WILDFIRE HAZARD ASSESSMENT
AND MITIGATION REPORT
For the proposed
NEW BREED RANCH FILING THREE
El Paso County, Colorado

Prepared for: New Breed Ranch, Inc
Jim Scott, President
12750 Oak Cliff Way
Colorado Springs, Colorado 80908

Prepared by: Jerome W. Hannigan and Associates, Inc.
19360 Spring Valley Road
Monument, Colorado 80132
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WILDFIRE HAZARD ASSESSMENT

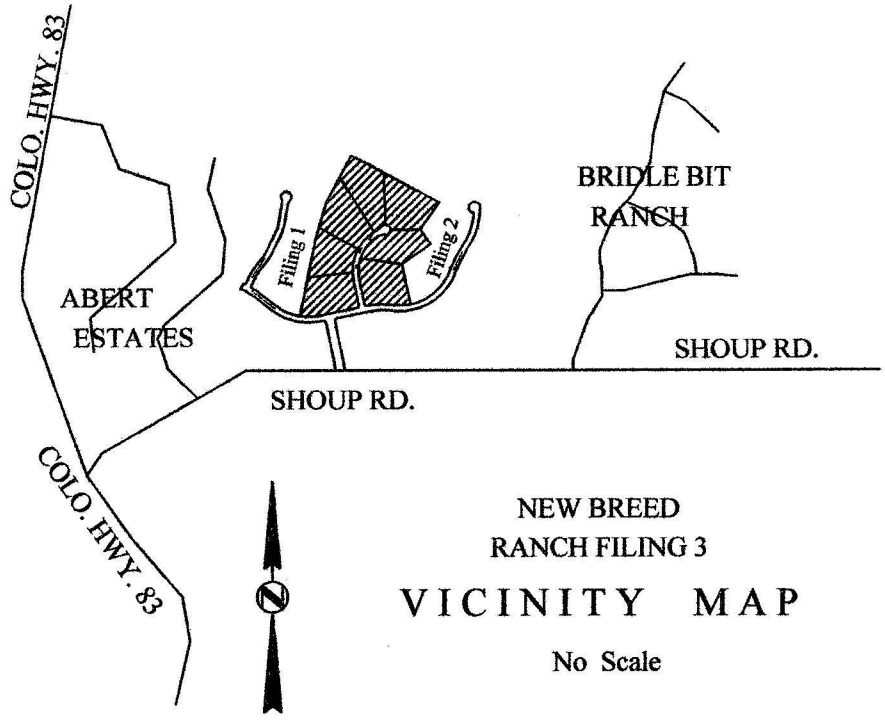
AND MITIGATION REPORT

For the proposed

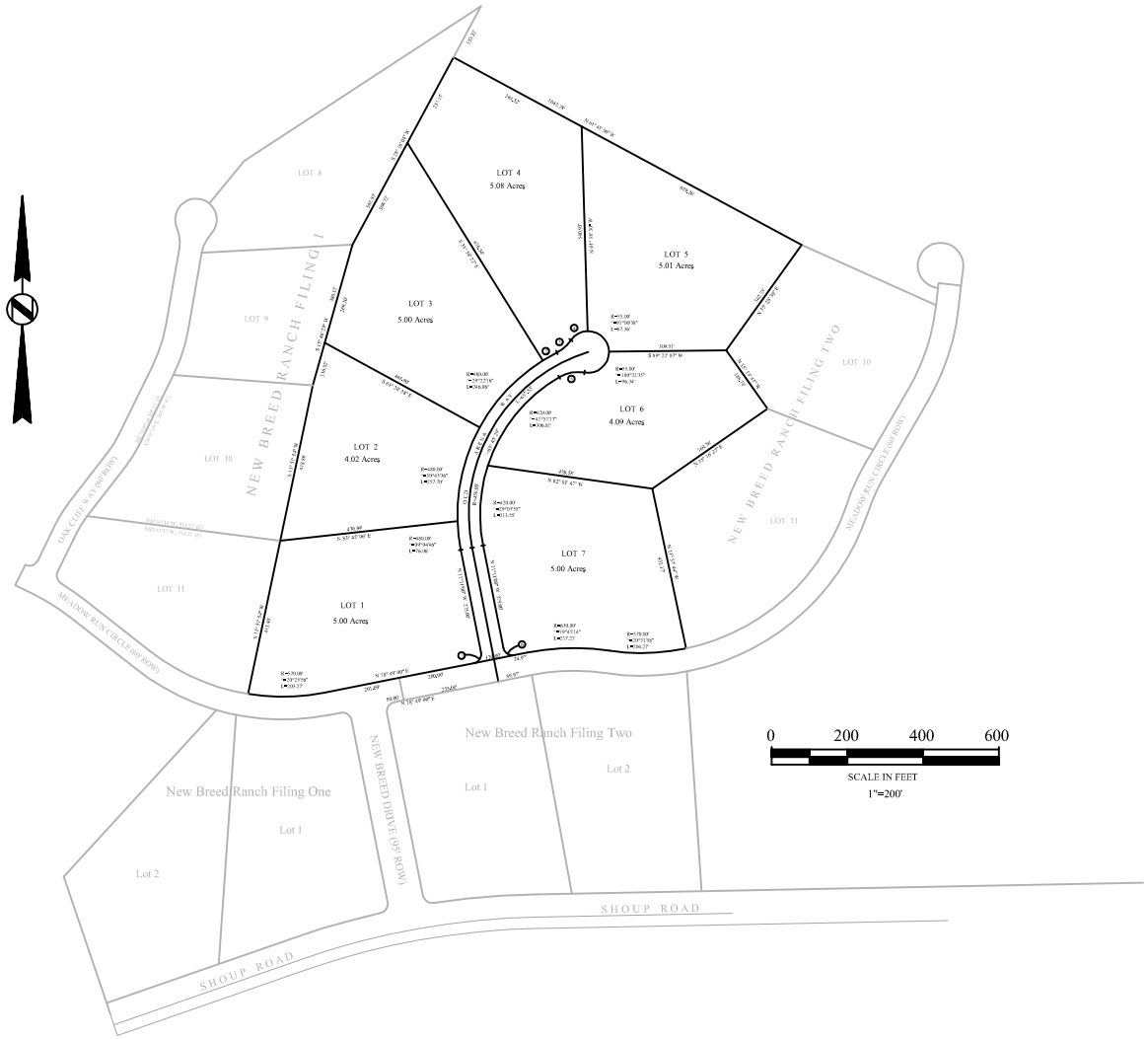
NEW BREED RANCH FILING THREE

El Paso County, Colorado

New Breed Ranch Filing Three is a seven lot addition to New Breed Ranch Subdivision located on the north side of Shoup Road just east of it's beginning at State Highway 83. The approved Development Plan / Preliminary Plan illustrates a total of 92 lots on 450 acres. Current zoning is PUD RR-5. Filing One and Two are complete and consist of 10 and 11 lots, respectively, all but one of which is built upon and occupied. Filing Three is 34.7 acres in area with a single centered access road called Old Arena Way which is an approximately 950 foot long paved cul-de-sac. Filing Three lies in Section 10, Township 12 South, Range 66 West of the 6th Principal Meridian. Filing One adjoins Three on the west and south while Filing Two adjoins on the south and east. Lots average 4.75 acres each. The State Parcel number is 62100-00-002.



Access into New Breed Ranch and to Old Arena Way, is by New Breed Ranch Drive which is a 95 foot wide two lane separated roadway that has a large landscape island in the center. Buried in this island is a 30,000 gallon water cistern for fire fighting purposes. The cistern was dedicated to the Black Forest Fire Protection District with Filing One and is used and maintained by them.



NEW BREED RANCH FILING THREE

A Final Plat for a 7 Lot Subdivision in Section 10, Township 12 South, Range 66 West, 6th Principal Meridian, El Paso County, Colorado.

HAZARD ASSESSMENT

The 2022 Colorado Wildfire Risk Assessment (CO-WRA) program is a service provided by the Colorado State Forest Service which can be found online at www.coloradoforestatlas.org. This site discusses, analyzes and maps the many significant factors relative to wildfire behavior. It is user friendly and has a public portal which can be accessed by anyone at any time. Using its mapping function for Burn Probability we discover the likelihood of a wildfire starting based on historical ignition patterns is moderate, rating a 4 or 5 out of 9 (highest). Looking to the Vegetation Map we find the general vegetation types are shown as grasslands (71%), shrublands, oak shrubland and an area in the north end shown as ponderosa pine forest. One of the significant characteristics of wildfire when analyzing its potential impact to structures is Fire Intensity. The Fire Intensity Map indicates a Low to Moderate fire intensity for the property. Overall, the mapped wildfire hazard is low to moderate.

A field inspection of the property on November 06, 2023 reveals the area of Filing Three to be vacant land with a fair stand of various grasses throughout. Shrubs are scattered with good stands of Gambel Oak and mature ponderosa pines which are scattered in the higher areas to the west and north. The area to the east of proposed Old Arena Way is lower and more open with fewer trees. Those portions of the filing that are treed constitute a higher hazard than the grassed area simply because of that tree cover. New home construction will afford an opportunity to clear around the home and mitigate remaining on lot vegetation which will significantly reduce that hazard even though a structure will have been added.

Although the hazard of wildfire on this filing is relatively low, wildfire can always occur and the opportunity for ignition remains. On June 11, 2013 the Black Forest wildfire started just a short distance to the northeast of this property. The Black Forest Wildfire burned from June 11th to the 20th consuming 14,280 acres (over 22 square miles), destroying 486 structures and taking two lives. The fire burned primarily in the more mature and overgrown pine forest of that time. Although tree density is much lower here in filing three, the threat remains.

WILDFIRE BEHAVIOR

There are three primary components that affect wildfire behavior. The first is fuel, the second is topography and the third is the local weather during a wildfire event.

Fuels:

Fuels on site include grasses, shrubs and ponderosa pines. As mentioned, most of the pines are mature trees and those not removed for home construction can be easily mitigated. If lower limbs are removed so as to prevent a ground fire with a typical flame length of 2 to 3 feet from entering the canopy, and fire should pass through with relatively little damage to the trees.

In some areas the trees are more scattered and little forest litter exists other than the grasses. Tree spacing here is such that canopies are separate from one another. Ground fire here will have flame lengths of about 2 feet. The chance of canopy involvement is low. A severe ground fire may torch an individual smaller tree but the fire will then return to the ground. All but the smallest of saplings will likely survive fire passage.

Areas of shrubs including Gambel or “scrub” oak can also be ignited by a passing ground fire. These have branches that are thin and easily ignited. As with trees, pruning the lower branches and keeping the trunk or stem vegetation free for several feet will help. Oak typically grow in clumps or stands that are separated from each other but the spacing of those stands can be too close. In our area, scrub oak are also often seen growing up to and around the base of mature pines. These are particularly dangerous in a wildfire as they form a ladder of lighter fuel that will bring fire right up to the branches of the tree and into the canopy. Either the oak or the tree should be removed.

Throughout the balance of the filing, grasses are the only fuel available. Grasses are an easily ignited fuel and, being light, they burn readily and rapidly. If ungrazed and un-mowed, these grasses can grow 18 or 20 inches in height and support flame lengths of over 4 feet. Wildfire in grasslands can move faster than most people can run.

Topography:

Assuming wind is not a factor, wildfire will advance faster up a slope than it will downslope or on level ground. This occurs primarily because the fire preheats and dries the fuel in front of itself when ascending a slope. The steeper the slope, the more dramatic the effect. Generally slopes of greater than 25% are considered a significant hazard depending on fuel availability.

Slopes in Filing Three are mixed; to the east of Old Arena Way they are typically in the 5% to 7% range and this area is primarily grass. To the west, the south half is likewise in the 5% range with steeper slopes going up the small hill located in the northwest corner of the southernmost lot. Scrub oak predominates on the slopes of this hill. The 2 lots in the northwest corner of the filing lie along a ridge which has side slopes of 10% to 15%. Here the ground is dryer and more rocky and the ponderosa trees are generally along these side slopes along with some oak.

Weather:

It is a fact that the recent really large wildfires in Colorado have all had a weather component that drives them such that efforts to contain the blaze are severely hampered or even ineffectual. Wind and moisture are the two weather phenomena that always affect wildfire behavior. Lack of moisture, either as rain or snow, allows vegetation to dry out and become much more susceptible to ignition. The lighter the fuel, the quicker the lack of moisture renders it more hazardous. Grasses become dry in just days. Brush or small trees can become hazardous in weeks and significant stands of pines can become dangerously dry in not much more than a month. The effect is cumulative; that is, a prolonged period without significant moisture lowers the moisture content of all of the vegetation at the same time raising the chance of uncontrollable wildfire. Conversely, rain or snow during a wildfire will suppress it and may even extinguish it.

Strong wind will drive wildfire before it. It will increase the speed at which the fire travels. Wind will also loft embers or fire brands high into the air where the directional winds will transport them, still glowing, well beyond the limits of the fire. This is called spotting and it can and often does, start new fires up to a mile or more away. Additionally, extreme fire behavior will create it’s own winds. These winds sometimes appear within the fire as small tornados. Tornados made of fire.

Another word about weather that is important to remember is simply that there is only one fire season here along the front range. It lasts 12 months a year. Wildfires start, grow and damage property in every month of the year here. We have experienced prolonged periods of hot and dry conditions that we recognize as droughts on a more frequent basis over the recent past. We likely will continue that in the future as well. While we can't do anything about the weather, we can and must be mindful of its effects and potential impact on fire possibility as well as fire behavior all year long.

Which brings us to the subject of mitigation. Since we know wildfires will occur but we cannot know where or when or how intense they may become, we must be proactive in creating an environment through which wildfire can pass with minimal impact to our structures and the land.

WILDFIRE MITIGATION

We cannot control the weather during a wildfire and we cannot alter the topography of the site during one either. That leaves two approaches that we can address before a wildfire happens. The first is to alter the fuels that will be available to a wildfire and the second is to use fire resistant construction methods and materials when we construct homes and outbuildings within the area.

It stands to reason that the less fuel available, the lower the impact any fire will have. Trees, brush and grasses can be reduced in number and trimmed such that fire will have a more difficult time moving from tree to tree or from the ground into the tree canopy. Canopy fires are especially difficult to control and typically lead to spotting which advances the fire rapidly and spreads firebrands into new areas that may be behind the efforts of firefighters who are battling the existing fire front. They can also impact structures directly, piling up against foundation walls like leaves in autumn or snow in winter. They also settle into valleys on roof tops, concentrating heat and fire there.

The mitigation of fuels is simply the managing of the continuity of fuel both horizontally and vertically within the landscape. Around homes and other structures, we identify an area within which we mitigate more intensely close to the structure and less intensely further out. This is called Defensible Space and it serves to reduce the fire hazard and to provide firefighters room to more safely fight a fire. Typically within 30 feet of a structure fuels are heavily reduced or even eliminated (think xeriscape landscape treatments adjacent to the house). Trees within this zone are few and far in between. Ground cover is kept to 6 inches in height or less and pine needles or slash and debris are removed. This is Zone 1 of the Defensible Space. In the next 50 to 100 feet fuel continuity is maintained at a lower density with at least 10 feet between tree limbs. Shrubs (especially scrub oak) in this zone are removed from under trees to prevent fire from laddering up into the canopy. Clumps of shrubs should be isolated and kept twice their mature height from other vegetation. Grasses are kept mowed. This is Zone 2. Finally, Zone 3 is the area outside that 100 foot Zone 2 line. Here the forest is managed to maintain the health of the vegetation that is present. In this area of Colorado that often means some thinning. Trees in all zones are pruned 6 to 10 feet up from the forest floor to lessen the chance of fire reaching the crown. Mowing in Zone 3 is generally unnecessary but collection and disposal of slash is a benefit. Colorado State Forest Service Quick Guide Fire 2012-1 (formerly CSU Extension Fact Sheet 6.302) “Protecting Your Home from Wildfire: Creating Wildfire Defensible Zones” provides further discussion on defensible space and how to create and maintain it.

It is unusual to see a mature natural evergreen forest today in much of Colorado because past fire suppression efforts have allowed vegetative growth that is several times more dense than nature would permit. A mature natural forest has a park like appearance with trees of all ages, sizes and species, each having room to grow. Sunlight reaches almost all of the forest floor for at least some time during each day.

In those parts of Filing Three that are mostly grasses, we can expect homeowners will plant trees and shrubs. There is a distinct advantage to this as species and type of vegetation can be placed where they will do the most good and still comply with the principles of Defensible Space. See CSFS / CSU Cooperative Extension pamphlet #6.306 Grass Seed Mixes to Reduce Wildfire Hazard and #6.305 FireWise Plant Materials, both by F.C. Dennis.

Fire Resistive Structure Construction:

Wildfire is capricious. It is certainly possible to lose a structure that is constructed of all fire resistant materials. It is also much less likely than the loss of one constructed of light flammable materials like wood siding or roofing. Structures are ignited by the direct impingement of flames as a fire passes the structure and they are ignited by firebrands that are blown up against the walls or onto roof valleys or eves. As we already know, structures will be preheated and dried by the approaching fire. Soffit and foundation vents must be screened to prevent embers from entering. Fire resistive roofing is absolutely necessary because of those firebrands. Windows are particularly vulnerable. Glass will fracture in about 10 minutes in the presence of the level of heat that wildfires generate. And that heat will get to the structure before the fire does. Glass that breaks and falls out or is blown in creates a direct path for firebrands to enter the home. Decks are particularly vulnerable to wildfire as they are often constructed and decked with light wood framing, open to fire from below. Too, they are often placed above an approaching slope to enhance the view. The area under a deck should be rock or other non-combustible material and a fire resistive soffit material should cover the bottom side while a non-combustible surface should be used instead of wood decking on top.

New construction, as will occur in this filing, can be planned to utilize materials that are fire resistive at little or no additional cost. Materials that are dangerously combustible can simply be avoided. There are several publications available that address materials and construction in the Wildland Urban Interface. FireWise Construction: Site Design & Building Materials by Tim Foley and David Bueche, December 2012, based on the 2009 International Wildland-Urban Interface Code is published by the Colorado State Forest Service. The Federal Emergency Management Agency (FEMA) published P-737, Home Builder’s Guide to Construction in Wildfire Zones in September 2008 as part of their Technical Fact Sheet Series. It addresses both existing structures and new construction and provides guidance for methods and techniques to employ for each.

Finally, effective, reliable and no longer prohibitively expensive automatic sprinkler systems are available and easily incorporated in new construction.

Like Defensible Space, the materials used in the construction of any structure are important but it is the execution of an overall plan of Defensible Space and fire resistive construction that will provide the best chance to reduce structural vulnerability to wildfire.

Access and Evacuation:

New Breed Ranch is served by a single 95 foot wide separated lane entrance road from Shoup Road. This is New Breed Ranch Road and it is about 500 feet in length. New Breed Ranch Road tees into Meadow Run Circle which is the primary loop road planned for the subdivision and which runs east and west from that intersection. Old Arena Way, which provides direct lot access for Filing Three, enters Meadow Run about 300 feet east of New Breed Ranch Road. These are County maintained, paved roadways in 60 foot wide rights of way. There is almost no forest encroachment on these roads, consequently evacuation along them will be unhindered. Shoup Road runs to the west approximately half a mile to intersect State Highway 83 which would permit evacuation to either the north or south. Evacuation to the east from New Breed Ranch follows Shoup Road about 4 miles to Black Forest Road (Hwy 189) which then permits extended travel to the north or south, again leaving the area.

Black Forest Fire Rescue Protection District

New Breed Ranch Filing Three lies within and is served by the Black Forest Fire Rescue Protection District. The District serves an area of approximately 54 square miles running from Research Parkway on the south to Walker Road on the north and from Highway 83 on the west to Vollmer Road on the east. This is primarily a residential district with some small business and light commercial uses. Overall, the District provides services to approximately 40,000 people. The District is a title 32 Special Fire District that provides full time fire protection services including:

1.) Fire suppression, both structural and wildland.
2.) Emergency medical services to include advanced life support and transport.
3.) Hazardous materials response.
4.) Rescue.

The District currently has a daily staff of 6 firefighters and 4 command staff working from 7am to 5pm, Monday to Friday. Their initial call response is with a type 1 engine carrying 500 gallons of water and a tender/pumper carrying 1800 gallons of water.

Black Forest Fire Rescue operates out of two stations which are manned 24 hours a day and 7 days a week by career firefighting EMS personnel.

Fire Station 1 is located at 11445 Teachout Road, Colorado Springs, Co. This station is 2.9 miles from New Breed Ranch. The average response time from call dispatch is 4 to 5 minutes. Equipment here includes:

1.) One type 1 Engine having a 750 gallon water capacity.
2.) One type 6 Engine which is a 300 gallon Brush Truck.
3.) An 1800 gallon water tender.
4.) An ambulance having Advanced Life Support with transport capability.
5.) Various Command Units.

Fire Station 2 is located at 16465 Ridge Run Drive, Colorado Springs, Co. This station is 8.1 miles from New Breed Ranch and the average response time is 8-10 minutes from call dispatch. Equipment here includes:

1.) One type 1 Engine with a 500 gallon water capacity.
2.) A type 6, 300 gallon wildland engine.
3.) An 1800 gallon reserve unit water tender.

Finally, the New Breed Ranch Subdivision has a 30,000 gallon water cistern for fire fighting located within the landscape island in New Breed Ranch Road which the Fire Protection District maintains. Trucks can refill their water tanks from this cistern at anytime and for fire fighting anywhere in the district, not just for New Breed Ranch.

The Black Forest Fire Rescue District is party to an automatic mutual aid agreement with their neighboring districts including Colorado Springs Fire Department, Falcon FPD, Tri-Lakes FPD and Wescott FPD. In the case of a mutual aid call these would bring an additional 9 to 11 personnel and potentially 6000 gallons of water for the initial attack and suppression of fire activities.

The Black Forest Fire Rescue District enjoys an Insurance Services Organization (ISO) rating of 5 for all areas within the district and a rating of 4 for those within 1000 feet of a functional fire hydrant.

Included with this report is the full detailed Colorado Wildfire Risk Assessment Report created using the CO-WRA program.

Please note that all Colorado State Forest Service publications, including those mentioned herein, are available on their website, www.csfs.colostate.edu.

Additionally note that the Forest Services' earlier website www.coloradowildfirerisk.com currently re-directs to www.coloradoforestatlas.org which is the new and expanded website.

For this analysis the attached CO-WRA Report addresses the following individual wildfire topics:

*Wildland Urban Interface

*Wildland Urban Interface Risk

*Firewise USA Recognized Sites

*Community Wildfire Protection Plans

*Wildfire Risk to Assets

*Burn Probability

*Terrain Difficulty Index

*Wildfire Behavior Outputs

*Characteristic Flame Length

*Fire Intensity Scale

*Fire Type

*Rate of Spread

*Surface Fuels

*Vegetation

*Watershed Protection Risk

*Riparian Assets Risk

*Forest Assets Risk

*Building Damage Potential

*Defensible Space Index

2022 Colorado Wildfire Risk Assessment Summary Report

COLORADO STATE FOREST SERVICE
COLORADO STATE UNIVERSITY

New Breed Ranch Filing 3

Report was generated using
www.ColoradoForestAtlas.org

Report version: 3.0.0
Report generated: 1-25-2024

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User should also note that property boundaries included in any product do not represent an on-the-ground survey suitable for legal, engineering, or surveying purposes. They represent only the approximate relative locations.

Introduction

Colorado Wildfire Risk Assessment Report

Welcome to the Colorado Wildfire Risk Assessment Summary Reporting Tool.

This tool allows users of the Risk Reduction Planner application of the Colorado Forest Atlas web portal to define a specific project area and generate information for this area. A detailed risk summary report can be generated using a set of predefined map products developed by the Colorado Wildfire Risk Assessment project which have been summarized explicitly for the user defined project area. The report is generated in PDF format.

The report has been designed so that information from the report can be copied and pasted into other specific plans, reports, or documents depending on user needs. Examples include, but are not limited to, Community Wildfire Protection Plans, Local Fire Plans, Fuels Mitigation Plans, Hazard Mitigation Plans, Homeowner Risk Assessments, and Forest Management or Stewardship Plans. Example templates for some of these reports are available for download on the Colorado Forest Atlas web portal.

The Colorado WRA provides a consistent, comparable set of scientific results to be used as a foundation for wildfire mitigation and prevention planning in Colorado.

Results of the assessment can be used to help prioritize areas in the state where mitigation treatments, community interaction and education, or tactical analyses might be necessary to reduce risk from wildfires.

The Colorado WRA products included in this report are designed to provide the information needed to support the following key priorities:

- Identify areas that are most prone to wildfire
- Plan and prioritize hazardous fuel treatment programs
- Allow agencies to work together to better define priorities and improve emergency response, particularly across jurisdictional boundaries
- Increase communication with local residents and the public to address community priorities and needs

Products

Each product in this report is accompanied by a general description, table, chart and/or map. A list of available Colorado WRA products in this report is provided in the following table.

COWRA Product	Description
Wildland Urban Interface	Housing density depicting where humans and their structures meet or intermix with wildland fuel
Wildland Urban Interface Risk	A measure of the potential impact on people and their homes from wildfire
Wildfire Risk to Assets	The overall composite risk occurring from a wildfire derived by combining Burn Probability and Values at Risk Rating
Burn Probability	Annual probability of any location burning due to wildfire
Terrain Difficulty Index	Reflects the difficulty to suppress a fire given the terrain and vegetation conditions that may impact ground resource access and capabilities
Characteristic Flame Length	A measure of the expected flame length of a potential fire
Fire Intensity Scale	Quantifies the potential fire intensity by orders of magnitude
Fire Type	Potential for canopy fire type for extreme weather conditions (canopy fire potential)
Rate of Spread	The speed with which a fire moves in a horizontal direction across the landscape
Surface Fuels	Characterization of surface fuel models that contain the parameters for calculating fire behavior outputs
Vegetation	General vegetation and landcover types
Watershed Protection Risk	A measure of risk to watershed protection areas based on the potential negative impacts from wildfire.
Riparian Assets Risk	A measure of the risk to riparian areas based on the potential negative impacts from wildfire
Forest Assets Risk	A measure of the risk to forested areas based on the potential negative impacts from wildfire

COWRA Product	Description
Building Damage Potential	Estimates the potential for building loss
Defensible Space Index	The arithmetic mean of the three defensible space components: canopy, fuels, and slope. The colors shown represent the relative range and are the average for all of the buildings in the hexagon.

Wildland Urban Interface

Reflects housing density depicting where humans and their structures meet or intermix with wildland fuels

Colorado is one of the fastest growing states in the Nation, with much of this growth occurring outside urban boundaries. This increase in population across the state will impact counties and communities that are located within the Wildland Urban Interface (WUI). The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire.

The Wildland Urban Interface (WUI) layer reflects housing density depicting where humans and their structures meet or intermix with wildland fuels. In the past, conventional wildland-urban interface data sets, such as USFS SILVIS, have been used to reflect these concerns. However, USFS SILVIS and other existing data sources did not provide the level of detail needed by the Colorado State Forest Service and local fire protection agencies, particularly reflecting encroachment into urban core areas.

The new WUI data set is derived using advanced modeling techniques based on the Where People Live (housing density) data set and 2021 LandScan USA population count data available from the Department of Homeland Security, HSIP data. WUI is simply a subset of the Where People Live data set. The primary difference is populated areas surrounded by sufficient non-burnable areas (i.e. interior urban areas) are removed from the Where People Live data set, as these areas are not expected to be directly impacted by a wildfire. Fringe urban areas, i.e. those on the edge of urban areas directly adjacent to burnable fuels are included in the WUI. Advanced encroachment algorithms were used to define these fringe areas.

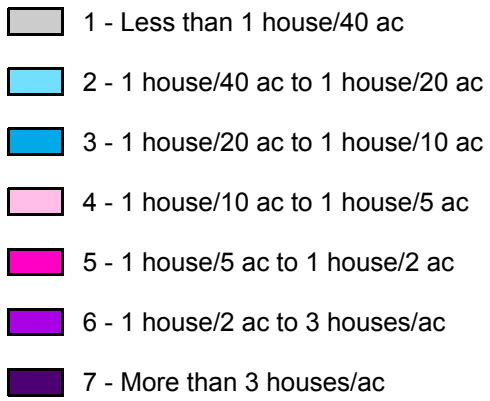
Data is modeled at a 20-meter grid cell resolution, which is consistent with other CO-WRA layers. The WUI classes are based on the number of houses per acre. Class breaks are based on densities well understood and commonly used for fire protection planning.

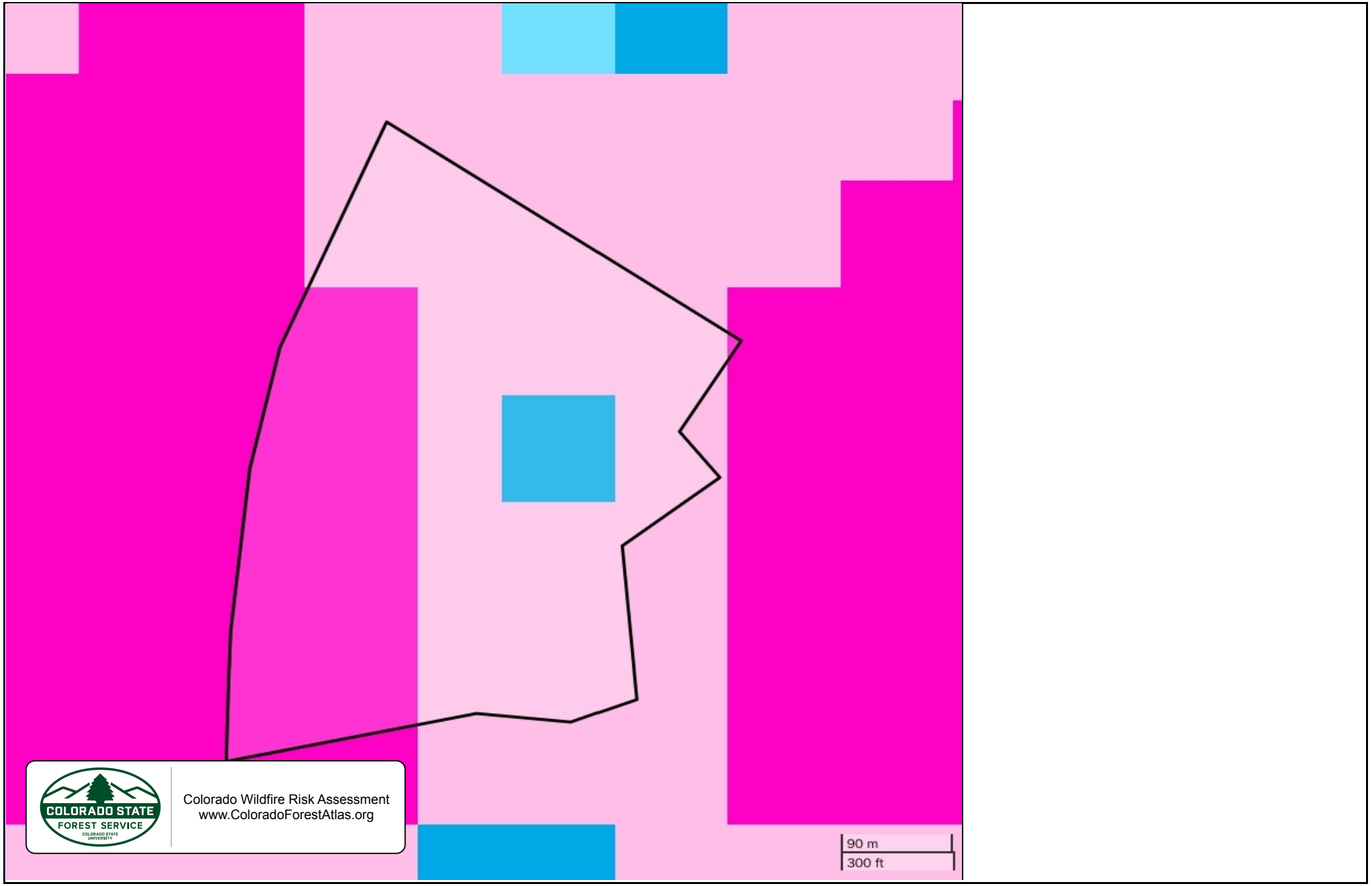
Housing Density	WUI Acres	Percent of WUI Acres
1 - Less than 1 house/40 ac	0	0%

2 - 1 house/40 ac to 1 house/20 ac	0	0%
3 - 1 house/20 ac to 1 house/10 ac	2	4.2%
4 - 1 house/10 ac to 1 house/5 ac	25	64.8%
5 - 1 house/5 ac to 1 house/2 ac	12	31.1%
6 - 1 house/2 ac to 3 houses/ac	0	0%
7 - More than 3 houses/ac	0	0%
None	**38**	**100%**

New Breed Ranch Filing 3

Wildland Urban Interface




COLORADO STATE
FOREST SERVICE
COLORADO STATE UNIVERSITY
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Wildland Urban Interface (WUI) Risk

The Wildland-Urban Interface (WUI) Risk Index layer is a rating of the potential impact of a wildfire on people and their homes.
The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the wildland-urban interface and rural areas is essential for defining potential wildfire impacts to people and homes.

The WUI Risk Index is derived using a response function modeling approach. Response functions are a method of assigning a net change in the value to a resource or asset based on susceptibility to fire at different intensity levels, such as flame length.

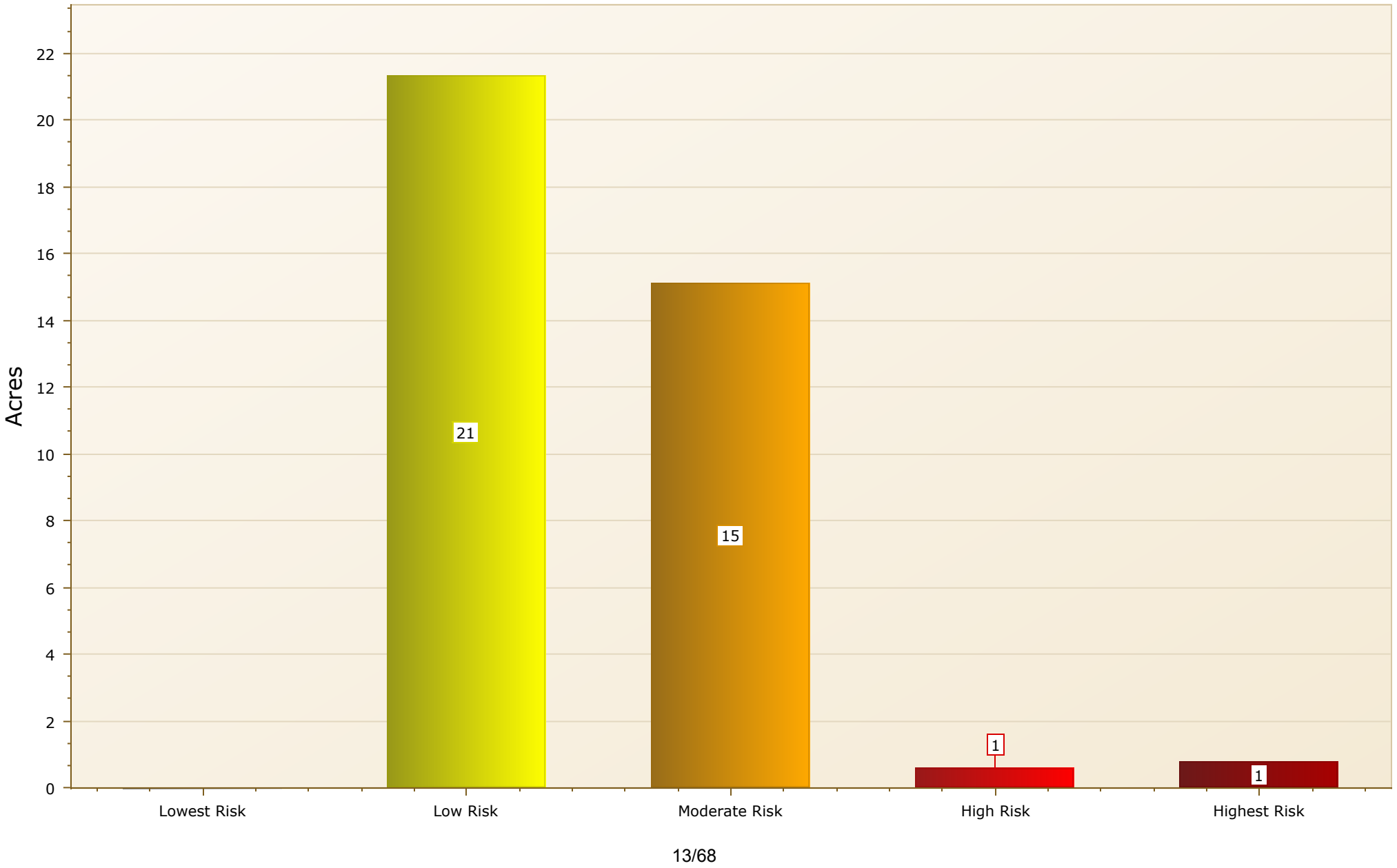
To calculate the WUI Risk Index, the WUI housing density data were combined with flame length data and response functions were defined to represent potential impacts. The response functions were defined by a team of experts led by Colorado State Forest Service mitigation planning staff. By combining flame length with the WUI housing density data, it is possible to determine where the greatest potential impact to homes and people is likely to occur. Customized urban encroachment algorithms were used to ensure those fringe urban areas were included in the WUI Risk outputs. Encroachment distances into urban areas were based on the underlying fuel models and their fuel types and propensity for spotting and spreading.

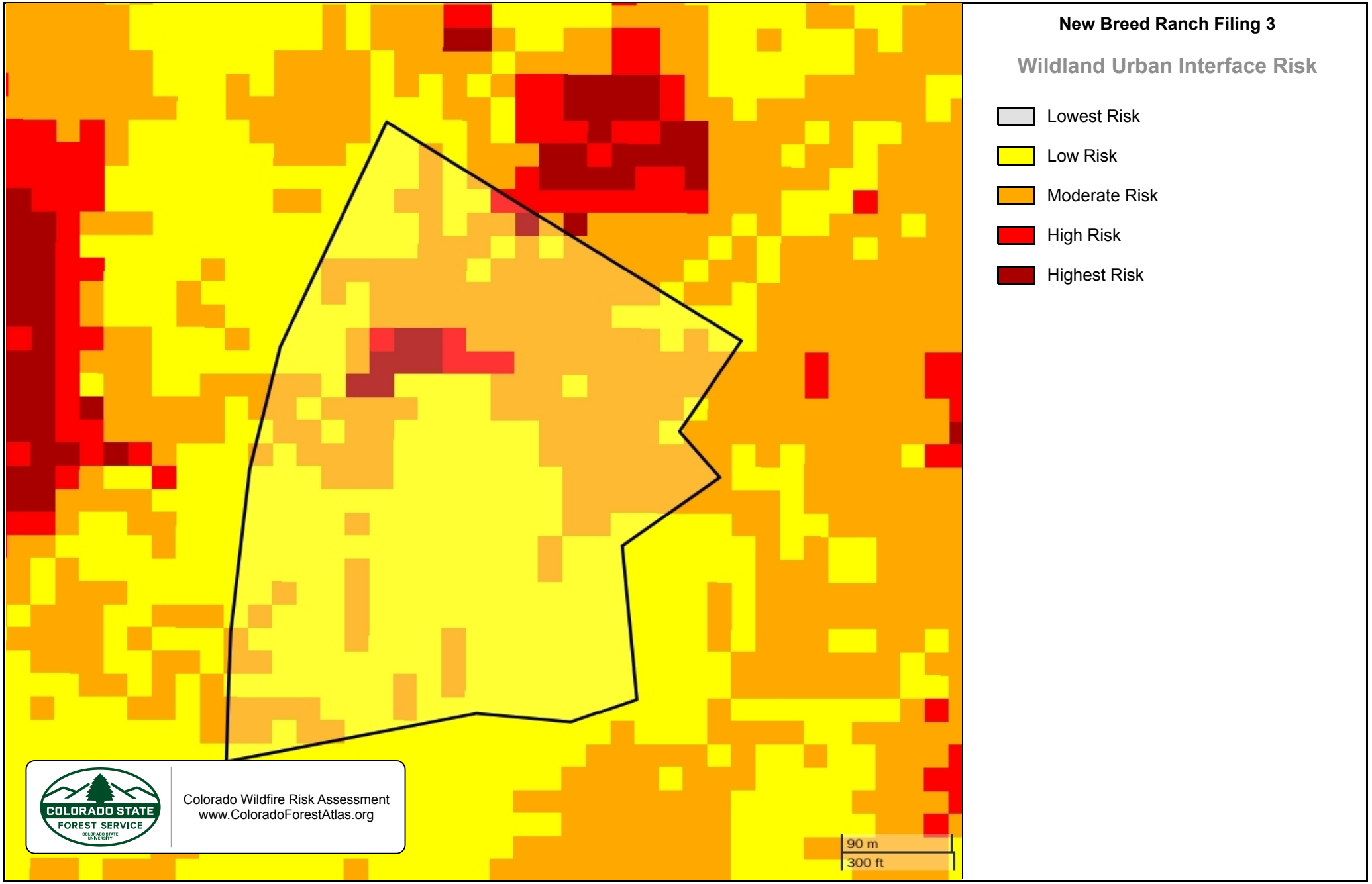
The WUI Risk Index has been calculated consistently for all areas in Colorado, which allows for comparison and ordination of areas across the entire state. Data is modeled at a 20-meter cell resolution, which is consistent with other CO-WRA layers.

WUI Risk Class	Acres	Percent
Lowest Risk		0%
Low Risk	21	56.4%
Moderate Risk	15	39.9%
High Risk	1	1.6%
Highest Risk	1	2.1%
Total	**38**	**100%**

Wildland Urban Interface Risk

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Wildland Urban Interface Risk
Lowest Risk
Low Risk
Moderate Risk
High Risk
Highest Risk
COLORADO STATE FOREST SERVICE
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Firewise USA Recognized Sites

Description

Firewise USA® is a national recognition program that provides resources to inform communities how to adapt to living with wildfire and encourages neighbors to take action together to reduce their wildfire risk. Colorado communities that take the following five steps can be recognized as Firewise:

1. Form a Firewise board or committe
2. Obtain a wildfire risk assessment from the CSFS or local fire department, and create an action plan
3. Hold a Firewise event once per year
4. Invest a minimum of $24.14 per dwelling unit in local Firewise actions annually
5. Create a National Fire Prevention Association (NFPA) profile and follow the application directions located at https://portal.firewise.org/user/login

The Firewise USA® dataset defines the boundaries of the recognized communities. Mapping Firewise USA® boundaries will generally be completed by CSFS staff.

Note: These are estimated boundaries using a variety of methods with varying degrees of accuracy. These are not legal boundaries and should not be construed as such. The boundaries may overlap with CWPP areas and are subject to change over time as the communities develop, change, and continue to implement wildfire mitigation efforts.
To learn more about the Firewise USA® recognition program or to fill out an application, visit https://www.nfpa.org/Public-Education/By-topic/Wildfire/Firewise-USA - OR https://csfs.colostate.edu/wildfire-mitigation/colorado-firewise-communities/

The designated area does not contain data for this section.

Community Wildfire Protection Plans (CWPPs)

Description

A Community Wildfire Protection Plan (CWPP) is a document developed and agreed upon by a community to identify how the community will reduce its wildfire risk. CWPPs identify areas where fuels reduction is needed to reduce wildfire threats to communities and critical infrastructure, address protection of homes and other structures, and plan for wildfire response capability. The Colorado State Forest Service (CSFS) supports the development and implementation of CWPPs and provides resources, educational materials and information to those interested in developing CWPPs.

The CWPP dataset represents the boundaries of those areas that have developed a CWPP. Note that CWPPs can be developed by different groups at varying scales, such as county, Fire Protection District (FPD), community/subdivision, HOA, etc., and as such, can overlap. In addition, the CWPPs can be from different dates. Often a county CWPP is completed first with subsequently more detailed CWPPs done for local communities within that county or FPD. CO-WRAP provides a tool that allows the user to select the CWPP area and retrieve the CWPP document for review (PDF).

At a minimum, a CWPP should include:

- The wildland-urban interface (WUI) boundary, defined on a map, where people, structures and other community values are most likely to be negatively impacted by wildfire
- The CSFS, local fire authority and local government involvement and any additional stakeholders
- A narrative that identifies the community's values and fuel hazards
- The community's plan for when a wildfire occurs
- An implementation plan that identifies areas of high priority for fuels treatments

CWPPs are not shelf documents and should be reviewed, tracked and updated. A plan stays alive when it is periodically updated to address the accomplishments of the community. Community review of progress in meeting plan objectives and determining areas of new concern where actions must be taken to reduce wildfire risk helps the community stay current with changing environment and wildfire mitigation priorities.

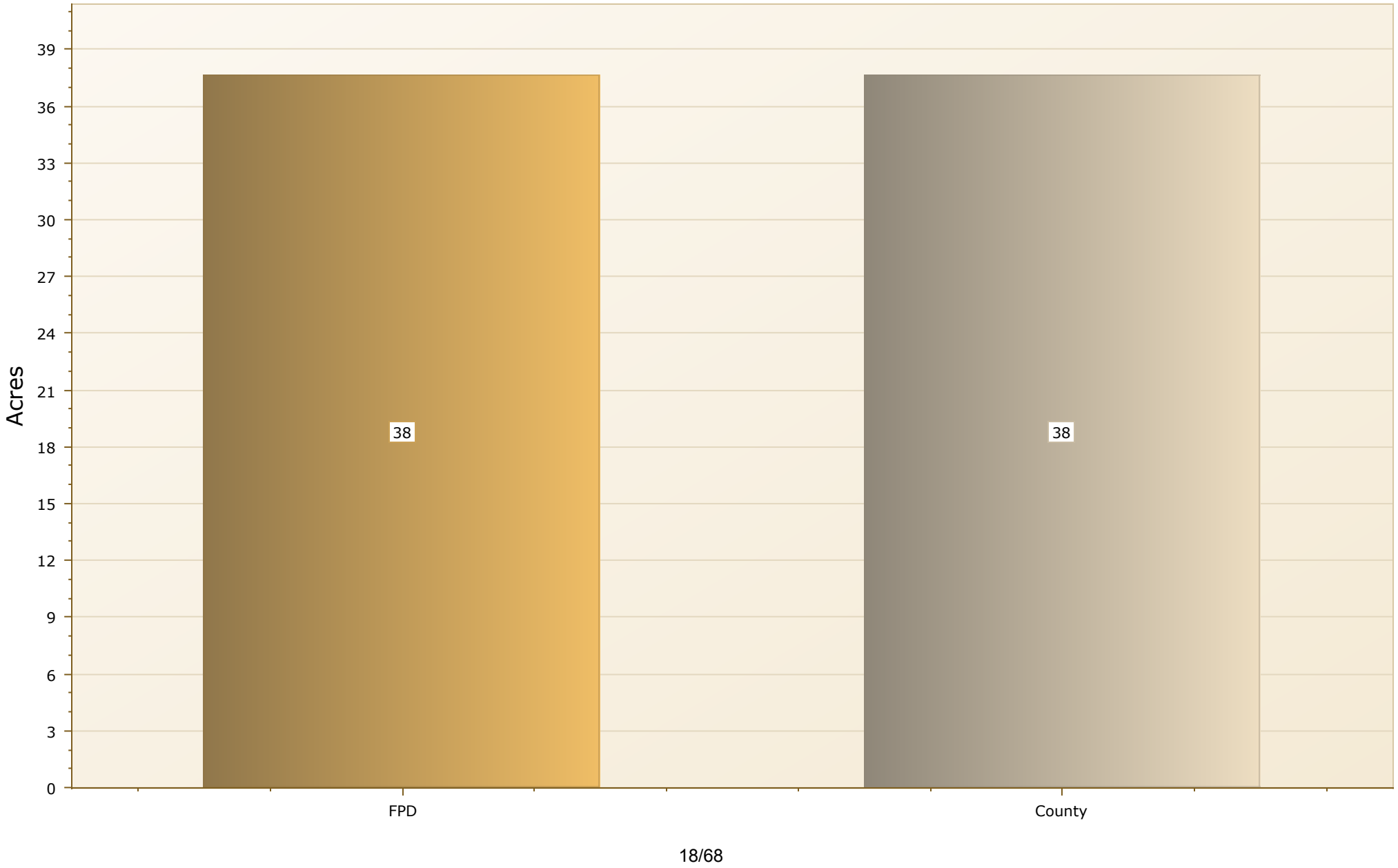
Community input is the foundation of a Community Wildfire Protection Plan that identfies community needs and garners community support.

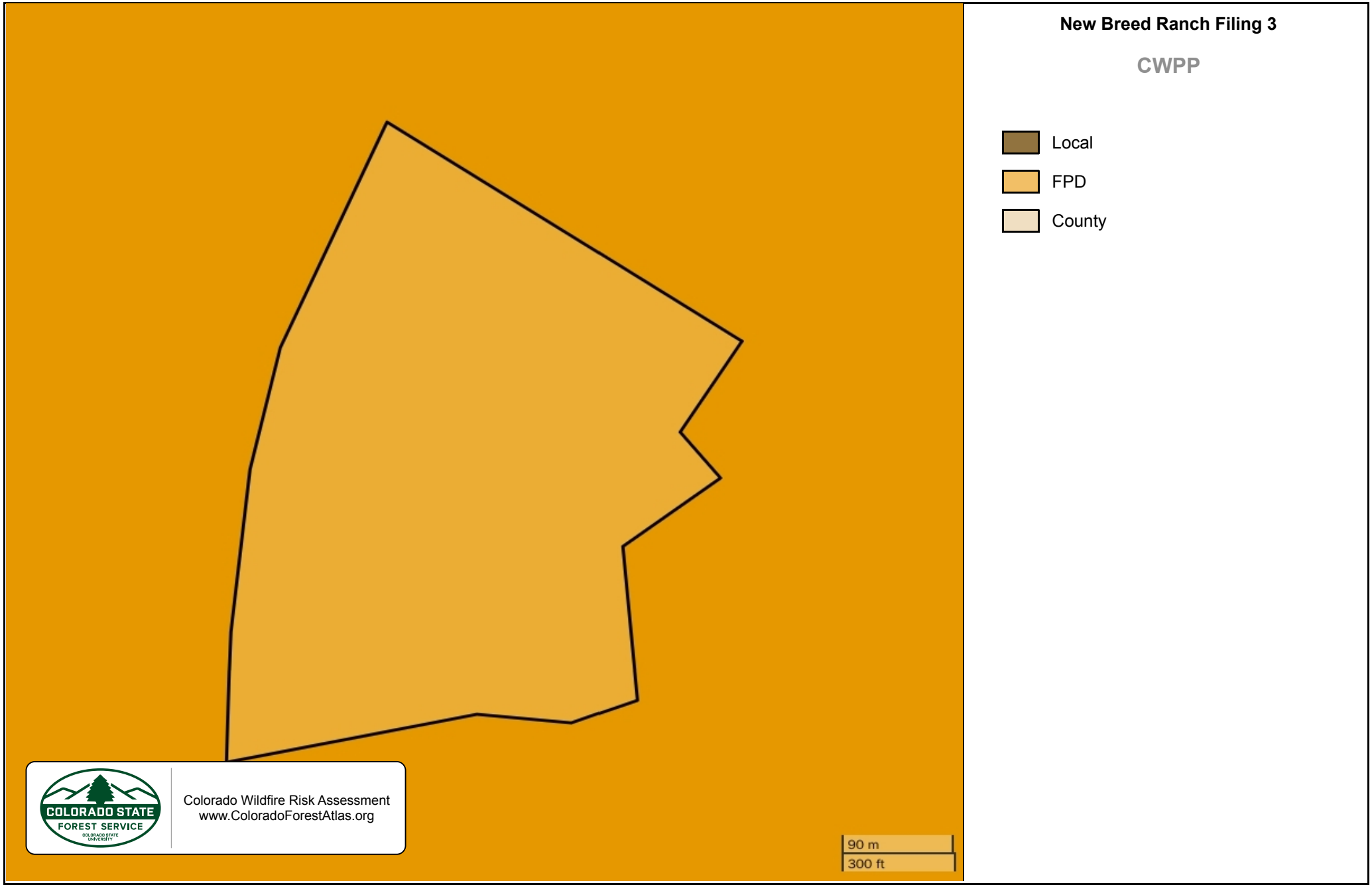
If your community is in an area at risk from wildfire, now is a good time to start working with neighbors on a CWPP and preparing forfuture wildfires. Contact your local CSFS district to learn how to start this process and create a CWPP for your community: http://csfs.colostate.edu/pages/your-local-forester.html
For the **New Breed Ranch Filing 3** test project area, there are 2 CWPPs areas that are totally or partially in the defined project area.

CWPP Name	CWPP Type	CSFS District	Acres inside project area	Total Acres
Black Forest	FPD	Woodland Park	38	31,421
El Paso County	County	Woodland Park	38	1,361,917
Total Acres			**75**	**1,393,339**

Community Wildfire Protection Plans

New Breed Ranch Filing 3




New Breed Ranch Filing 3
CWPP
Local
FPD
County
COLORADO STATE
FOREST SERVICE
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Wildfire Risk to Assets

Description

Wildfire Risk is a composite risk map created by combining the Values at Risk Rating and the Burn Probability layers.
It identifies areas with the greatest potential impacts from a wildfire – i.e., those areas most at risk when considering the four values layers.

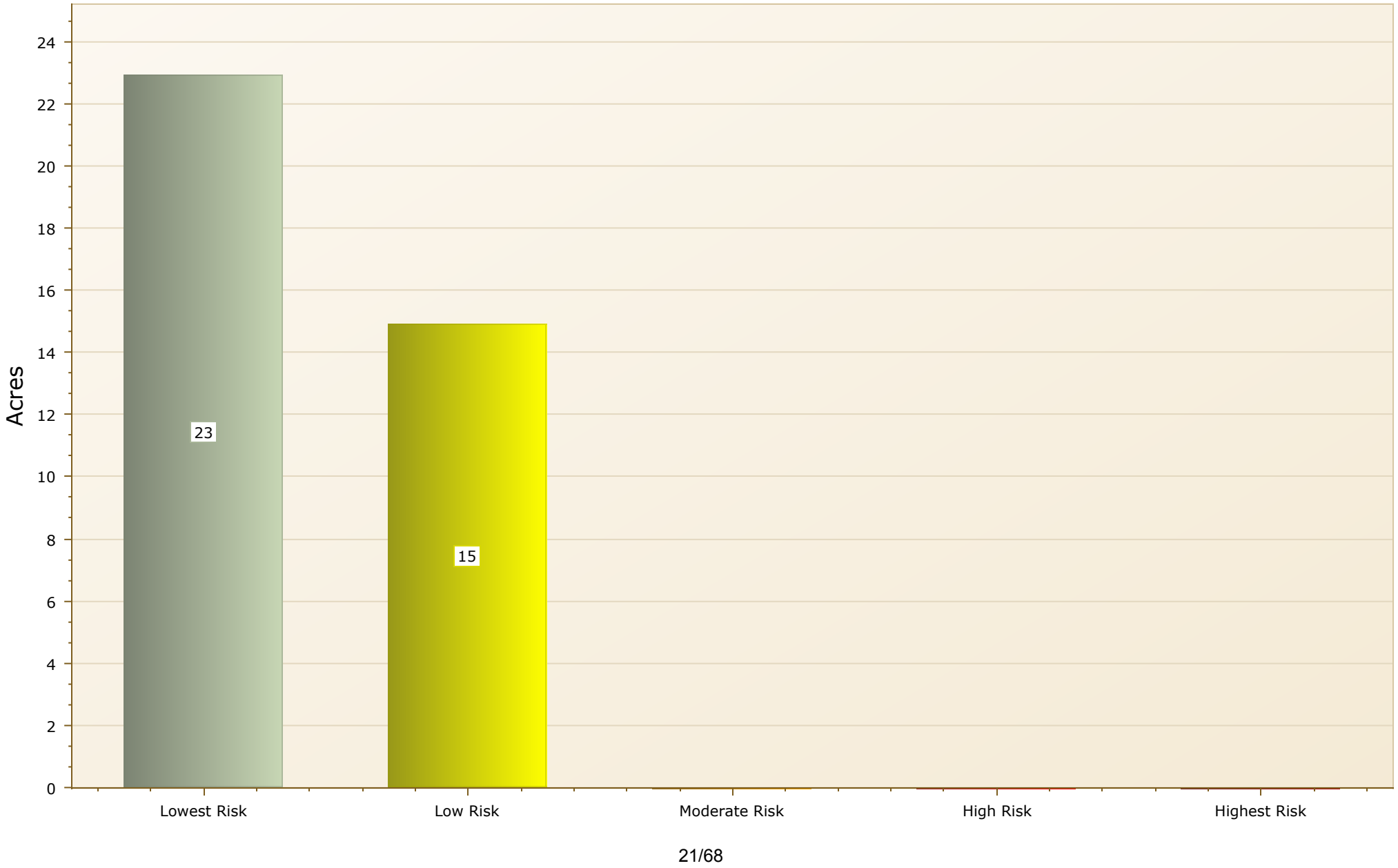
The Values at Risk Rating is a key component of Wildfire Risk. It is comprised of several individual risk layers including Wildland Urban Interface (housing density), Forest Assets, Riparian Assets and Watershed Protection risk outputs. The WUI component is a key element of the composite risk since it represents where people live in the wildland and urban fringe areas that are susceptible to wildfires and damages. The found individual risk layers are weighted to derive the Values at Risk Rating layer.

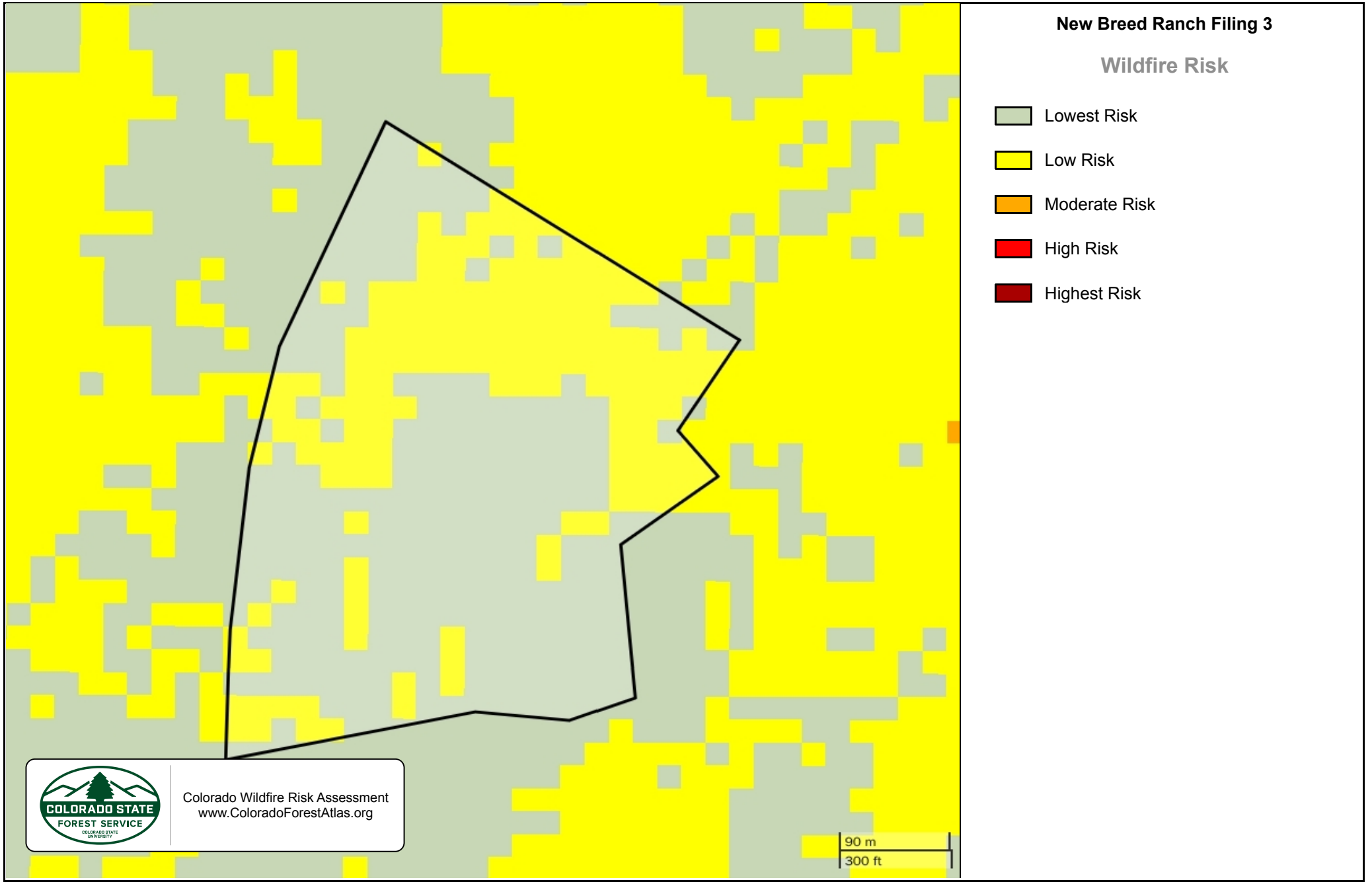
The risk map is derived at a 20-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county, or local planning efforts.

Wildfire Risk	Acres	Percent
Lowest Risk	23	60.6%
Low Risk	15	39.4%
Moderate Risk		0%
High Risk		0%
Highest Risk		0%
Total	**38**	**100%**

Wildfire Risk to Assets

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Wildfire Risk
Lowest Risk
Low Risk
Moderate Risk
High Risk
Highest Risk
COLORADO STATE
FOREST SERVICE
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Burn Probability

Description

Burn Probability (BP) is the annual probability of any location burning due to a wildfire.

The annual BP was calculated as the number of times that a cell was burned and the number of iterations used to run the models. The annual BP was estimated for Colorado by using a wildfire simulation approach with Technosylva's Wildfire Analyst software (Wildfire Analyst). A total number of 2,342,334 fires were simulated (3,200,000 if we consider those fires outside the Colorado border which were used in a buffer area around the study area to compute BP) with a mean ignition density of 8.68 fires/km2. The ignition points were spatially distributed evenly every 500 meters across the state. Only high and extreme weather conditions were used to run the single fires because they usually burn most of the annual burned area. All fires simulations had a duration of 8 h. After simulating all the fires, some cells were not burned by any simulated fire, resulting in a BP value of zero. Some cells were non-burnable due to the associated fuel type (i.e. water, roads, urban, agricultural areas, barren areas). However, the lowest BP value found in "burnable" cells was assigned to cells where the simulated fires did not reach.

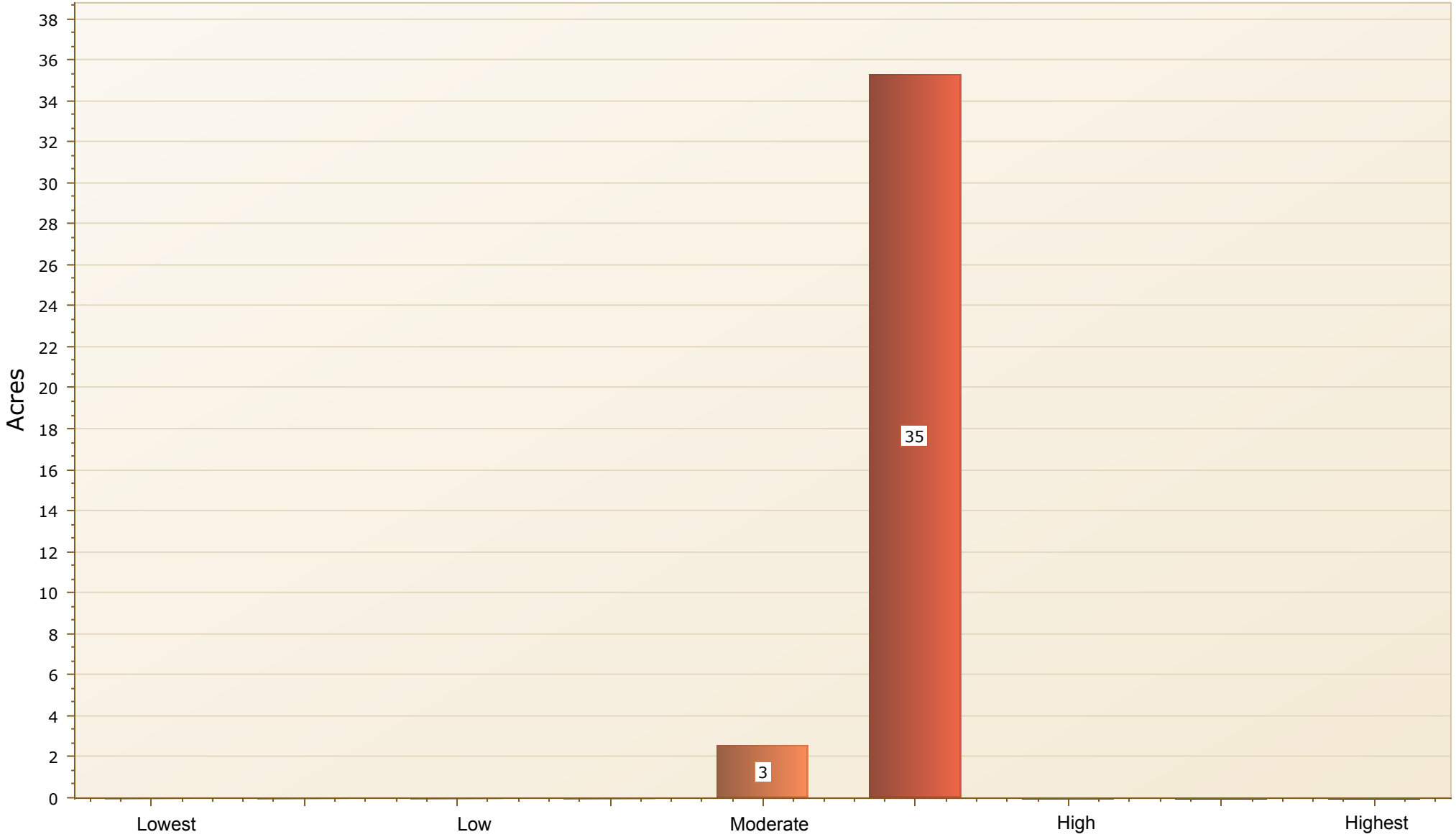
The Wildfire Analyst fire simulator considered the number of times that the simulated fires burned each cell. After that, results were weighted by considering the historical fire occurrence. The weighting was done by assessing the relation between the annual historical fire ignition density in Colorado and the total number of simulated fires with varying input data in high and moderate weather scenarios and the historical spatial distribution of the ignition points.

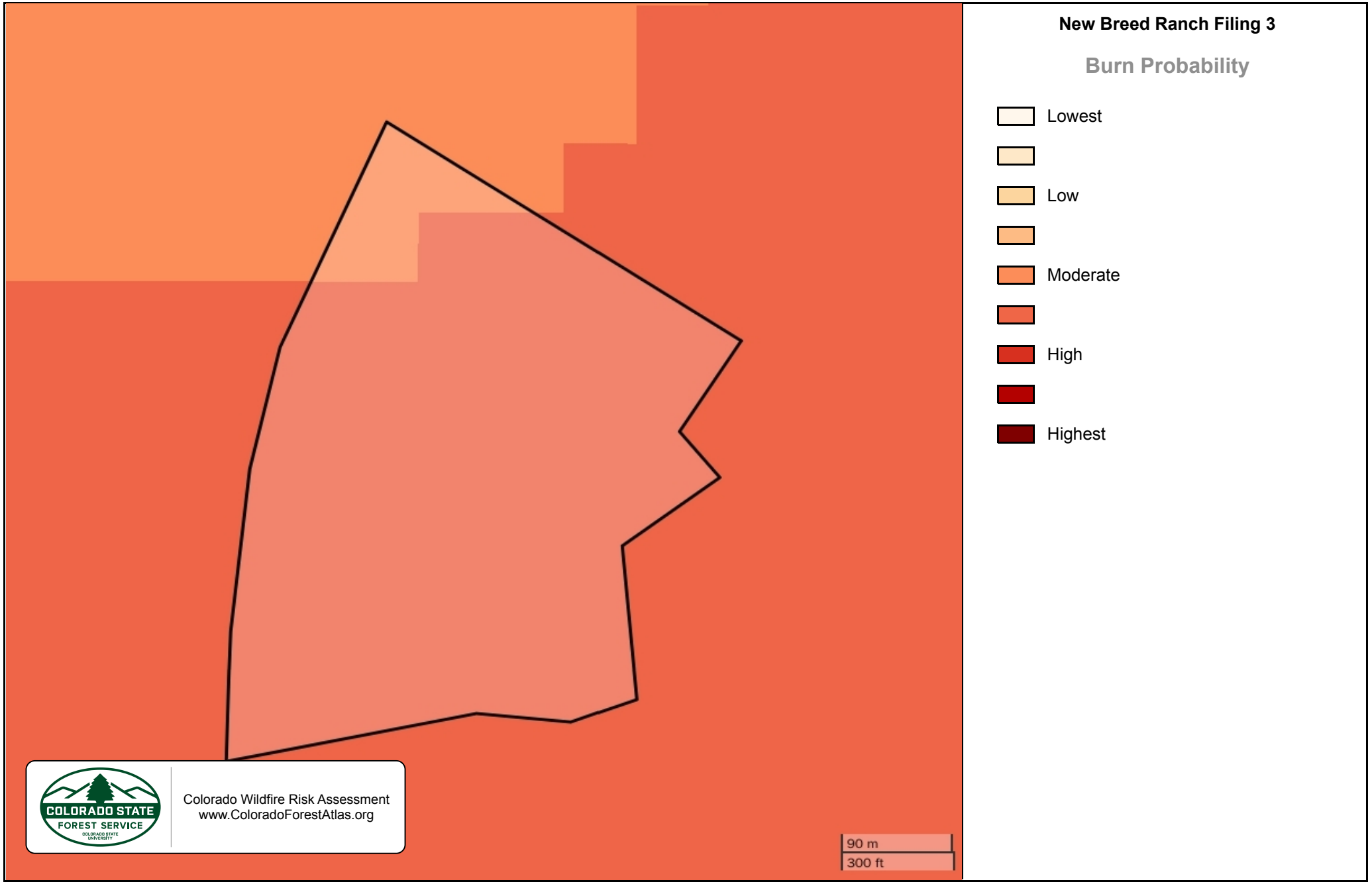
The probability map is derived at a 20-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county or local protection mitigation or prevention.

Burn Probability	Acres	Percent
Lowest		0%
		0%
Low		0%
		0%
Moderate	3	6.8%
	35	93.2%
High		0%
		0%
Highest		0%
Total	**38**	**100%**

Burn Probability

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Burn Probability
Lowest
Low
Moderate
High
Highest
COLORADO STATE
FOREST SERVICE
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Terrain Difficulty Index

Description

The 2012 and 2017 CO-WRA included a simple metric that described suppression difficulty based on fireline dozer rates. For 2022 CO-WRA, this standalone metric has been updated to reflect a more enhanced definition of areas where access to fires and suppression from ground resources is difficult. Although not a component of the standard risk assessment outputs, this metric is provided as it helps inform which areas may have limited suppression capabilities, especially for initial attack, across the State.

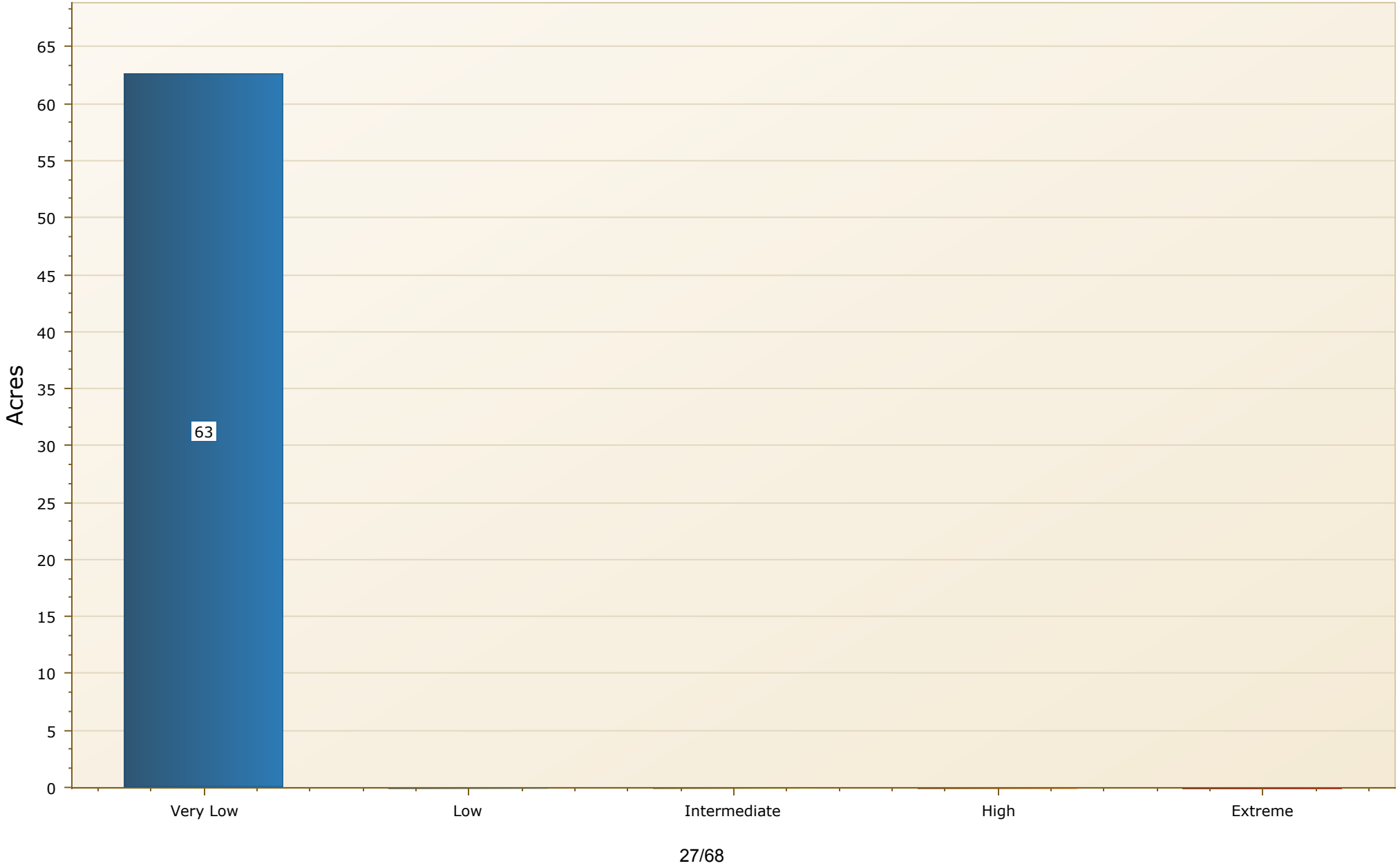
The Terrain Difficulty Index (TDI) is a metric that describes the characteristics of the landscape which evaluates the difficulty of extinction, especially in initial attack, although it can also be extrapolated to extended attacks. This static index quantifies the availability of access for the arrival of terrestrial means, the ability to penetrate the area where the fire originates, and the difficulty of extinguishing fuels.

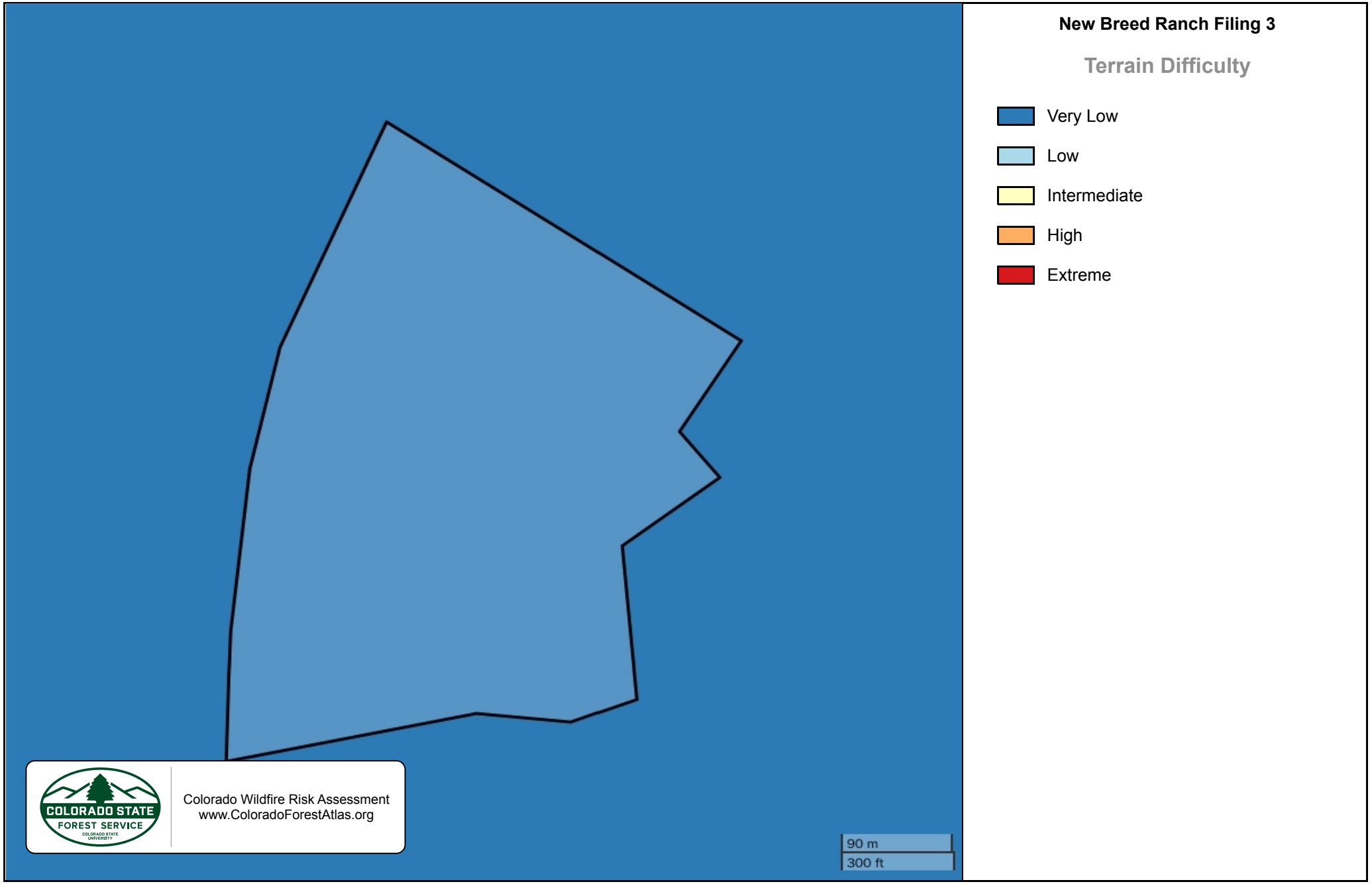
Indicators such as the Accessibility Index, Penetrability Index and Fireline Opening Index (construction) have been used for the formulation of TDI. This index is based on other indices such as the Wildfire Suppression Difficulty Index (terrestrial) (SDIt) (Matthew P Thompson et al, 2018. Francisco Rodriguez and Silva et al, 2020.) which is a quantitative rating of the relative difficulty to perform fire control work. However, TDI is dynamic as it incorporates changes in surface fuels over time providing a less static perspective for a planning point of view.

Terrain Difficulty Index	Acres	Percent
Very Low	63	100%
Low		0%
Intermediate		0%
High		0%
Extreme		0%
Total	**63**	**100%**

Terrain Difficulty Index

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Terrain Difficulty
Very Low
Low
Intermediate
High
Extreme
COLORADO STATE
FOREST SERVICE
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Wildfire Behavior Outputs

Description

Fire behavior is the way a fire reacts to the following environmental influences:

1. Fuels
2. Weather
3. Topography

Fire behavior characteristics are attributes of wildland fire that pertain to its spread, intensity, and growth. Fire behavior characteristics utilized in the Colorado WRA include fire type, rate of spread, flame length and fireline intensity (fire intensity scale). These metrics are used to determine the potential fire behavior under different weather scenarios. Areas that exhibit moderate to high fire behavior potential can be identified for mitigation treatments, especially if these areas are in close proximity to homes, business, or other assets.

Fuels

The Colorado WRA includes composition and characteristics for both surface fuels and canopy fuels. Assessing canopy fire potential and surface fire potential allows identification of areas where significant increases in fire behavior affects the potential of a fire to transition from a surface fire to a canopy fire.

Fuel datasets required to compute both surface and canopy fire potential include:

1.Surface Fuels are typically categorized into one of four primary fuel types based on the primary carrier of the surface fire: 1) grass, 2) shrub/brush, 3) timber litter, and 4) slash. They are generally referred to as fire behavior fuel models and provide the input parameters needed to compute surface fire behavior. The 2022 assessment uses the latest 2022 calibrated fuels for Colorado. The following custom fuels were included to improve the fire modeling in timber, WUI and agricultural areas:

- Timber: 2 new categories (171 and 191)

- Urban: 7 new categories (911,912,913,914,915,916 and 919)

- Roads: 5 new categories (941,942,943,944 and 949)

- Agriculture: 4 new categories (931,932,938 and 939)

- Water: 3 new categories (981,982 and 989)

2. Canopy Cover is the horizontal percentage of the ground surface that is covered by tree crowns. It is used to compute wind-reduction factors and shading.

3.Canopy Ceiling Height/Stand Height is the height above the ground of the highest canopy layer where the density of the crown mass within the layer is high enough to support vertical movement of a fire. A good estimate of canopy ceiling height is the average height of the dominant and co-dominant trees in a stand. It is used to compute wind reduction to mid-flame height, and spotting distances from torching trees.

4.Canopy Base Height is the lowest height above the ground above which sufficient canopy fuel exists to vertically propagate fire (Scott & Reinhardt, 2001). Canopy base height is a property of a plot, stand or group of trees, not an individual tree. For fire modeling, canopy base height is an effective value that incorporates ladder fuels, such as tall shrubs and small trees. Canopy base height is used to determine whether a surface fire will transition to a canopy fire.

5. Canopy Bulk Density is the mass of available canopy fuel per unit canopy volume (Scott & Reinhardt, 2001). Canopy bulk density is a bulk property of a stand, plot, or group of trees, not an individual tree. Canopy bulk density is used to predict whether an active crown fire is possible.

Weather

Weather data (1979-2022) from gridMET was used to analyze potential weather scenarios in which assessing fire behavior and spread. gridMET is a dataset of daily high-spatial resolution (~4-km, 1/24th degree) surface meteorological data covering the contiguous US. Air temperature data at 2m, relative humidity at 2m, and wind speed and direction at 10 m were all downloaded and used.

After computing the weather percentiles of the gridMET variables, data was interpolated using IDW algorithms (Inverse Distance Weighting) at 20-meter pixel resolution.

Dead fuel moisture content was estimated using the model of Rothermel and Rinehart (1983). Both temperature and air relative humidity at 2m from gridMET was used to define the fuel moisture model. The model also considered elevation and aspect to take into account the accumulated solar radiation at 14h (local time). 1% and 2% were added to the 1h-dead fuel moisture content to estimate 10h and 100h dead fuel moisture content, respectively.

For the first time in CO-WRA risk assessments, both herbaceous and woody live fuel moisture content was modelled using Technosylva's proprietary models based on optical imagery, drought indices and phenology. The models were trained with the WFAS National live fuel moisture content. Foliar moisture content in the canopies was considered as a constant value (80%) across the entire state.

Wind speed at 10 m was estimated at 20 ft applying a wind adjustment factor to use 20-ft wind speed in the fire spread and behavior equations. Afterward, wind speed percentiles were computed to use these data in the FB analysis at 20-meter pixel resolution. Wind direction for Colorado was analyzed for a 40-year period (1979-2022) considering the calculated wind speed percentiles from gridMET data. Predominant wind direction is from SW to NE, especially when wind speed is high or very high.

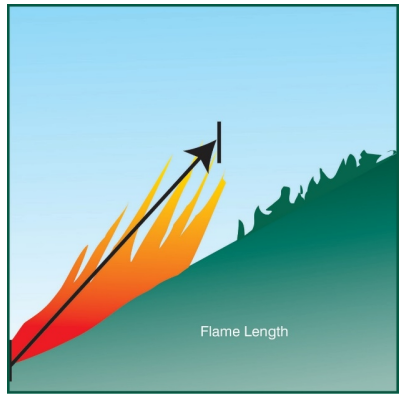
Characteristic Flame Length

The typical or representative flame length of a potential fire based on a weighted average of four percentile weather categories.

Flame Length is defined as the distance between the flame tip and the midpoint of the flame depth at the base of the flame, which is generally the ground surface. It is an indicator of fire intensity and is often used to estimate how much heat the fire is generating.

Flame length is typically measured in feet. Flame length is the measure of fire intensity used to generate the Fire Effects outputs for the CO-WRA and it is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each 20-meter grid cell in Colorado.

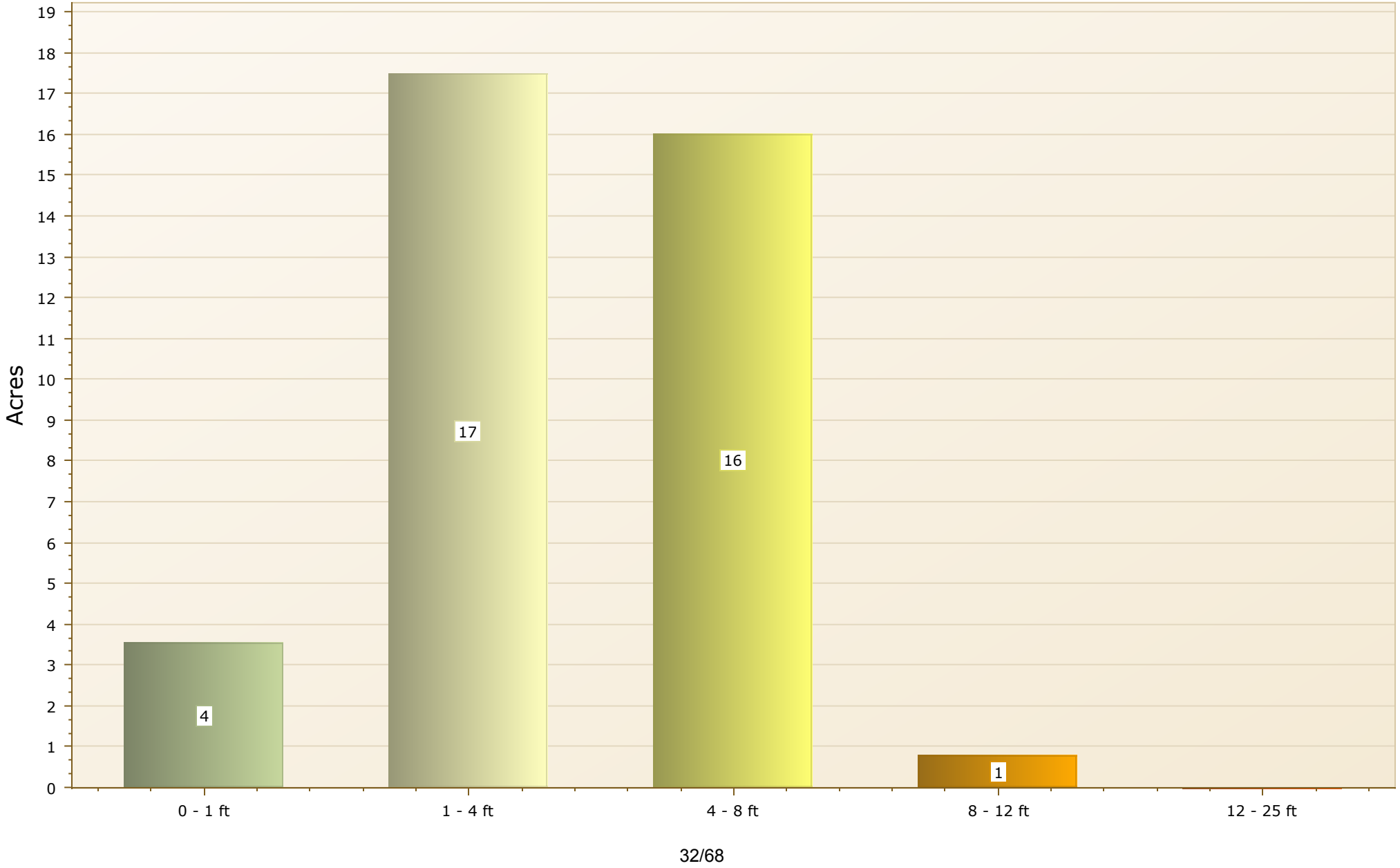
The Characteristic Flame Length represents the weighted average for all four weather percentiles. While not discussed in this report, the individual percentile weather Flame Length outputs are available in the CO-WRA data.

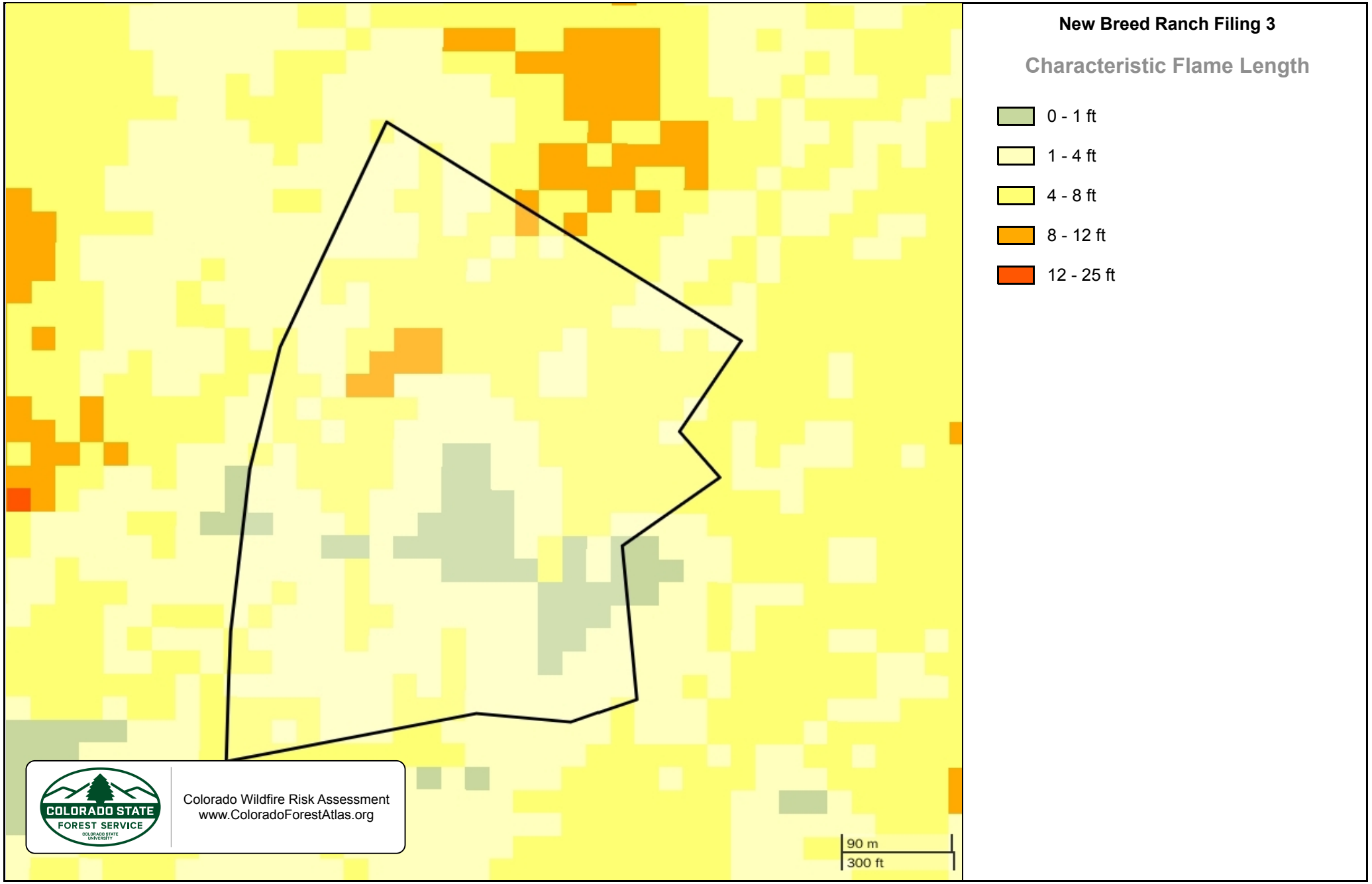


Characteristic Flame Length	Acres	Percent
0 - 1 ft	4	8.4%
1 - 4 ft	17	41.2%
4 - 8 ft	16	37.7%
8 - 12 ft	1	1.9%
12 - 25 ft		0%
Total	**38**	**89%**

Characteristic Flame Length

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Characteristic Flame Length
0 - 1 ft
1 - 4 ft
4 - 8 ft
8 - 12 ft
12 - 25 ft
COLORADO STATE FOREST SERVICE
COLORADO STATE UNIVERSITY
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Fire Intensity Scale

Description

Quantifies the potential fire intensity by orders of magnitude.
Fire Intensity Scale (FIS) specifically identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist. Similar to the Richter scale for earthquakes, FIS provides a standard scale to measure potential wildfire intensity. FIS consist of five (5) classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities.

1. Class 1, Lowest Intensity:
Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.

2. Class 2, Low:
Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.

3. Class 3, Moderate:
Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.

4. Class 4, High:
Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.

5. Class 5, Highest Intensity:
Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Burn Probability and Fire Intensity Scale are designed to complement each other. Unlike Wildfire Threat, the Fire Intensity Scale does not incorporate historical occurrence information. It only evaluates the potential fire behavior for an area, regardless if any fires have occurred there in the past. This additional information allows mitigation planners to quickly identify areas where dangerous fire behavior potential exists in relationship to nearby homes or other valued assets.

Since all areas in Colorado have fire intensity scale calculated consistently, it allows for comparison and ordination of areas across the entire state. For example, a high fire intensity area in Eastern Colorado is equivalent to a high fire intensity area in Western Colorado.

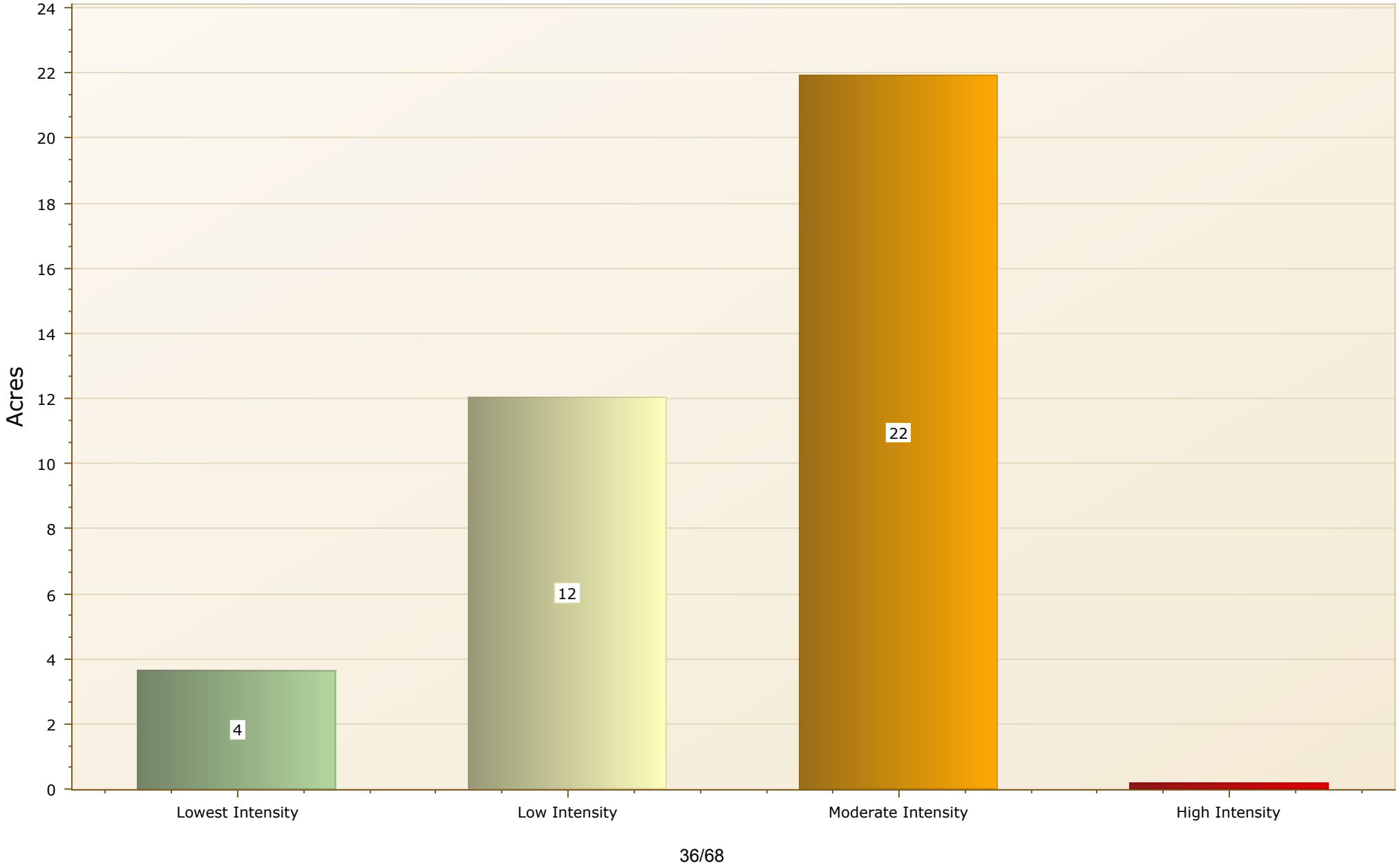
Fire intensity scale is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography – and the spread itself (back, flank or head fire influences fire behavior for a given pixel for a specific fire simulation). Weather is by far the most dynamic variable as it changes frequently. Thus, each pixel may burn many times with different fire spread patterns based on the aforementioned factors. The fire intensity scale maps represent an average fire intensity map.

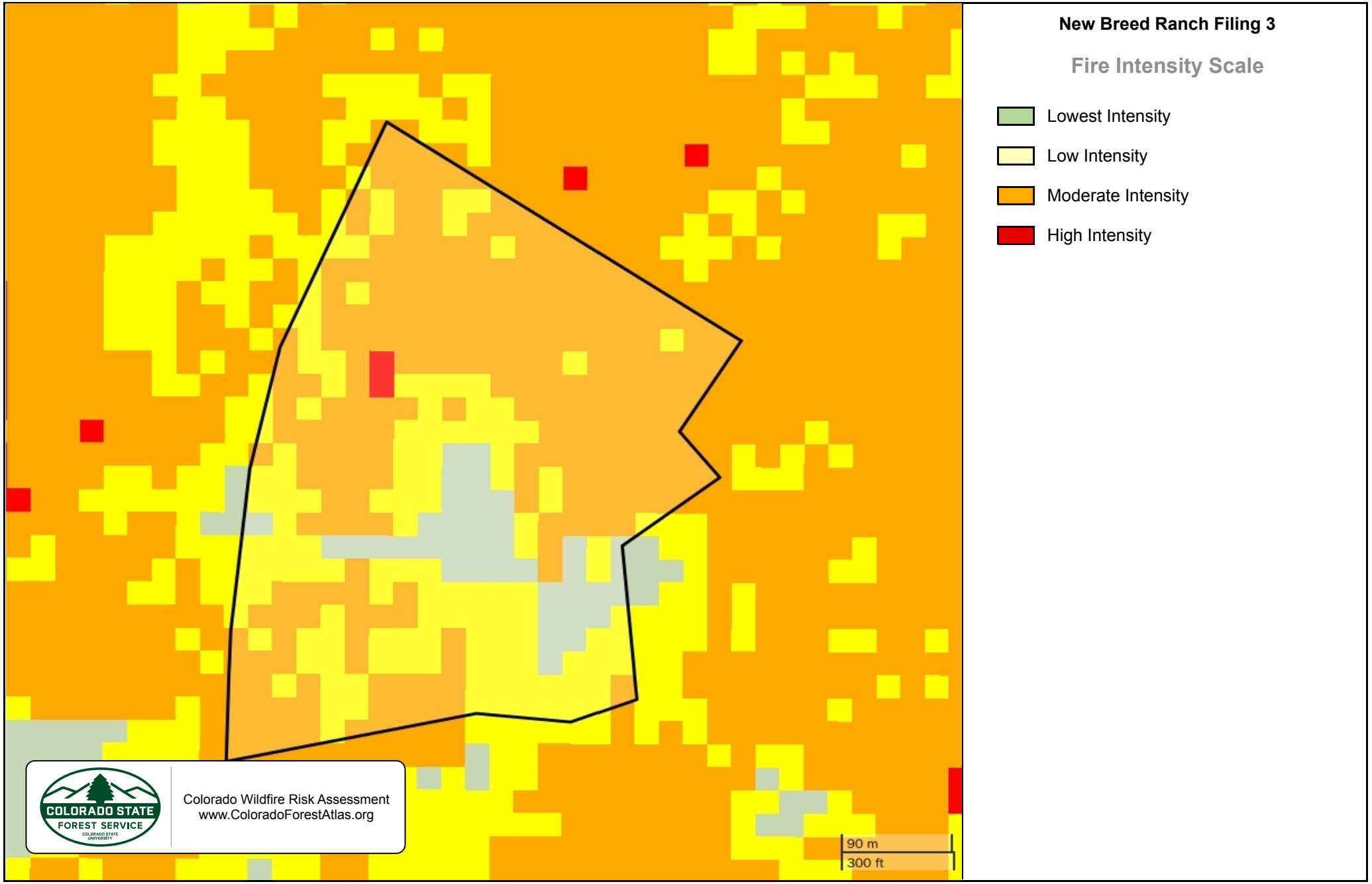
The fire intensity scale map is derived at a 20-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county, or local planning efforts.

FIS Class	Acres	Percent
Lowest Intensity	4	9.7%
Low Intensity	12	31.8%
Moderate Intensity	22	58%
High Intensity		0.5%
Total	**38**	**100%**

Fire Intensity Scale

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Fire Intensity Scale
Lowest Intensity
Low Intensity
Moderate Intensity
High Intensity
COLORADO STATE FOREST SERVICE
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Fire Type

Represents the potential fire type under the extreme percentile weather category.

Canopy fires are very dangerous, destructive and difficult to control due to their increased fire intensity. From a planning perspective, it is important to identify where these conditions are likely to occur on the landscape so that special preparedness measure can be taken if necessary. The Fire Type layer shows the footprint of where these areas are most likely to occur. However, it is important to note that canopy fires are not restricted to these areas. Under the right conditions, it can occur in other canopied areas.

There are two primary fire types – surface fire and canopy fire. Canopy fire can be further subdivided into passive canopy fire and active canopy fire. A short description of each of these is provided below.

• Surface Fire - A fire that spreads through surface fuel without consuming any overlying canopy fuel. Surface fuels include grass, timber litter, shrub/brush, slash and other dead or live vegetation within about 6 feet of the ground.

• Passive Canopy Fire – A type of crown fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods (Scott & Reinhardt, 2001).

• Conditional Crown Fire – A type of crown fire in which an active crown fire is possible but one would not be predicted to initiate. Two outcomes are possible in that situation: surface fire if the fire starts in the stand as a surface fire, or active crown fire if fire enters the stand as an active crown fire.

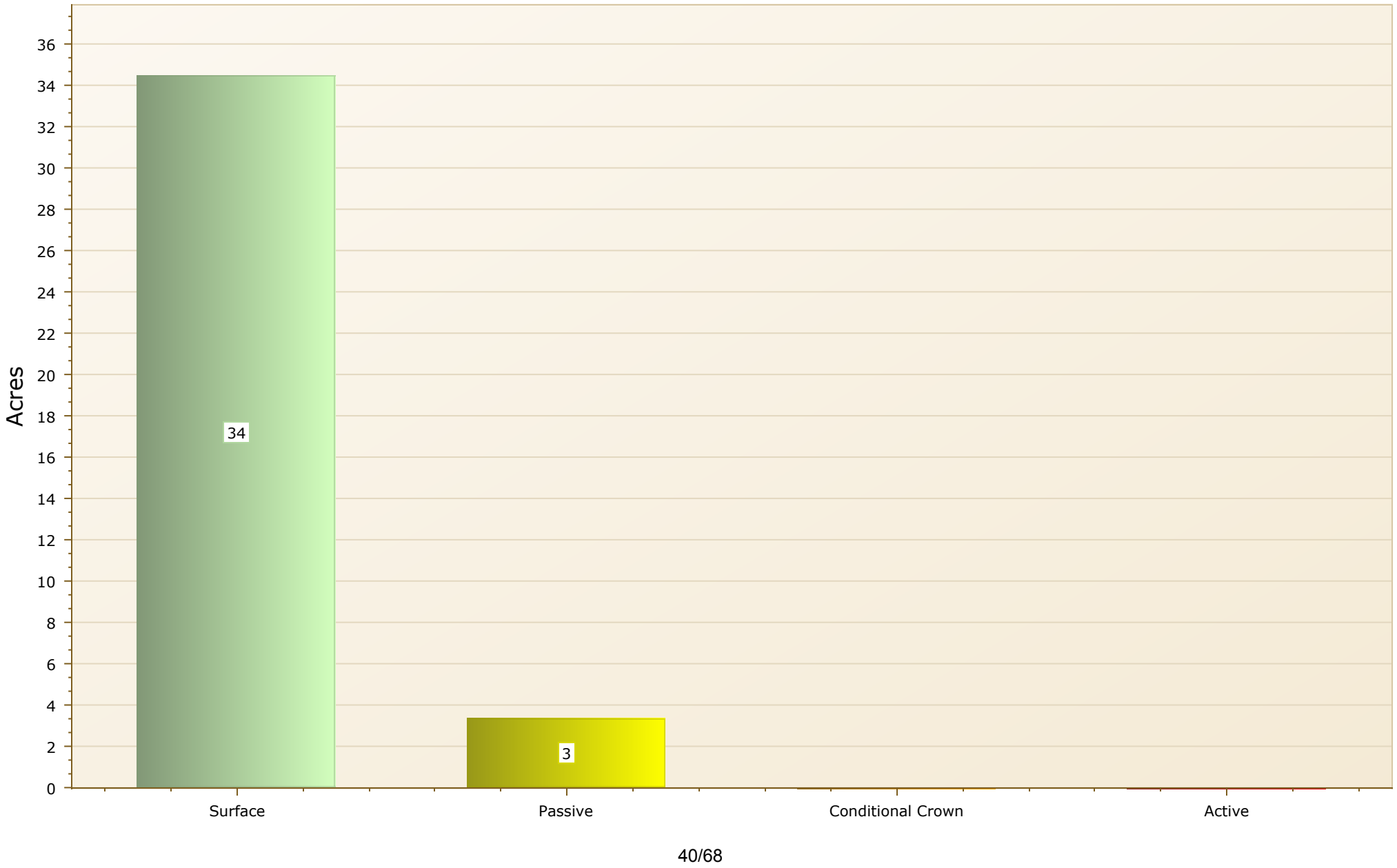
• Active Canopy Fire - A crown fire in which the entire fuel complex (canopy) is involved in flame, but the crowning phase remains dependent on heat released from surface fuel for continued spread (Scott & Reinhardt, 2001).

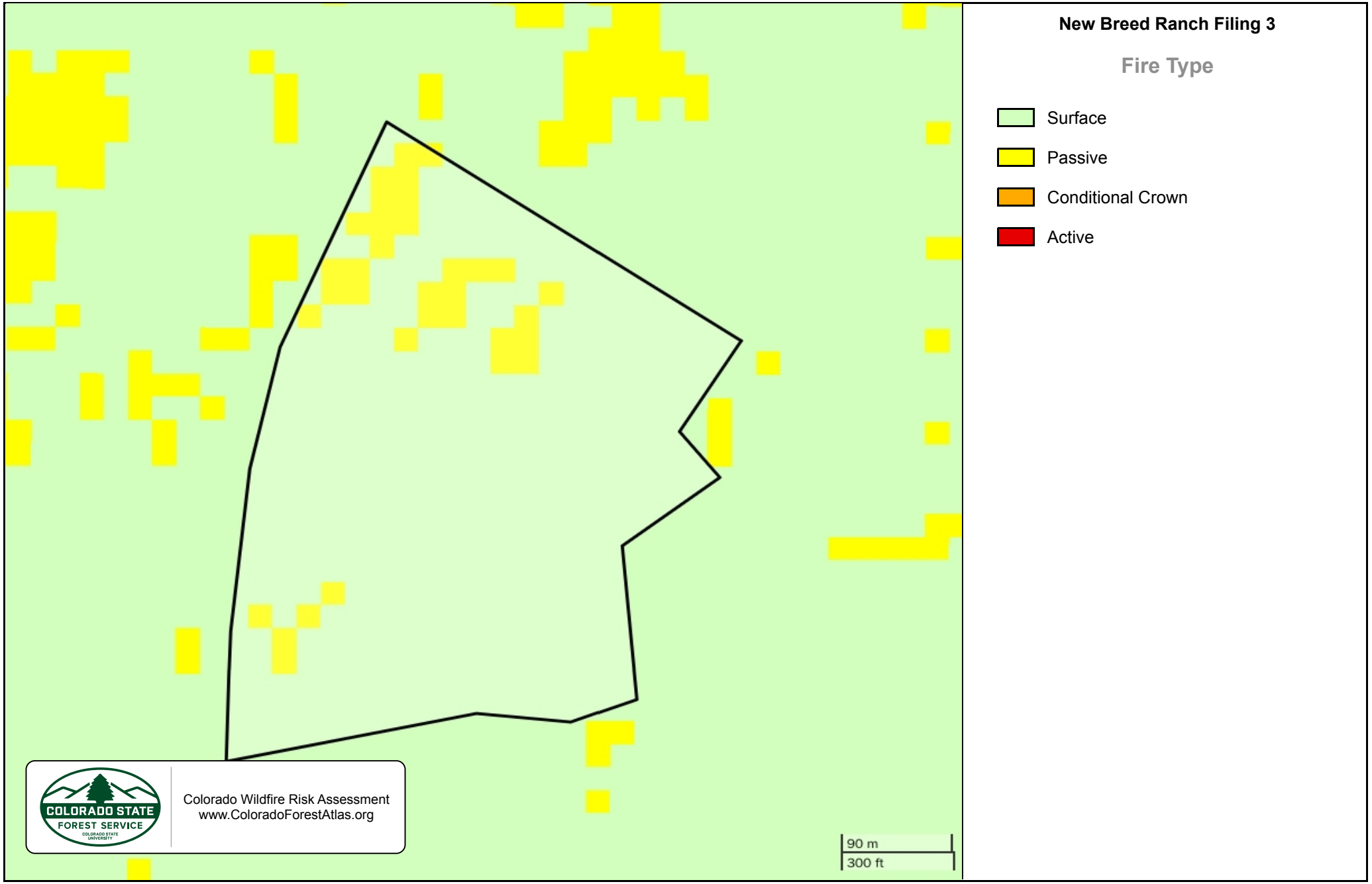
The fire type map is derived at a 20-meter resolution and was estimated based on the extreme weather scenario (percentile 97th). This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county or local planning efforts.

Fire Type	Acres	Percent
Surface	34	91.1%
Passive	3	8.9%
Conditional Crown		0%
Active		0%
Total	**38**	**100%**

Fire Type

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Fire Type
Surface
Passive
Conditional Crown
Active
COLORADO STATE
FOREST SERVICE
Colorado Wildfire Risk Assessment
www.ColoradoForestAtlas.org
90 m
300 ft

Rate of Spread

The typical or representative rate of spread of a potential fire based on a weighted average of four percentile weather categories.

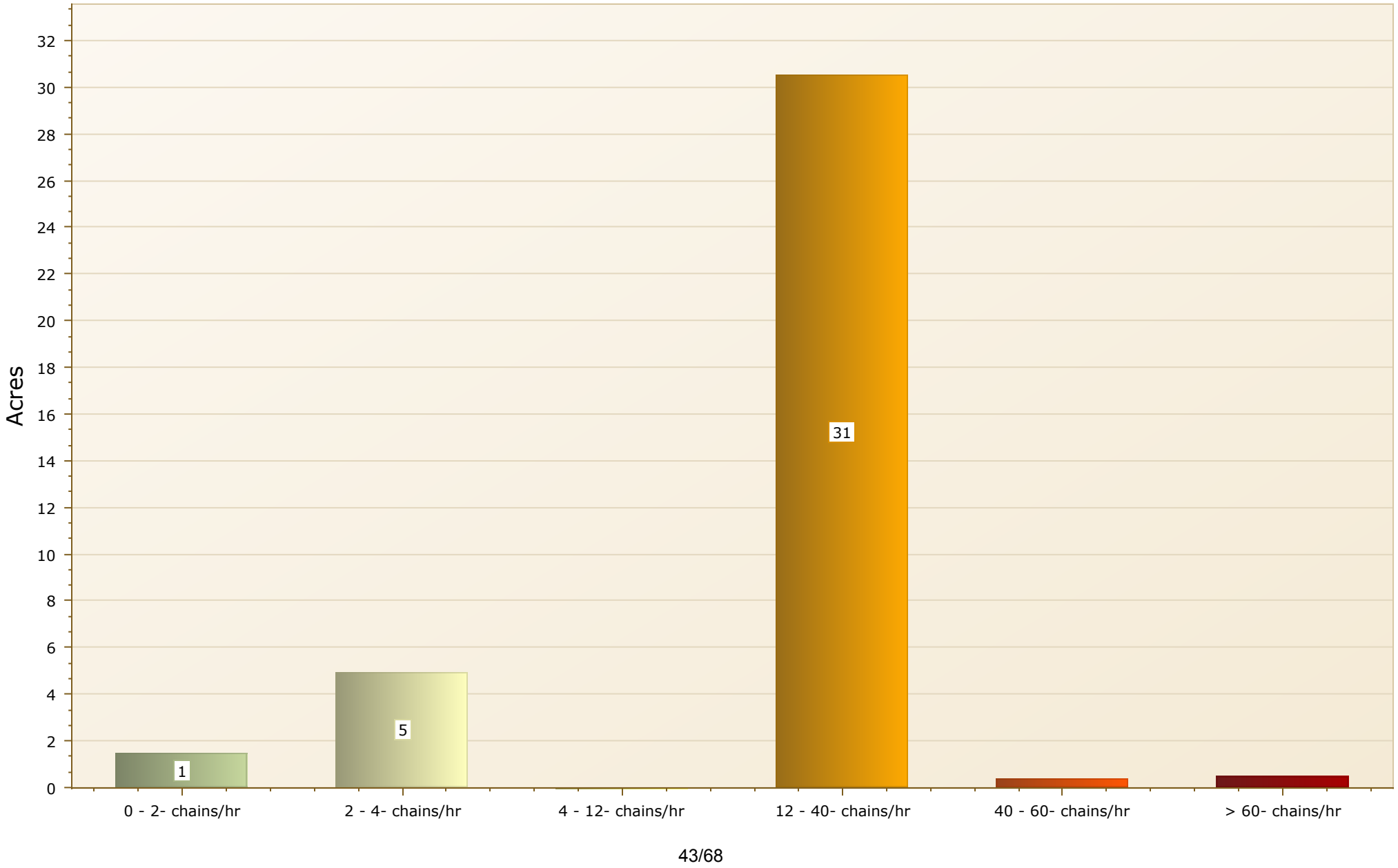
Rate of spread is the speed with which a fire moves in a horizontal direction across the landscape, usually expressed in chains per hour (ch/hr) or feet per minute (ft/min). For purposes of the CO-WRA, this measurement represents the maximum rate of spread of the fire front.

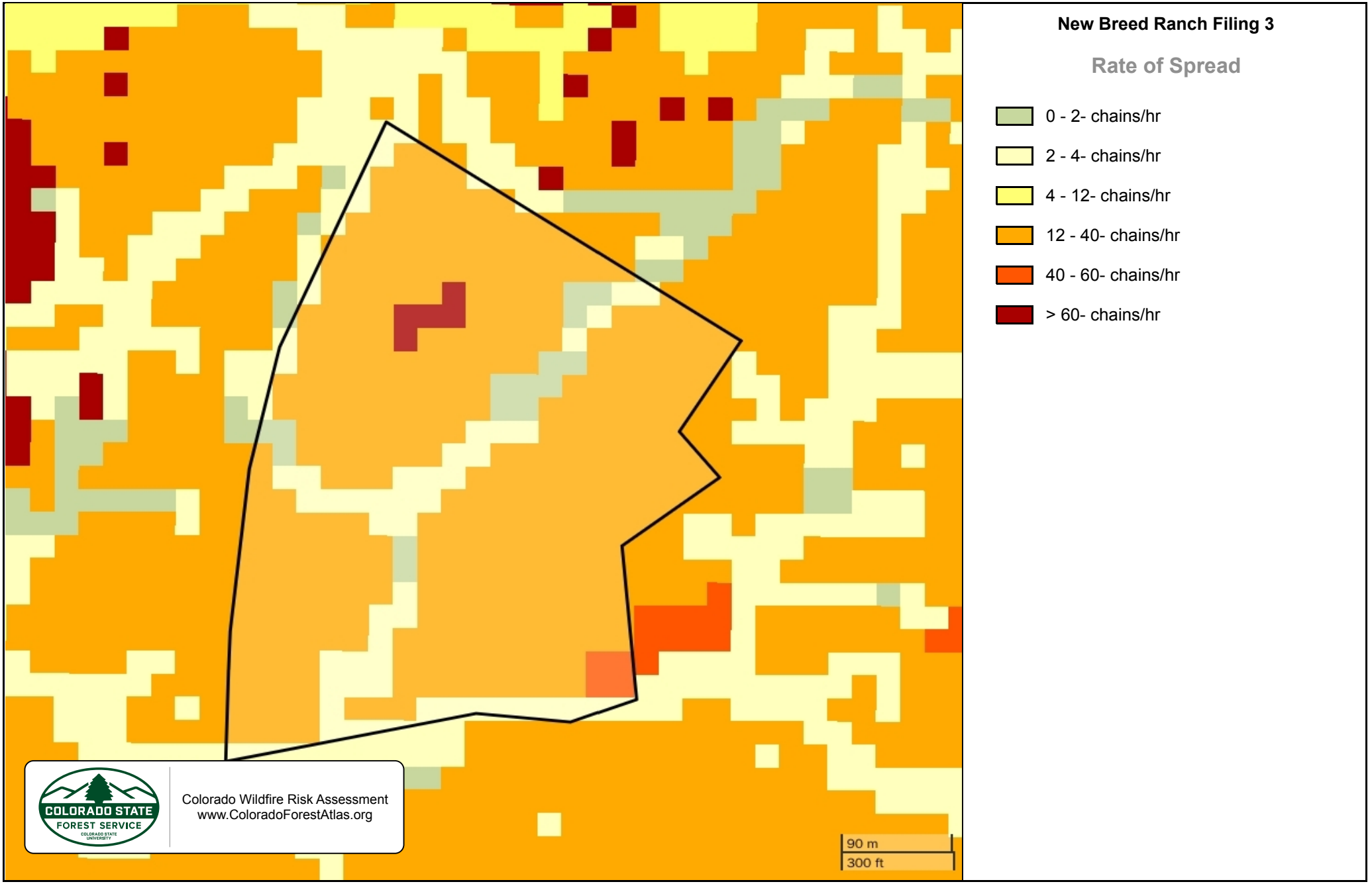
Rate of spread is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for a 20-meter grid cell in Colorado.

Rate of Spread	Acres	Percent
0 - 2- chains/hr	1	3.9%
2 - 4- chains/hr	5	13%
4 - 12- chains/hr		0%
12 - 40- chains/hr	31	80.7%
40 - 60- chains/hr		1%
> 60- chains/hr		1.3%
Total	**38**	**100%**

Rate of Spread

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Rate of Spread
0 - 2- chains/hr
2 - 4- chains/hr
4 - 12- chains/hr
12 - 40- chains/hr
40 - 60- chains/hr
> 60- chains/hr
COLORADO STATE FOREST SERVICE
Colorado Wildfire Risk Assessment
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90 m
300 ft

Surface Fuels

Fire behavior fuel models that contain the parameters required to calculate fire behavior outputs.

Surface fuels, or fire behavior fuel models as they are technically referred to, contain the parameters needed by the Rothermel (1972) surface fire spread model to compute surface fire behavior characteristics, e.g. rate of spread, flame length, fireline intensity, and other fire behavior metrics. As the name might suggest, surface fuels account only for surface fire potential. Canopy fire potential is computed through a separate but linked process. The CO-WRA accounts for both surface and canopy fire potential in the fire behavior outputs.

An up-to-date surface fuel dataset at 20-meter (m) resolution was developed for this project, based on Scott and Burgan (2005) fuel models, enhanced with custom fuels created by Technosylva. The custom fuels distinguish this assessment from previous ones performed in Colorado as they allow a better characterization of fire behavior across the landscape. Additionally, the urban and road custom fuel models included in the assessment are key for better characterizing the exposure, vulnerability and risk of both buildings and population in the Wildland Urban Interface (WUI). This also allows for better modeling of fire encroachment in urban areas considering the building density, community structure and fuels surrounding the buildings and urban areas.

The following custom fuels were included in order to improve the fire modeling in timber, WUI and agricultural areas:

- Timber: 2 new categories (171 and 191)
- Urban: 7 new categories (911,912,913,914,915,916 and 919)
- Roads: 5 new categories (941,942,943,944 and 949)
- Agriculture: 4 new categories (931,932,938a and 939)
- Water: 3 new categories (981,982 and 989)

Additionally, we also considered canopy fuel data to better simulate crown fire behavior. This includes:

- canopy bulk density (CBD),
- canopy base height (CBH),
- canopy cover (CC) and
- canopy height (CH).

Unmanaged forest with dead amd dowmed trees and branches

Slash on the ground indicates that forest management treatments have occurred in this area

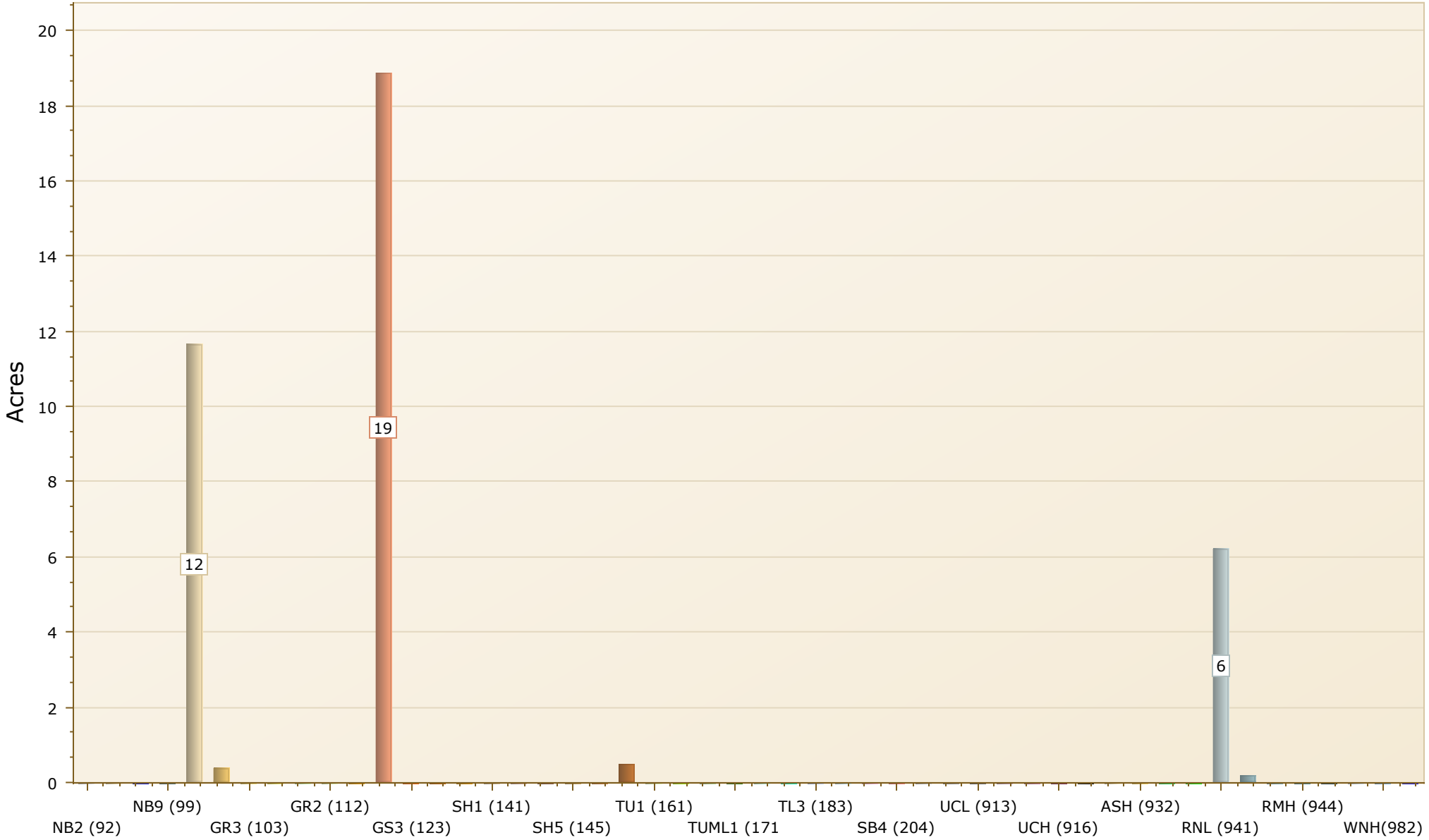
The updated fuel dataset also considered the effects of natural disturbances on vegetation (fires, insect and disease, and harvesting/fuel treatments) that occurred in Colorado from 2013 to 2022. More information about the methods used can be found in the Colorado 2022 Fuels Mapping Final Report.

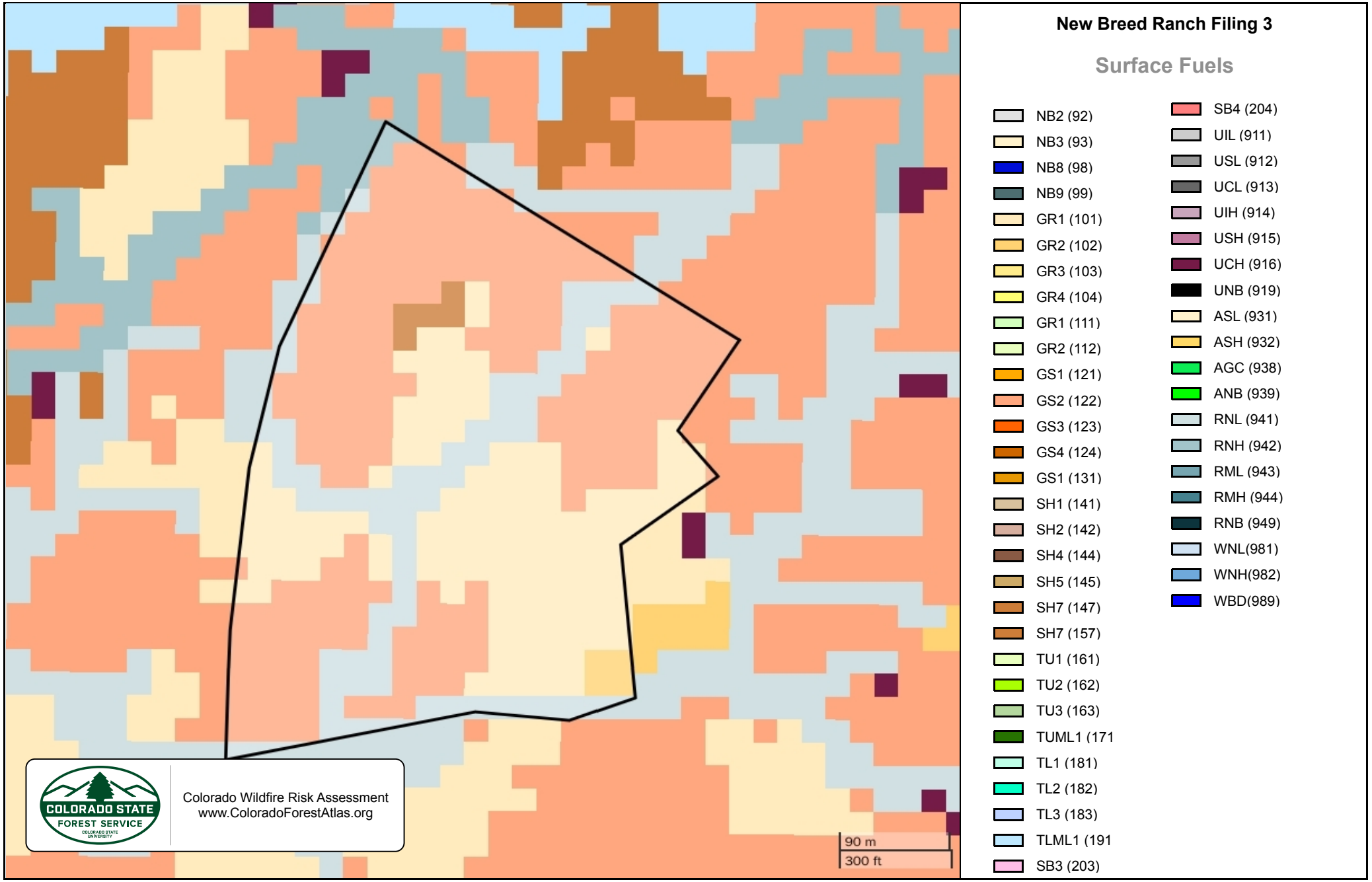
Surface Fuels	Description	Acres	Percent
NB2 (92)	Snow/Ice		0%
NB3 (93)	Agricultural		0%
NB8 (98)	Open Water		0%
NB9 (99)	Bare Ground		0%
GR1 (101)	Short, Sparse Dry Climate Grass	12	30.8%
GR2 (102)	Low Load, Dry Climate Grass		1%
GR3 (103)	Low Load, Very Coarse, Humid Climate Grass		0%
GR4 (104)	Moderate Load, Dry Climate Grass		0%
GR1 (111)	Short, Sparse Dry Climate Grass - ALPINE		0%
GR2 (112)	Low Load, Dry Climate Grass - ALPINE		0%
GS1 (121)	Low Load, Dry Climate Grass-Shrub		0%
GS2 (122)	Moderate Load, Dry Climate Grass-Shrub	19	49.9%
GS3 (123)	Moderate Load, Humid Climate Grass-Shrub		0%
GS4 (124)	High Load, Humid Climate Grass-Shrub		0%
GS1 (131)	Low Load, Dry Climate Grass-Shrub - ALPINE		0%
SH1 (141)	Low Load Dry Climate Shrub		0%
SH2 (142)	Moderate Load Dry Climate Shrub		0%
SH4 (144)	Low Load, Humid Climate Timber-Shrub		0%
SH5 (145)	High Load, Dry Climate Shrub		0%
SH7 (147)	Very High Load, Dry Climate Shrub		0%
SH7 (157)	Very High Load, Dry Climate Shrub		1.3%
TU1 (161)	Low Load Dry Climate Timber-Grass-Shrub		0%
TU2 (162)	Moderate Load, Humid Climate Timber-Shrub		0%
TU3 (163)	Moderate Load, Humid Climate Timber-Grass-Shrub		0%
TUML1 (171	Timber Understory Dynamic ML (TSYL 2022)		0%
TL1 (181)	Low Load Compact Conifer Litter		0%
TL2 (182)	Low Load Broadleaf Litter		0%
TL3 (183)	Moderate Load Conifer Litter		0%
TLML1 (191	Timber Litter ML (TSYL 2022)		0%

Surface Fuels	Description	Acres	Percent
SB3 (203)	High Load Activity Fuel or Moderate Load Blowdown		0%
SB4 (204)	High Load Blowdown		0%
UIL (911)	Isolated urban surrounded by Low FB fuel		0%
USL (912)	Scattered urban surrounded by Low FB fuel		0%
UCL (913)	Urban core surrounded by Low FB fuel		0%
UIH (914)	Isolated urban surrounded by High FB fuel		0%
USH (915)	Scattered urban surrounded by High FB fuel		0%
UCH (916)	Urban core surrounded by High FB fuel		0%
UNB (919)	Unburnable urban areas		0%
ASL (931)	Agricultural Low Load Fuels, with seasonal changes of its Burnable condition		0%
ASH (932)	Agricultural High Load Fuels, with seasonal changes of its Burnable condition		0%
AGC (938)	Golf courses - Non-Burnable (no encroachment)		0%
ANB (939)	Agricultural Fields, maintained in a Non-Burnable condition		0%
RNL (941)	Minor roads Low FB	6	16.4%
RNH (942)	Minor roads High FB		0.5%
RML (943)	Major roads Low FB		0%
RMH (944)	Major roads High FB		0%
RNB (949)	Roads surrounded by non-burnable fuels		0%
WNL(981)	Minor Water streams surrounded by Low Load Fuel (moderate encroachment)		0%
WNH(982)	Minor Water streams surrounded by High Load Fuel (high encroachment)		0%
WBD(989)	Water Bodies		0%
Total		**38**	**100%**

Surface Fuels

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Surface Fuels
NB2 (92)
NB3 (93)
NB8 (98)
NB9 (99)
GR1 (101)
GR2 (102)
GR3 (103)
GR4 (104)
GR1 (111)
GR2 (112)
GS1 (121)
GS2 (122)
GS3 (123)
GS4 (124)
GS1 (131)
SH1 (141)
SH2 (142)
SH4 (144)
SH5 (145)
SH7 (147)
SH7 (157)
TU1 (161)
TU2 (162)
TU3 (163)
TUML1 (171
TL1 (181)
TL2 (182)
TL3 (183)
TLML1 (191
SB3 (203)
SB4 (204)
UIL (911)
USL (912)
UCL (913)
UIH (914)
USH (915)
UCH (916)
UNB (919)
ASL (931)
ASH (932)
AGC (938)
ANB (939)
RNL (941)
RNH (942)
RML (943)
RMH (944)
RNB (949)
WNL(981)
WNH(982)
WBD(989)
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90 m
300 ft

Vegetation

The Vegetation map describes the general vegetation and landcover types across the state of Colorado.

In the CO-WRA, the Vegetation dataset is used to support the development of the Surface Fuels, Canopy Cover, Canopy Stand Height, Canopy Base Height, and Canopy Bulk Density datasets.
The 2020 LANDFIRE program data product (Existing Vegetation Type) was used to compile the Vegetation data for the CO-WRA. This reflects data current to 2020. The LANDFIRE EVT data were classified to reflect general vegetation cover types for representation with CFA.

Oak shrublands are commonly found añlong dry foothills and lower mountain slopes, and are often situates above Piñyon-juniper.

Piñyon-juniper woodlands are common in southern and southwestern Colorado

Douglas-fir understory in a ponderosa pine forest

Grasslands occur both on Colorado's Eastern Plains and on the Western Slope.

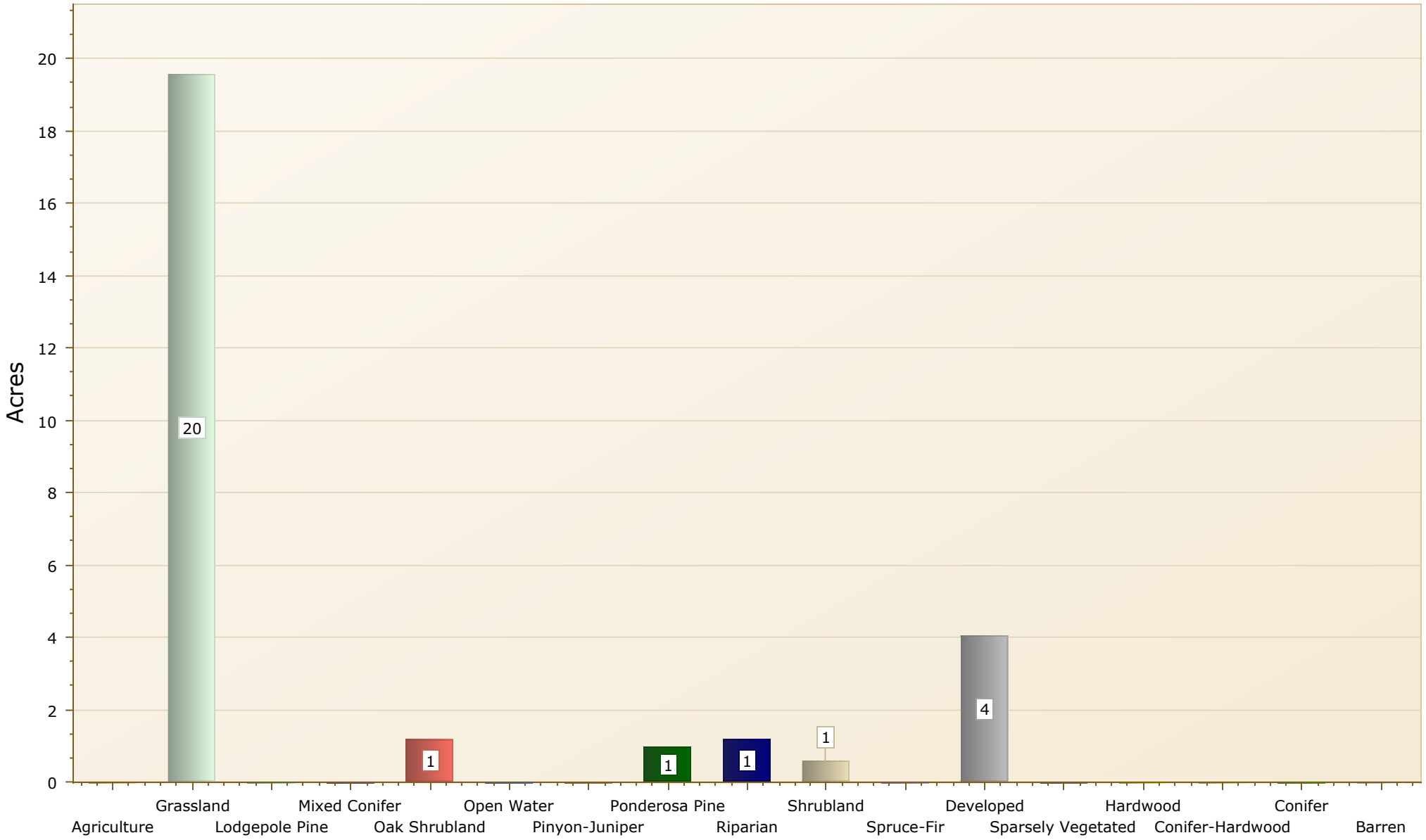
Wildland fire threat increases in lodgepole pine as the dense forest grow old

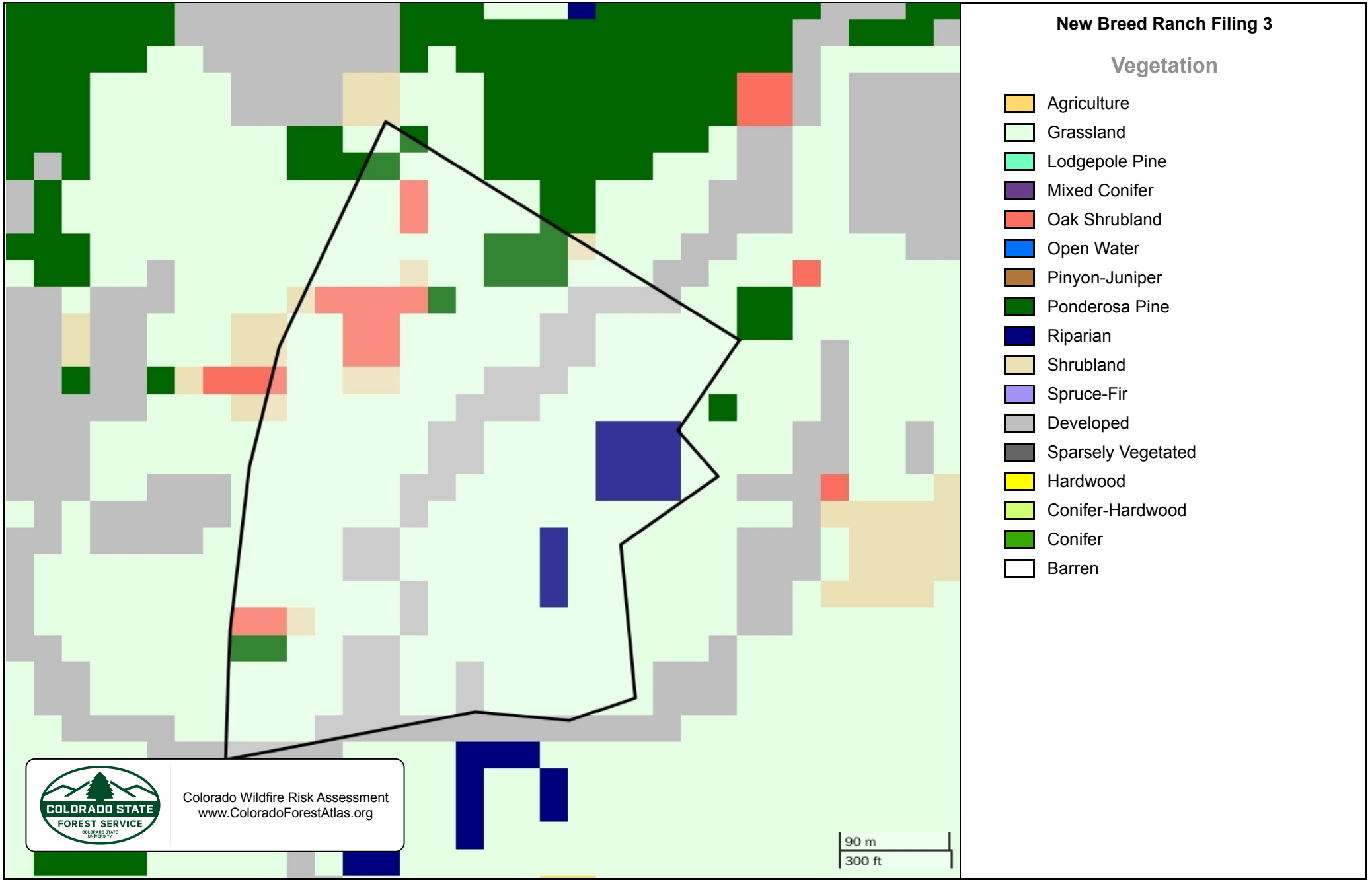
Overly dense ponderosa pine, a dominant species of the montane zone

Vegetation Class	Acres	Percent
Agriculture		0%
Grassland	20	71%
Lodgepole Pine		0%
Mixed Conifer		0%
Oak Shrubland	1	4.3%
Open Water		0%
Pinyon-Juniper		0%
Ponderosa Pine	1	3.6%
Riparian	1	4.3%
Shrubland	1	2.2%
Spruce-Fir		0%
Developed	4	14.7%
Sparsely Vegetated		0%
Hardwood		0%
Conifer-Hardwood		0%
Conifer		0%
Barren		0%
Total	**28**	**100%**

Vegetation

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Vegetation
Agriculture
Grassland
Lodgepole Pine
Mixed Conifer
Oak Shrubland
Open Water
Pinyon-Juniper
Ponderosa Pine
Riparian
Shrubland
Spruce-Fir
Developed
Sparsely Vegetated
Hardwood
Conifer-Hardwood
Conifer
Barren
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Watershed Protection Risk

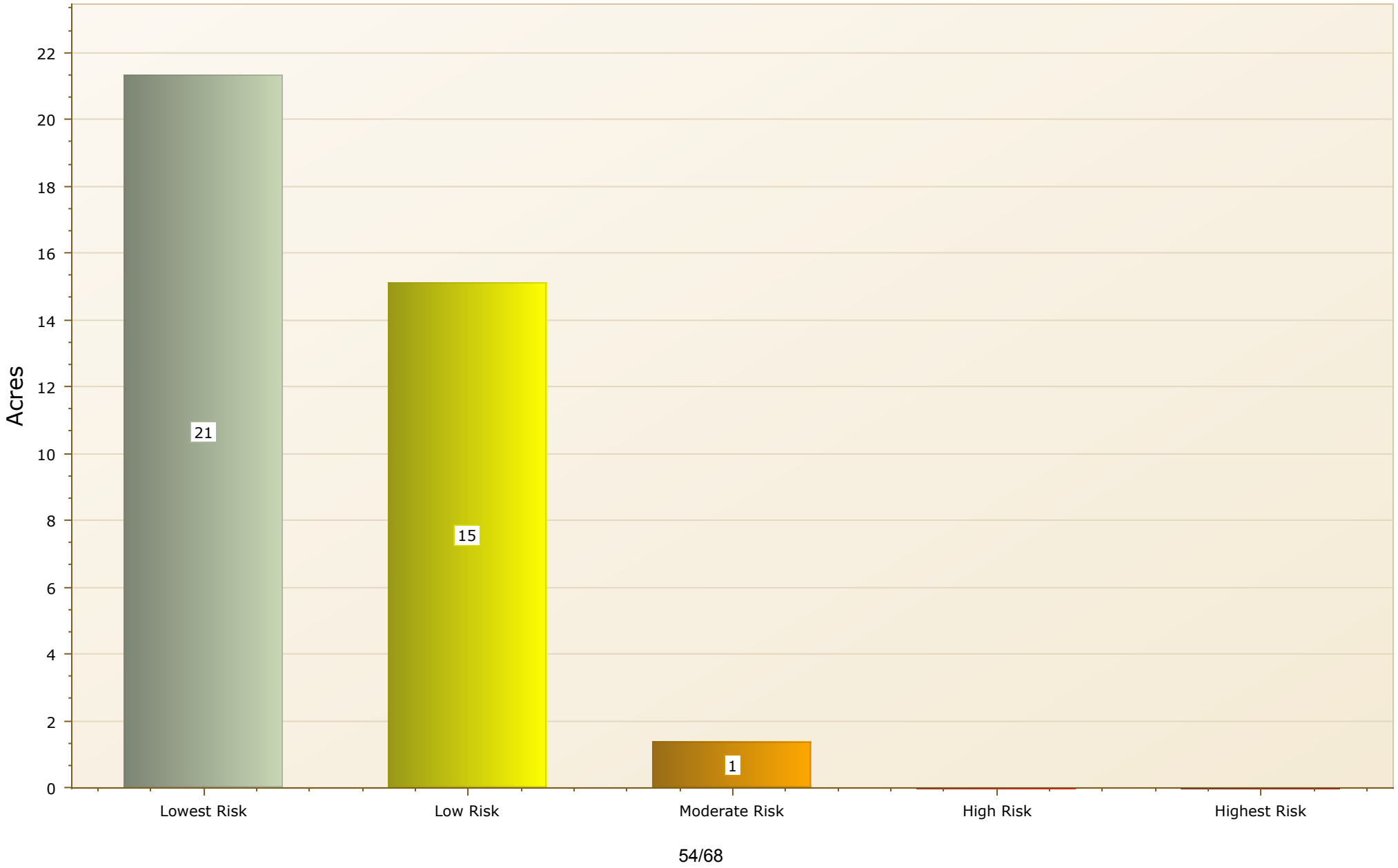
A measure of the risk to Watershed Protection Areas based on the potential negative impacts from wildfire.

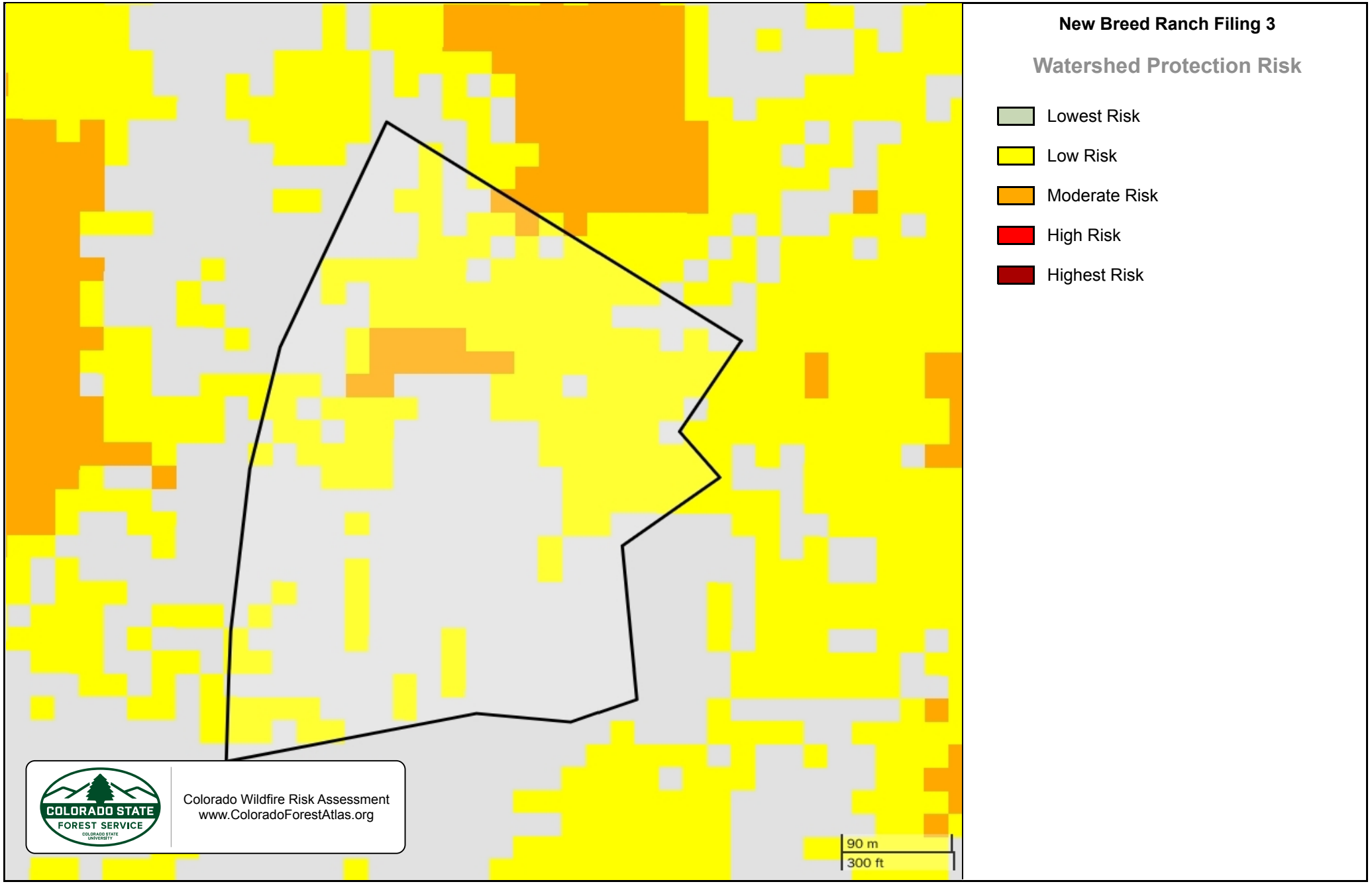
In areas that experience low-severity burns, fire events can serve to eliminate competition, rejuvenate growth and improve watershed conditions. But in landscapes subjected to high, or even moderate-burn severity, the post-fire threats to public safety and natural resources can be extreme.
High-severity wildfires remove virtually all forest vegetation – from trees, shrubs and grasses down to discarded needles, decomposed roots and other elements of ground cover or duff that protect forest soils. A severe wildfire also can cause certain types of soil to become hydrophobic by forming a waxy, water-repellent layer that keeps water from penetrating the soil, dramatically amplifying the rate of runoff.
The loss of critical surface vegetation leaves forested slopes extremely vulnerable to large-scale soil erosion and flooding during subsequent storm events. In turn, these threats can impact the health, safety and integrity of communities and natural resources downstream. The likelihood that such a post-fire event will occur in Colorado is increased by the prevalence of highly erodible soils in several parts of the state, and weather patterns that frequently bring heavy rains on the heels of fire season.
In the aftermath of the 2002 fire season, the Colorado Department of Health estimated that 26 municipal water storage facilities were shut down due to fire and post-fire impacts. The potential for severe soil erosion is a consequence of wildfire because as a fire burns, it destroys plant material and the litter layer. Shrubs, forbs, grasses, trees and the litter layer disperse water during severe rainstorms. Plant roots stabilize the soil, and stems and leaves slow the water to give it time to percolate into the soil profile. Fire can destroy this soil protection.
The risk index has been calculated by combining the Watershed Protection data with a measure of fire intensity using a Response Function approach. Those areas with the highest negative impact (-9) represent areas with high potential fire intensity and high importance for ecosystem services. Those areas with the lowest negative impact (-1) represent those areas with low potential fire intensity and a low importance for ecosystem services. The response function outputs were combined into 5 qualitative classes.

Watershed Protection Risk	Acres	Percent
Lowest Risk	21	56.4%
Low Risk	15	39.9%
Moderate Risk	1	3.6%
High Risk		0%
Highest Risk		0%
Total	**38**	**100%**

Watershed Protection Risk

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Watershed Protection Risk
Lowest Risk
Low Risk
Moderate Risk
High Risk
Highest Risk
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Riparian Assets Risk

A measure of the risk to riparian areas based on the potential negative impacts from wildfire.

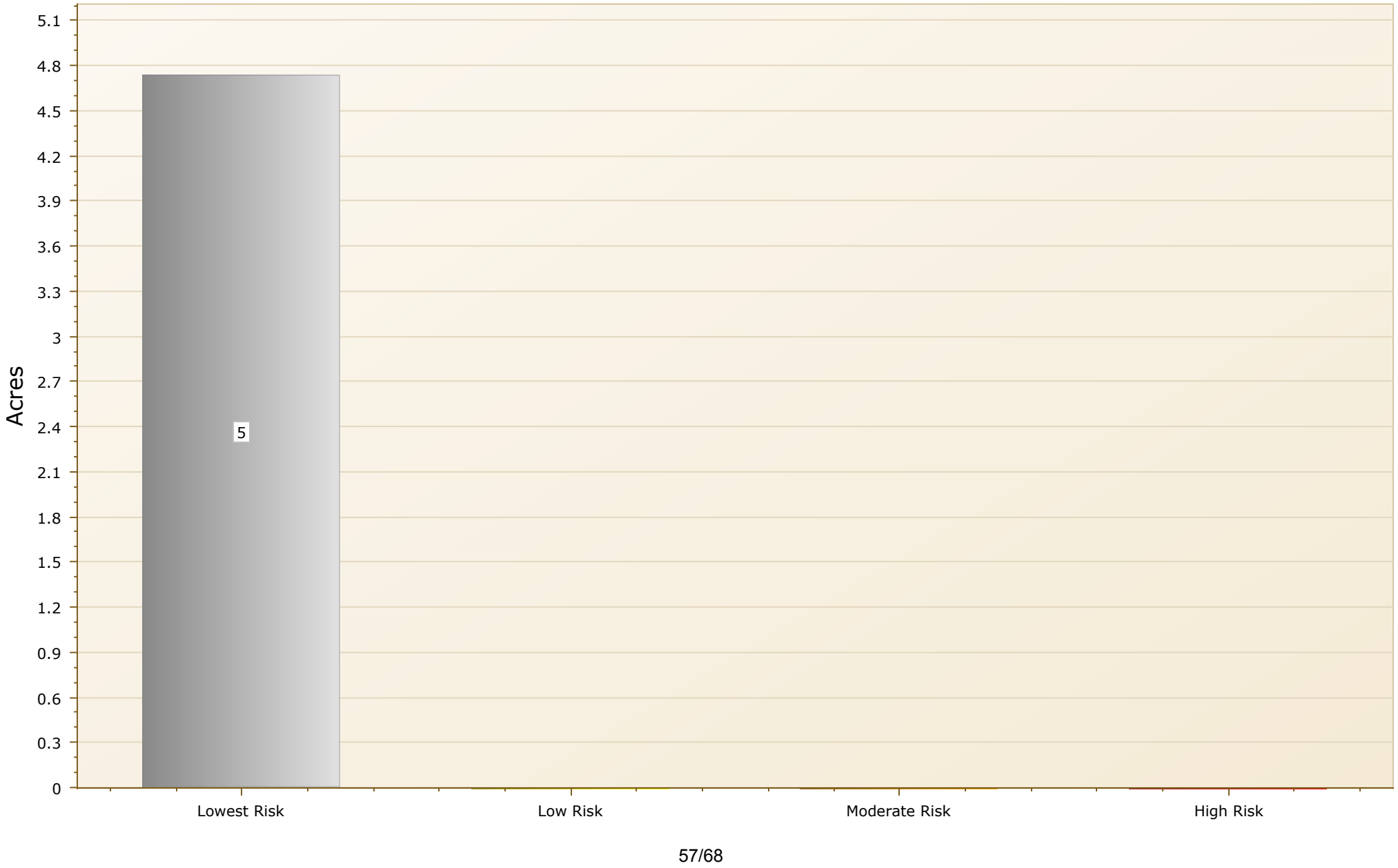
The risk index has been calculated by combining the Riparian Assets data with a measure of fire intensity using a Response Function approach. Those areas with the highest negative impact (-9) represent areas with high potential fire intensity and high importance for ecosystem services. Those areas with the lowest negative impact (-1) represent those areas with low potential fire intensity and a low importance for ecosystem services. The response function outputs were combined into 5 qualitative classes.

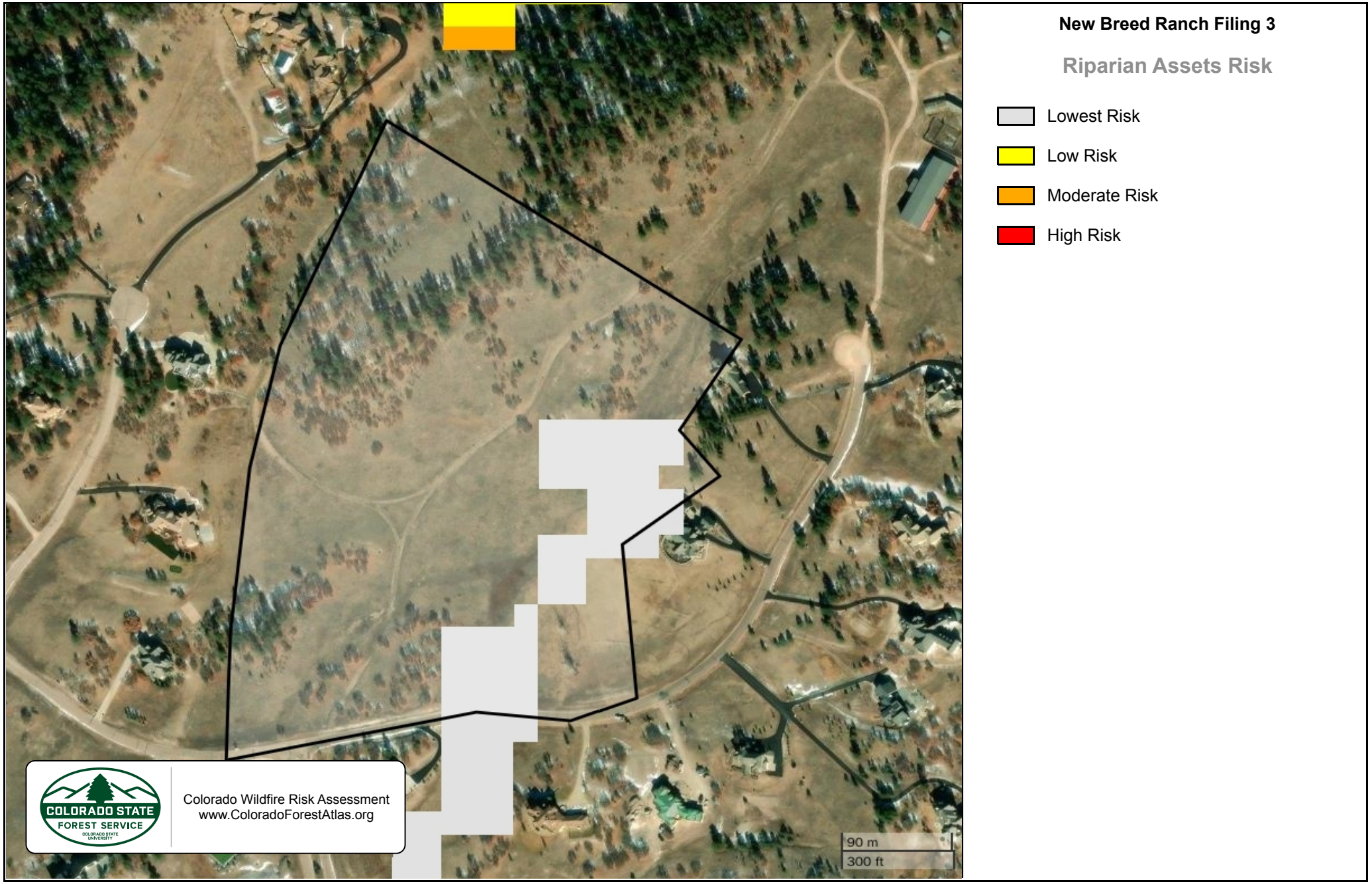
This risk output is intended to supplement the Watershed Protection Risk Index by identifying wildfire risk within the more detailed riparian areas.

Riparian Assets Risk		Acres	Percent
	Lowest Risk	5	100%
	Low Risk		0%
	Moderate Risk		0%
	High Risk		0%
Total		**5**	**100%**

Riparian Assets Risk

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Riparian Assets Risk
Lowest Risk
Low Risk
Moderate Risk
High Risk
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Forest Assets Risk

A measure of the risk to forested areas based on the potential negative impacts from wildfire.
This layer identifies those forested areas with the greatest potential for adverse effects from wildfire.This layer identifies those forested areas with the greatest potential for adverse effects from wildfire.

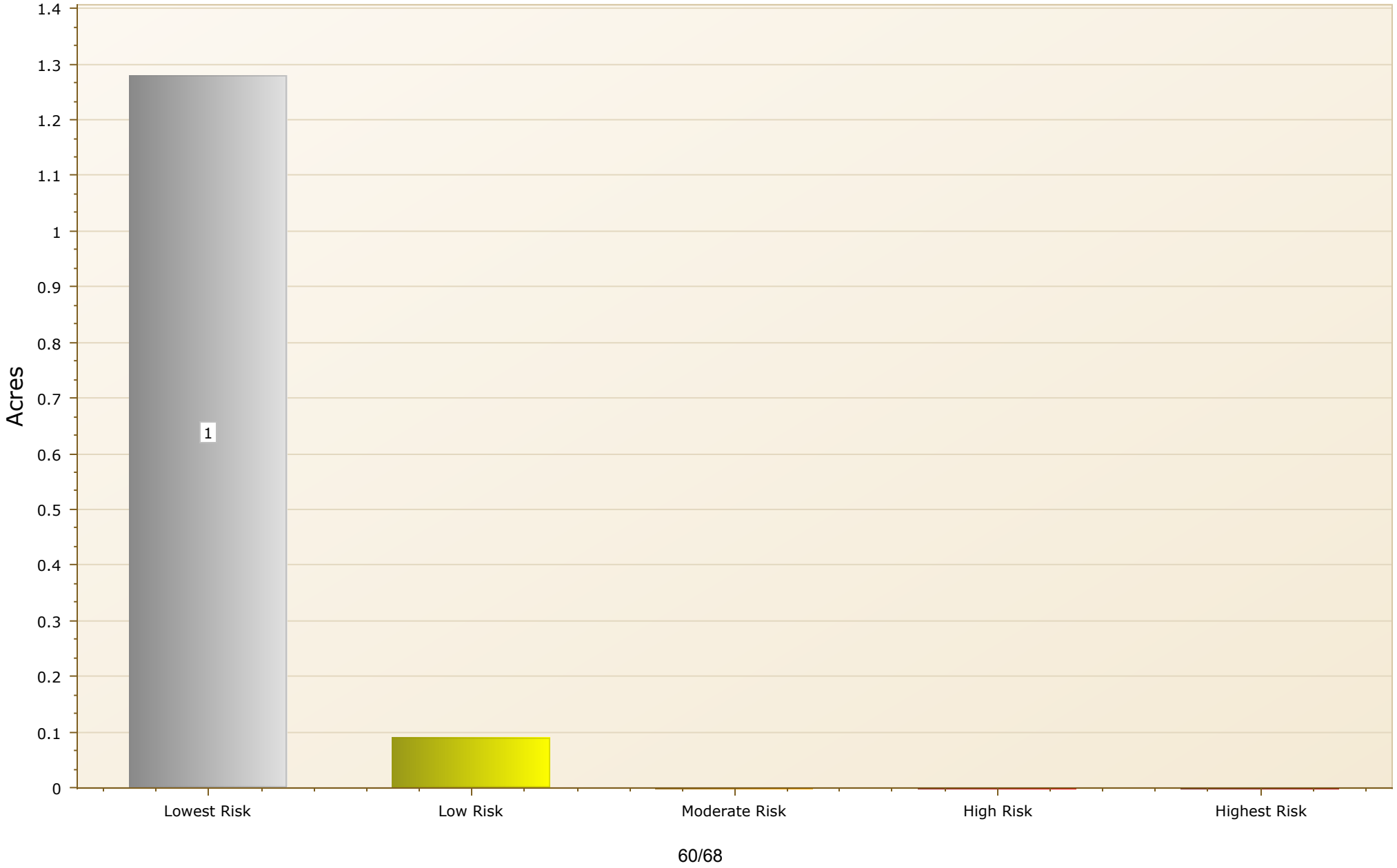
The risk index has been calculated by combining the Forest Assets data with a measure of fire intensity using a Response Function approach. Those areas with the highest negative impact (-9) represent areas with high potential fire intensity and low resilience or adaptability to fire. Those areas with the lowest negative impact (-1) represent those areas with low potential fire intensity and high resilience or adaptability to fire. The response function outputs were combined into 5 qualitative classes.

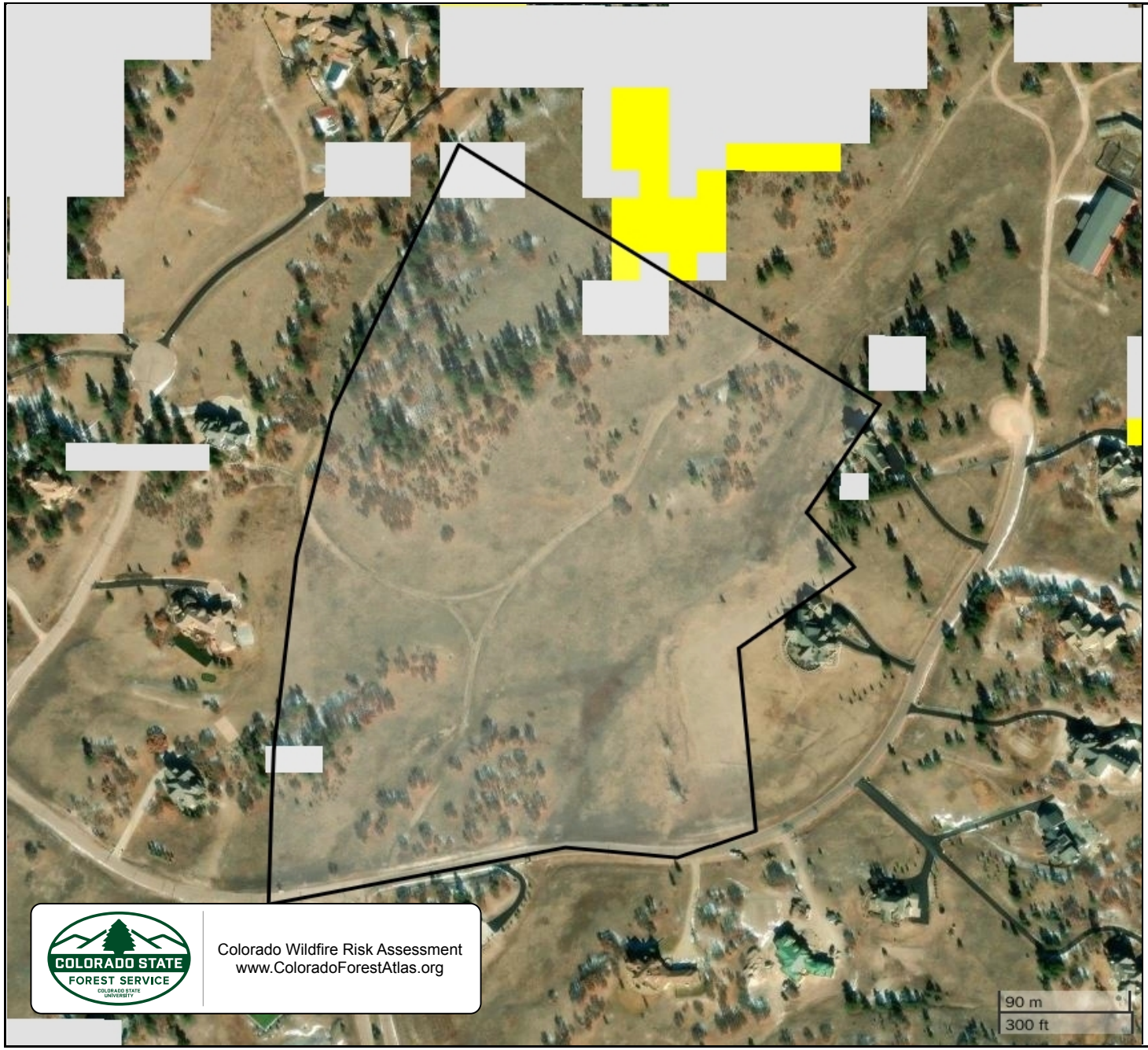
This risk output is intended to provide an overall forest index for potential impact from wildfire. This can be applied to consider aesthetic values, ecosystem services, or economic values of forested lands.

Forest Assets Risk	Acres	Percent
Lowest Risk	1	92.8%
Low Risk		7.1%
Moderate Risk		0%
High Risk		0%
Highest Risk		0%
Total	**1**	**100%**

Forest Assets Risk

New Breed Ranch Filing 3





New Breed Ranch Filing 3

Forest Assets Risk

- Lowest Risk
- Low Risk
- Moderate Risk
- High Risk
- Highest Risk

Building Damage Potential

This metric estimates the potential for building loss and was derived using proprietary data from Technosylva Inc. on building damages that was created by analyzing 13 years of building damage data from state agency inspections after large fires.

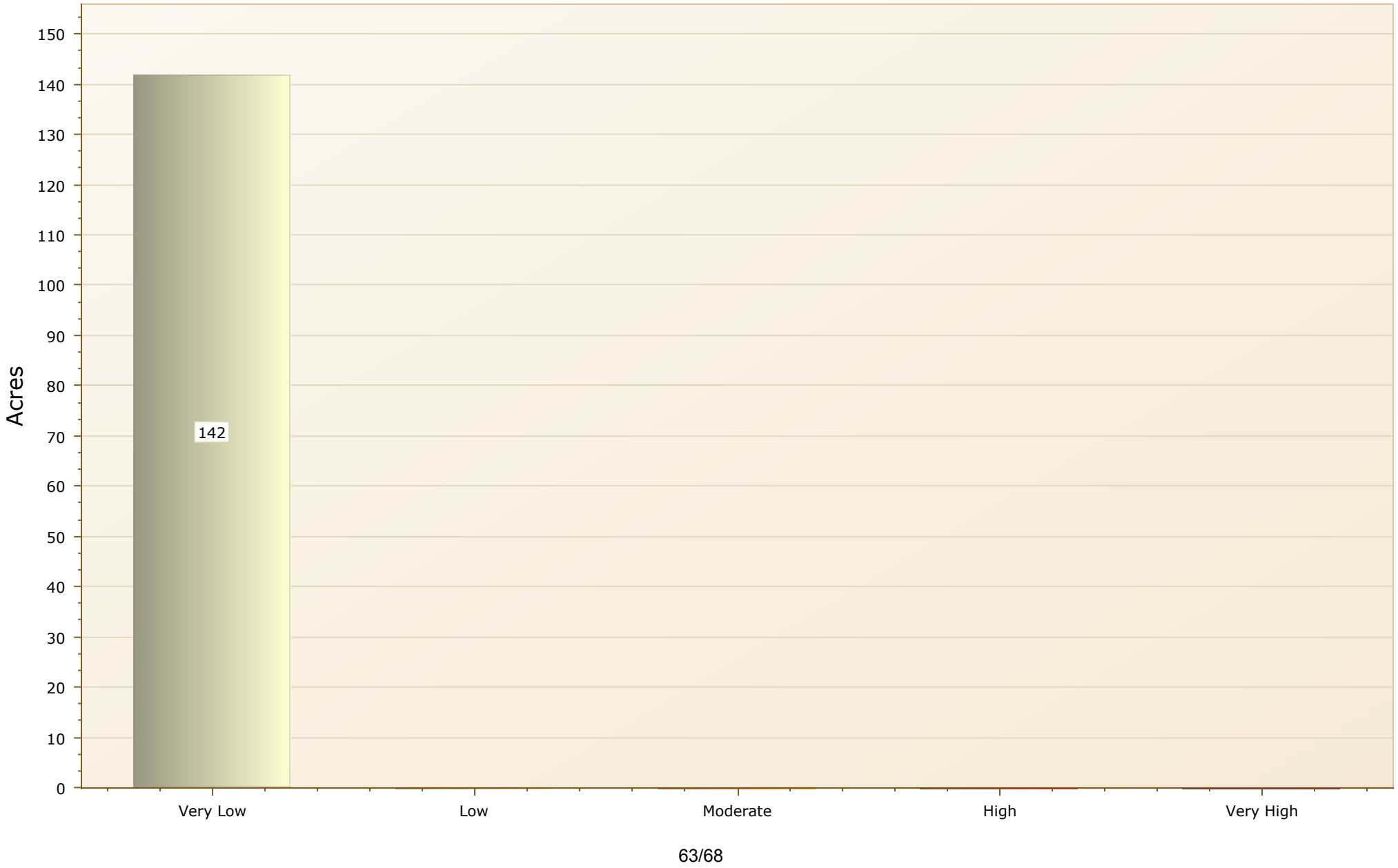
BDP is a spatially variable metric that is calculated on a building-by-building basis and aggregated to Uber H3 hexagons, providing a measure of the number of potential buildings lost based on the number of buildings threatened by fires in the specific area. BDP was calibrated using Machine Learning algorithms that identified the key factors that influenced building loss from historical damage inspection databases. The model has been calibrated using 13 years of damage inspection data and validated across multiple Western States with current wildfire data.

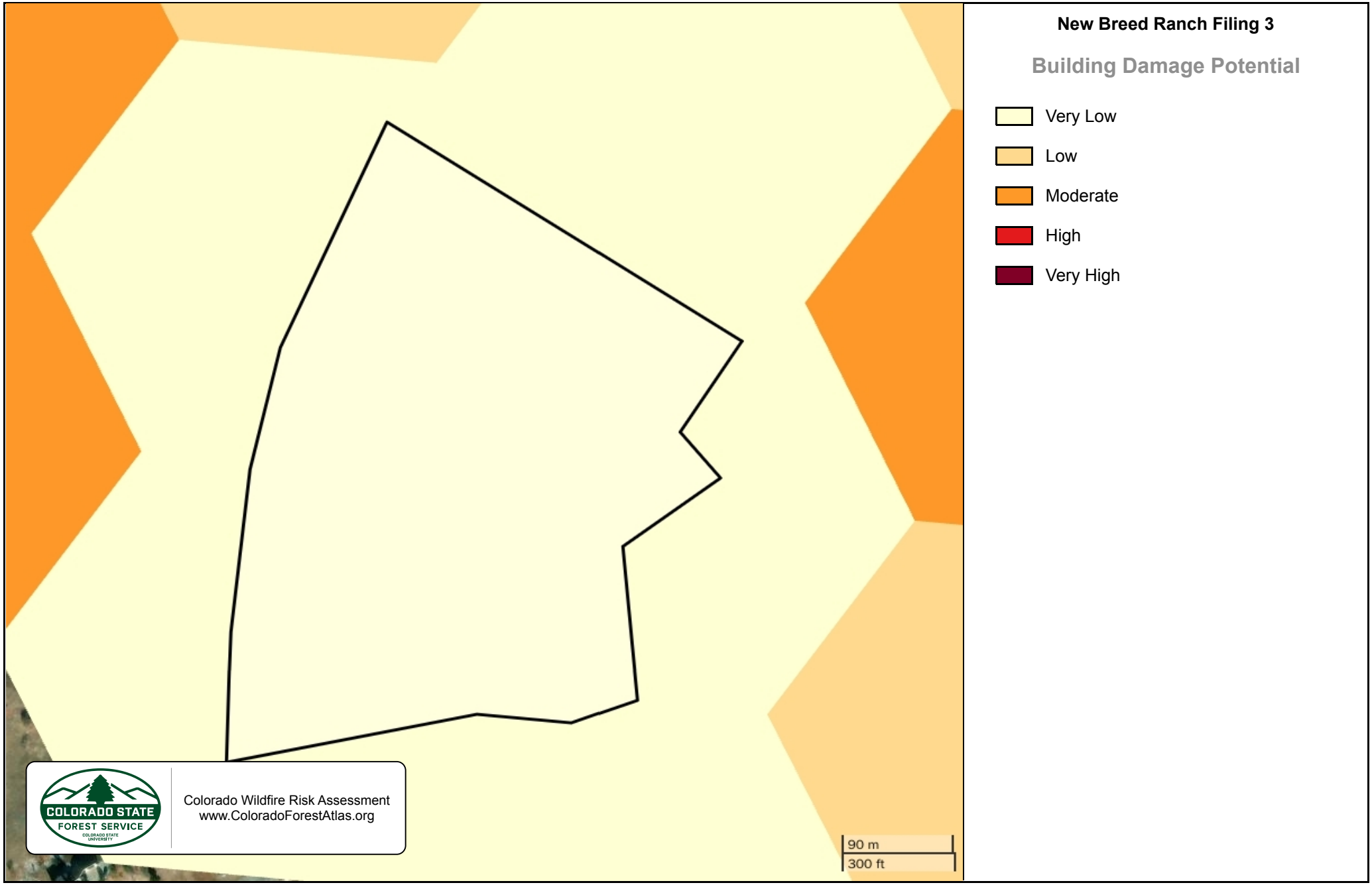
BDP is available as a static risk layer, although a key factor involved in the metric is conditional fire behavior. Conditional Flame Length derived in the fire behavior analysis conducted for the 2022 CO-WRA was used. However, the metric can also be used as a dynamic layer when modulated by the fire intensity of an active wildfire through conventional fire behavior analysis. Although applied as a static layer for the 2022 CO-WRA, the metric is used operationally in California by state agencies and private industry for risk forecasting

Building Damage Potential	Acres	Percent
Very Low	142	100%
Low		0%
Moderate		0%
High		0%
Very High		0%
Total	**142**	**100%**

Building Damage Potential

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Building Damage Potential
Very Low
Low
Moderate
High
Very High
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300 ft

Defensible Space Index

The defensible space in a Wildfire Urban Interface (WUI) analysis context refers to the space that surrounds a specific building and can be used to define the hazard, or the exposure, to a wildfire occurrence. In this area, natural and manmade fuels are treated, cleared or reduced to slow the spread of wildfire near structures.

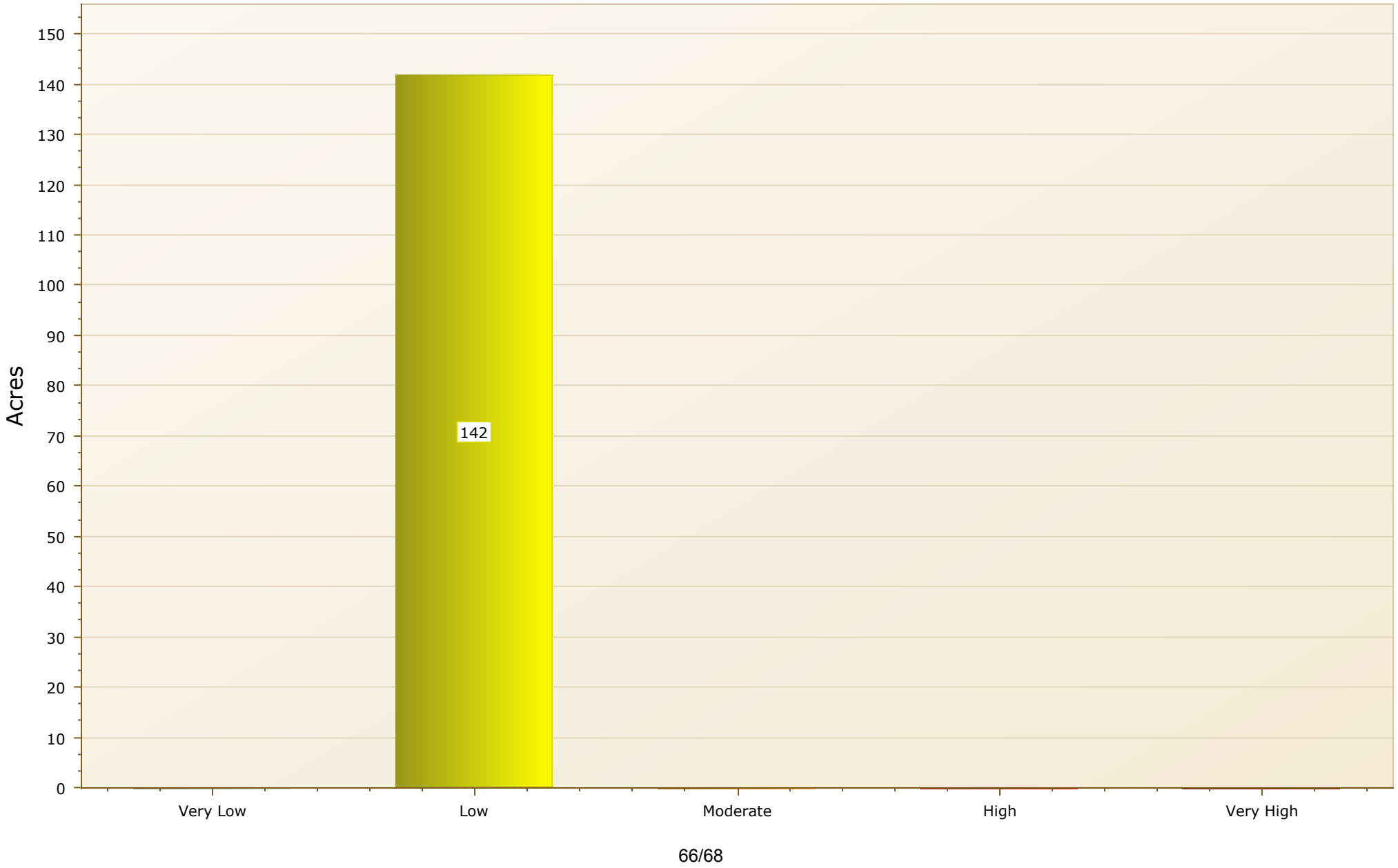
Individual building footprints were used to identify structure locations. Buildings were then grouped using Uber's hexagonal hierarchical spatial index. Within each hexagon, the building values were averaged and applied to the hexagon to remove building specific metrics. This provides a detailed measure of defensible space characteristics for small areas consistent with the accuracy of the structure locations and wildfire fuels and risk analysis data.

Each hexagon in the defensible space risk has a relative value from 0 to 1 that represents the average building hazard in that hexagon. This defensible space value is based on three spatial components/variables: 1) canopy cover, 2) slope, and 3) fuel models present within the buffer around the buildings analyzed.

Defensible Space Index	Acres	Percent
Very Low		0%
Low	142	100%
Moderate		0%
High		0%
Very High		0%
Total	**142**	**100%**

Defensible Space Index

New Breed Ranch Filing 3




New Breed Ranch Filing 3
Defensible Space Index
Very Low
Low
Moderate
High
Very High
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90 m
300 ft

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