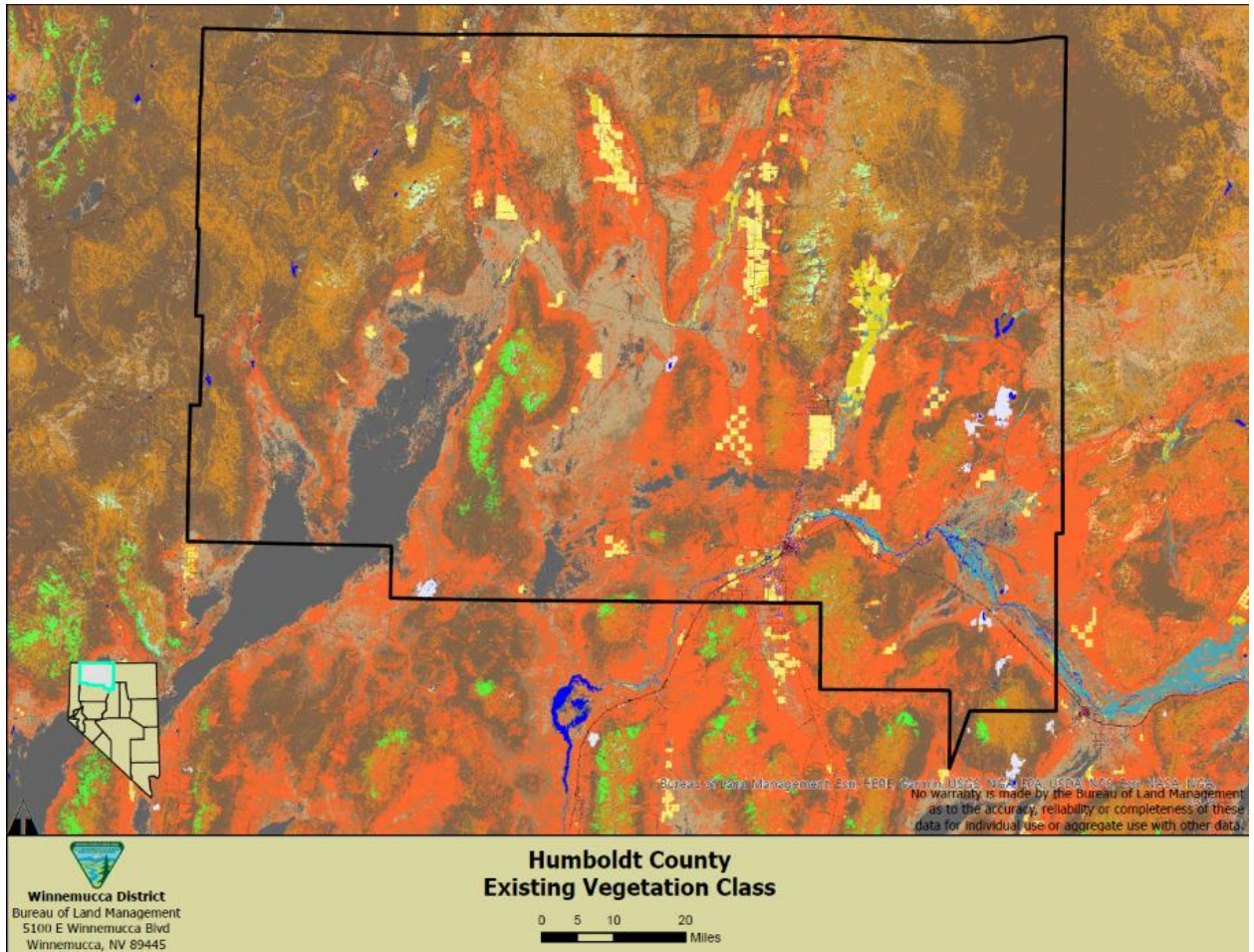
Map 3 – Blue Mountain Rangeland Fire Protection Association Oregon support area to Humboldt County



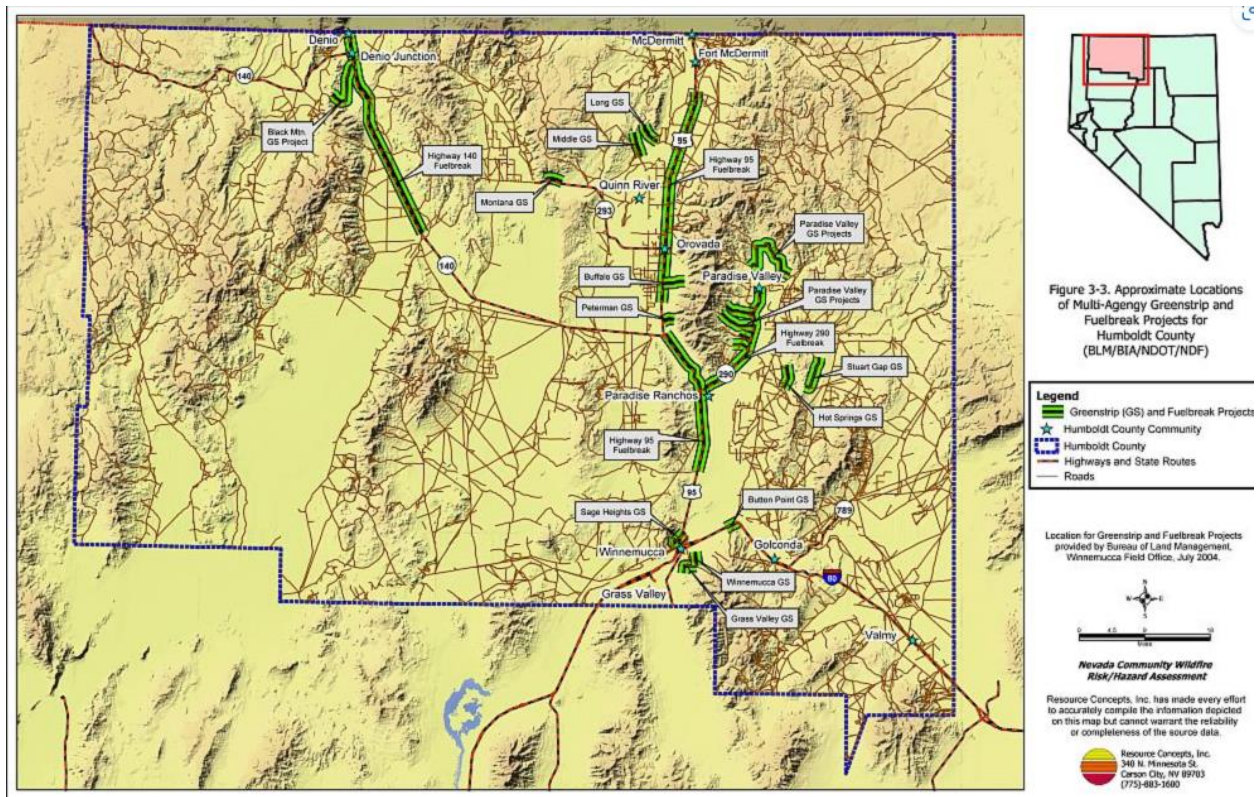
Map 4 – Land Ownership in Humboldt County



Map 5 – Fire Regime Classes



Map 7 – Vegetation Classes



Map 8 – Green Strip Areas

Appendix F

Recommended Mitigations

SUPPRESSION ASSESSMENT

Ingress/Egress

Keep community ingress/egress open and maintained (cleared of vegetation)

Develop community plan for evacuation routes, safe zones, staging areas

Conduct an annual evacuation drill with ALL response agencies (Live/Sandtable)

Ensure adequate notification plan exists and ALL residents know how and when to go

Ask local Fire Department about Ready, Set, Go

Road Width

Keep shoulders of road clear for emergency vehicle use at all times

Consider providing pull-offs every 100 yards

Road Accessibility

Ensure a road maintenance plan is in place

Secondary Road Terminus

Ensure emergency responders are aware of dead-end roads; Consider signing all dead ends

If dead-end roads are narrow, restrict access during an emergency

Maintain unobstructed access into cul-de-sacs

Ensure cul-de-sacs are free of vehicles and/or other items

Street Signs

Keep street signs visible and clear of vegetation and fine fuels

Driveways

Maintain driveway access and clearance

Road Width

Keep shoulders of road clear for emergency vehicle use at all times

Consider providing pull-offs every 100 yards

Road Accessibility

Ensure a road maintenance plan is in place

Water Supply

Be aware of limited access to a water source; coordinate with closest Fire Department; consider pre-suppression plan

Identify nearby potential water sources; consider pre-suppression plan

Plan for water source installations within or closer to community

Response Resources

Be aware of local geographic features and plan appropriately when wildfire approaches

Discuss with closest Fire Department possibility of quicker response strategies and other solutions

Community Organization/Governance

Work as a community to become more proactive towards protecting life and property

Become a Firewise USA Site

Host a Community Education event at least once a year
 Complete Community Risk Mitigation Project(s) identified in Community Action Plan
 Ensure individual homes are ignition-resistant, hardened, and Living with Fire concepts are followed

SURROUNDING ENVIRONMENT ASSESSMENT

Predominant Vegetation

Consider removal of ladder fuels that allow fire to climb from lower to higher vegetation
 Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees

Leave 30' between cluster of two to three trees, or 20' between individual trees

Prune trees 6-10' from the ground

Use brick or stone along the edge of interior fuels/open space to slow the flame spread

Consider landscaping using single plants or groups within interior fuels/open space to separate fuels

Defensible Space

Be aware of the risks from falling embers in relation to nearby fuels and defensible space

Mow lawns regularly

Water grass, plants, trees and mulch regularly

Create a spacing of 30 feet between tree crowns

Create a non-combustible area (zone 0) within 5 feet of your home, using non-flammable landscaping materials

Remove dead vegetation from under the deck and within 10 feet of the house; stack firewood away from structures

Consider xeriscaping

Plant a mixture of deciduous trees (e.g. oak and maple) and coniferous trees (e.g. pine)

Create fuel breaks like driveways and gravel walkways

Vegetation on Electric Transmission Lines

Know who to call should there be a problem with electric lines in community

Adjacency to Wildlands

When possible, install firebreaks and reduce fuel loads around community boundary

Undeveloped Lots

Provide Living with Fire/Firewise construction guidelines to developers/owners

Consider developing covenant restrictions, if applicable

STRUCTURES ASSESSMENT

Roofing Materials

Use fire-resistant roofing material; metal, tile or Class A shingles

Inspect for address gaps in roofing that can expose roof decking or supports

Place angle flashing over openings between the roof decking and fascia board

Debris on Roof and Gutters

Clear branch, leaf-litter and other debris regularly

Prune tree limbs from roof

Ventilation and Soffits

Keep vents free of debris; keeps embers out and allows ventilation air flow

Enclose or box-in eaves with non-combustible materials; metal, cement board, stucco
Install a 1/8" metal screen behind roof vents

Siding

Keep landscaping materials and vegetation away from combustible siding
Create 5' non-combustible area (Zone 0) around house
Replace with non-combustible siding when possible

Underskirting

Remove combustible vegetation and leaf litter
Spread gravel or other non-combustible material under the deck
Screen in the bottom of the deck with metal 1/8-inch screening
Separate wooden fences from the house with a stone or metal barrier

Wooden Attachments

Maintain debris-free decks (e.g. remove ignitable furniture, planters and covering propane grills, especially during high fire danger periods)
Consider disconnecting fences from structures, or replacing materials directly attached to structures with fire resistant materials
Be aware that wooden attachments can act as a fuse to the structure

Building Setback

Review suggested defensible space and vegetation management as pertains to building setback

Propane

Clear ALL flammable debris and materials from around propane tank regularly
Consider setting propane tank on concrete or gravel pad

Electric Utilities

Â Keep vegetation pruned and mowed around electric cabinets
Place non-flammable mulch (rock, stone) around base of electrical cabinets
Plant less flammable bushes and shrubs around electrical cabinets

APPENDIX G



Urban Wildland
Interface Communitie