

GARFIELD COUNTY WILDFIRE SMOKE PREPAREDNESS PLAN



BUILDING SMOKE-READY COMMUNITIES



Garfield County Wildfire Smoke Plan

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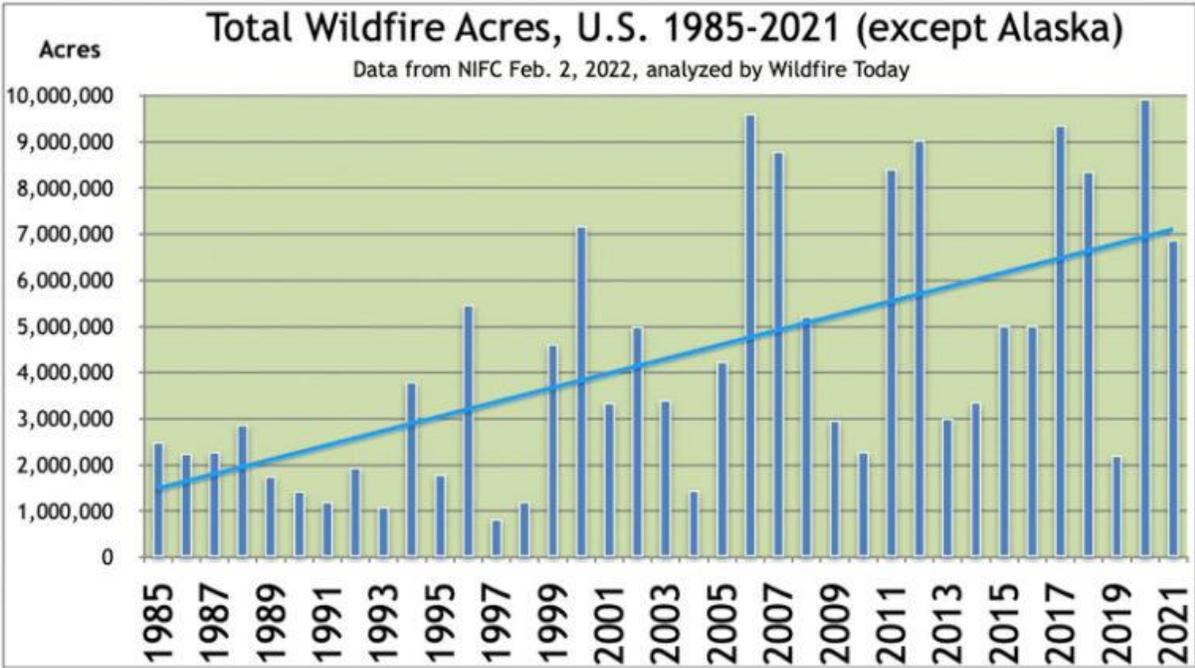
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Background and purpose

1.1 Key Information

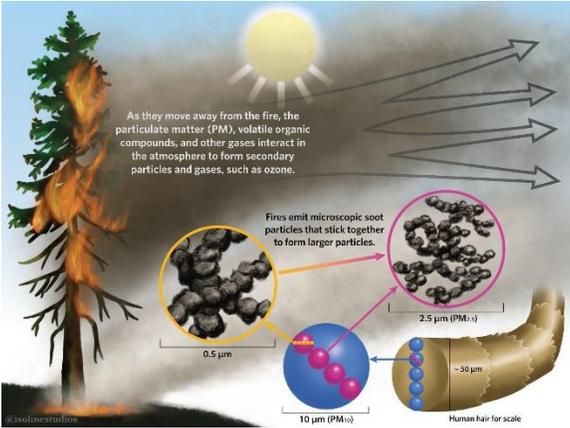
Garfield County is located in an area at high risk for wildland fire and smoke impacts. Colorado and the western U.S. are becoming hotter and drier. As a result, wildfires have increased in frequency and severity. Wildfires cause smoke events that affect large areas, often traveling hundreds of miles beyond where the fire is burning and impacting other states. Trends show that wildfires will continue to become more frequent in the coming years due to several factors including longer fire seasons, changing weather patterns, and increased numbers of people living next to or recreating in areas prone to wildfires. From 2011 to 2021, between 3.6 and 10.1 million acres of land have burned each year in the U.S.



Total Wildfire Acres Burned, U.S. 1985-2021 (National Interagency Fire Center, 2021)

Wildfire smoke consists of many complex ingredients. Measuring the **particulate matter (PM_{2.5})** in the air is a way of measuring how bad wildfire smoke is. PM_{2.5} are small particles that reduce visibility and cause air to appear hazy. PM_{2.5} particles can travel deep into the lungs when inhaled causing severe or sudden:

- eye, nose, throat, and lung irritation
- coughing, wheezing, sneezing, congestion
- chest discomfort
- shortness of breath

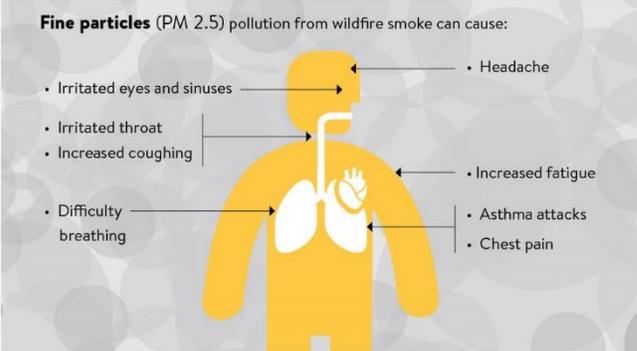


People with **asthma** and **heart disease** may have more severe symptoms from wildfire smoke. **Children, the elderly,** and those involved in **outdoor work/exercise** are more likely to be sensitive to these effects.

Prolonged exposure to PM_{2.5} may lead to

- chronic bronchitis
- reduced lung function
- an increase in the risk of lung cancer and heart disease

Wildfire Smoke Health Impacts



1.2. How this document can be used and why it was created. Garfield County organizations and residents can use this guide as a resource to navigate smoke events and increase awareness regarding the dangers of wildfire smoke exposure. This plan contains localized information that can be used for outreach and education including templates for media messages, fact sheets, and mapping tools.

Due to the increase in wildfire smoke, Garfield County Public Health decided to take action to protect the community, including vulnerable populations, from future wildfire smoke events. Garfield, Eagle, and Pitkin County Public Health, the U.S. Environmental Protection Agency (EPA), and regional partner agencies *see *Appendix A*, participated in a year-long (June 2021 -

June 2022) series of educational workshops led by national and regional wildfire experts. Plan updates will be maintained by Garfield County Public Health (GCPH).

I. Community overview and potential impacts on specific groups

Garfield County (GC), Colorado is primarily rural with a large farming, ranching, outdoor recreation, and tourism industry. The majority of individuals speak either English or Spanish.

The following table can **help with reaching critical populations and stakeholders** and includes the names of local agencies that work directly with these groups that may be able to amplify messages.

LatinX/English as a second language	26% of the population are non-English speakers, with 93% of those speaking Spanish
Vulnerabilities	<ul style="list-style-type: none"> • Language barriers make it more difficult to receive and follow directions or interact with agencies before, during, or after a wildfire disaster • Wildfire smoke may amplify existing inequalities within the population • This population is disproportionately affected by racial discrimination, exploitation, economic hardships, and fear of deportation in their everyday lives
Local organizations	<ul style="list-style-type: none"> • Literacy Outreach • Valley Settlement Project • English in Action • Voces Unidas de las Montañas • Mi Salud, Mi Charco • Madres En Acción de Rifle
Local leadership	Elected officials, county and municipal leadership, safety and public-serving organizations
Considerations	<ul style="list-style-type: none"> • Community leaders should be informed at the earliest point in any incident
Local organizations	<ul style="list-style-type: none"> • County and municipal leadership • Law enforcement/fire agencies • Hospital, medical and behavioral health providers • Human service or community advocacy organizations

Media	Increases ability to reach individuals
Considerations	<ul style="list-style-type: none"> • Ensure a variety of media platforms • Social media channels with high community participation/engagement • Newspapers, radio, TV
Local organizations	<ul style="list-style-type: none"> • Garfield County Communications maintains an up-to-date list of local news outlets
Older adults	≥65 years of age make up 13% of population
Vulnerabilities	<ul style="list-style-type: none"> • Older adults have a higher prevalence of underlying diseases such as Chronic Obstructive Pulmonary Disease (COPD) and heart disease that may make it harder to counter pollution damage • Air pollution can aggravate heart disease and stroke, lung diseases such as chronic obstructive pulmonary disease and asthma, and diabetes • Population may prefer in-person messages over web or social media
Local organizations	<ul style="list-style-type: none"> • Senior Matters • Garfield County Department of Human Services • Long-term care facilities
Outdoor workers	14% of employed individuals work in construction industry, 35% of farmers and ranchers are over the age of 65
Vulnerabilities	<ul style="list-style-type: none"> • Workers that have strenuous occupations outdoors and little access to clean air spaces when working in the field • High percentage of workforce older than 65 in agriculture • Much of Garfield County’s agriculture is in rural areas and people living in rural communities may have longer distances to travel for health care as well as work • Web and social media channels may not be the best way to reach this population • Printed material posted at highly visible locations may be better
Local organizations	<ul style="list-style-type: none"> • CSU Extension • Garfield County Vegetation Management • USDA-NRCS • Farm Service Agency

People experiencing homelessness	
Vulnerabilities	<ul style="list-style-type: none"> • Individuals experiencing homelessness have little access to clean air spaces, Personal Protective Equipment (PPE), and health alerts
Local organizations	<ul style="list-style-type: none"> • Western Slope Services Homeless Prevention • LIFT-UP • Feed My Sheep • Garfield County Human Services • Colorado Department of Labor and Employment
People experiencing mental illness	
Vulnerabilities	<ul style="list-style-type: none"> • Wildfire smoke may increase the risk of depression and anxiety
Local organizations	<ul style="list-style-type: none"> • Mind Springs • Aspen Hope Center
People with disabilities	
Vulnerabilities	<ul style="list-style-type: none"> • People with disabilities are subject to health complications that make exposure to wildfire smoke more consequential • Compromised mobility • Various disabilities may make it more difficult to receive and follow directions or interact with agencies before, during, or after a wildfire disaster
Local organizations	<ul style="list-style-type: none"> • Division of Vocational Rehabilitation • Mountain Valley Developmental Services • Center for Independence • ARC of the Central Mountains • Glenwood Springs Disability Coalition
People without health insurance	<p>The state average is 7.8%. Garfield County’s average is much higher, at 17.8% of the population without health insurance</p>
Vulnerabilities	<ul style="list-style-type: none"> • Lack of health coverage equates to poorly managed chronic conditions, undetected or untreated cancer, and untried medical procedures

Local organizations	<ul style="list-style-type: none"> • Garfield County Public Health • Mountain Family Health Centers
Pre-existing medical conditions	People with asthma, cardiovascular and pulmonary diseases are at greater risk for complications due to wildfire smoke
Vulnerabilities	<ul style="list-style-type: none"> • 5% of Garfield County residents have chronic obstructive pulmonary disease • 5% of Garfield County residents have heart disease • 10% of Coloradoans have asthma
Local organizations	<ul style="list-style-type: none"> • Garfield County Public Health • Valley View Hospital • Grand River Health
Pregnant women	
Vulnerabilities	<ul style="list-style-type: none"> • Risks associated with gestational hypertension, gestational diabetes, neonatal intensive care unit admission, assisted ventilation, small for gestational age
Local organizations	<ul style="list-style-type: none"> • Garfield County Public Health / WIC • Women’s Health Associates • Great Expectations
Tourists/ recreation	Tourism and outdoor recreation are a major industry in Garfield County
Vulnerabilities	<ul style="list-style-type: none"> • Visitors may not be familiar with smoke and wildfire events. • Visitors may lack access to emergency communication messages • Reaching this population in a timely manner could be difficult
Local organizations	<ul style="list-style-type: none"> • Local Chambers of Commerce • Municipalities • Hotels • Local outdoor attractions (hot springs, adventure parks, adventure outfitters, fishing/hunting outfitters, park services, rental companies)
Youth	0-17 years of age, 25% of the population
Vulnerabilities	<ul style="list-style-type: none"> • Children breathe more rapidly than adults which increases their intake of pollutants • Airways are smaller and still developing

Local organizations

- [Youth Zone](#)
- [Youth Entity](#)
- School Districts: Roaring Fork, Garfield Re2, District 16

II. Communications

3.1 Key messages regarding wildfire smoke and public health

- Prolonged exposure to wildfire smoke is detrimental to a person’s health
- There are strategies to reduce smoke exposure and lessen the severity of health impacts from wildfire smoke
- Certain population groups are at an increased risk for negative health impacts

3.2 Garfield County communication channels for local smoke information

- Garfield County [emergency communications authority](#) *subscribe for alerts
- Garfield County [Air Quality webpage](#)
- Garfield County [Facebook page](#)
- Garfield County [emergency news page](#) *subscribe for notices

3.3 Strategies to be implemented under varying conditions

If the AQI level stays in a sustained or worsening air quality condition for over 24 hours Garfield County would take the following actions:

AIR QUALITY INDEX (AQI)		
AQI Values	Levels of health concern	
0 to 50	Good	·No action needed
51 - 100	Moderate	
101 - 150	Unhealthy for sensitive groups	·Issue an informational press release ·Notify vulnerable populations of poor air quality ·Provide information on protective behaviors ·Send messages to stakeholders to amplify messages ·Send a health alert to medical providers
151 - 200	Unhealthy	·Take all steps included above ·Issue a GARCO 911 emergency notification ·Initiate conference call with key partners ·Share information about clean air spaces ·Alert and inform any known event coordinators and provide outdoor event air quality guidance
201 - 300	Very unhealthy	
301 to 500	Hazardous	

3.4 Message templates

Prescribed fires:

Prescribed burns can help prevent larger, more destructive fires, improve wildlife habitat and help create fuel breaks to protect the community. These fires can produce localized smoke, but often does not mean the air is unhealthy. If you are seeing smoke, visit [Garfield County Air Quality](#) or [Air Now](#) to see if you should make changes to your outdoor activities.

Out-of-area/non-local fire transported smoke:

Seeing smoke in the air can make us worry that there’s a fire nearby. Garfield County does not currently have an active fire, but we are being impacted by smoke transported from another location. Visit [Garfield County Air Quality](#) or [Air Now](#) to understand what the smoke levels are in your community and see where fires are burning.

Air quality advisory is in effect:

The Colorado Department of Public Health and Environment has issued an [air quality advisory for parts of Garfield County](#). Smoke may reach levels that are unhealthy. Visit [Garfield County Air Quality](#) or [Air Now](#) for real-time air quality information.

If you can't see more than 5 miles away, or if you feel that your health is being impacted, limit outdoor activities and keep [indoor air clean](#).

Local fire:

The _____ Fire is producing smoke that may affect air quality in your community. Wondering if you should let the kids play outside, or go for a bike ride? Visit [Garfield County Air Quality](#) or [Air Now](#) to understand if it's safe to be active outdoors. Adjusting the timing or location of your activity may allow you to avoid smoky air.

Wildfire smoke general preparedness:

Smoky air has become an unfortunate reality of our Garfield County summers, and it can affect both our physical and mental health. Be [smoke ready](#) and know what steps you can take to protect yourself. If possible, have a backup plans to avoid outdoor activities when smoke is thick, and know how to keep your [indoor air clean](#).

Wildfire smoke general preparedness:

Wildfires are happening more frequently. They are also larger and more destructive than in the past. Garfield County experiences wildfire smoke each summer from either local or distant fires. Learn how to [protect yourself](#) and check if air quality outdoors is safe at [Garfield County Air Quality](#) or [Air Now](#)

Wildfire smoke preparedness, exercising outdoors:

Outdoor recreation is one of the reasons many of us live in Garfield County. But when it's smokey outside, exercise may do your health more harm than good. When we are exercising vigorously, our breathing rate increases in frequency and volume. This increases the amount of air (and pollution from wildfire smoke) that we inhale. Check if air quality is safe for your outdoor activity at [Garfield County Air Quality](#) or [Air Now](#).

“Moderate” air quality is typically still safe to be active outdoors, but unhealthy air means you should consider delaying your exercise activity or changing to an indoor activity. Take a class at

your local fitness center, do a home workout, or wait for a time of day when smoke levels may be lower.

Keep indoor air clean:

When smoke becomes a problem outdoors, protect your health by staying indoors and keeping indoor air clean. Keep doors and windows closed if possible. Purchase a portable air cleaner, or [make your own](#) with a box fan and filter. Avoid air fresheners and scented candles, as they add chemicals to indoor air. Avoid frying or broiling foods, as it adds more particles to indoor air.

Air quality resources:

How bad is the smoke in your area?

[Garfield County Air Quality](#) or [Air Now](#) are your ‘go-to’ source for air quality information. Use the Air Quality Index (AQI) to decide if you should [change your plans](#) based on smoke levels.

Smoke message for high risk populations:

If you have [moderate to severe heart or lung disease](#), consider staying with relatives or friends who live away from the smoke. If significant smoke is already present, evaluate whether evacuation might cause greater exposure than staying at home and using [other precautions](#).

Physical and mental health impacts of smoke:

When the air is smoky, our eyes and throat burn. The smoke can make us cough. Smoke can also impact our mental health by increasing anxiety. Find support by dialing [988](#) the three digit, nationwide phone number to connect directly to the suicide and crisis lifeline.

Know if the air is safe or unhealthy

When wildfire smoke is in the air it’s harder to see and the sky is discolored. Sometimes it can seem smoky outside but not pose a health risk to most people. Other times, the air may be unhealthy, and we need to stay indoors and keep indoor air clean. Learn how to [protect yourself](#) and check if the air quality outdoors is safe at [Garfield County Air Quality](#) or [Air Now](#).

Check the Garfield County air sensors

Garfield County has air sensors monitoring the air quality in every community. Learn about outdoor air and check today's air quality level at [Garfield County Air Quality](#) or [Air Now](#).

How to protect yourself and your family

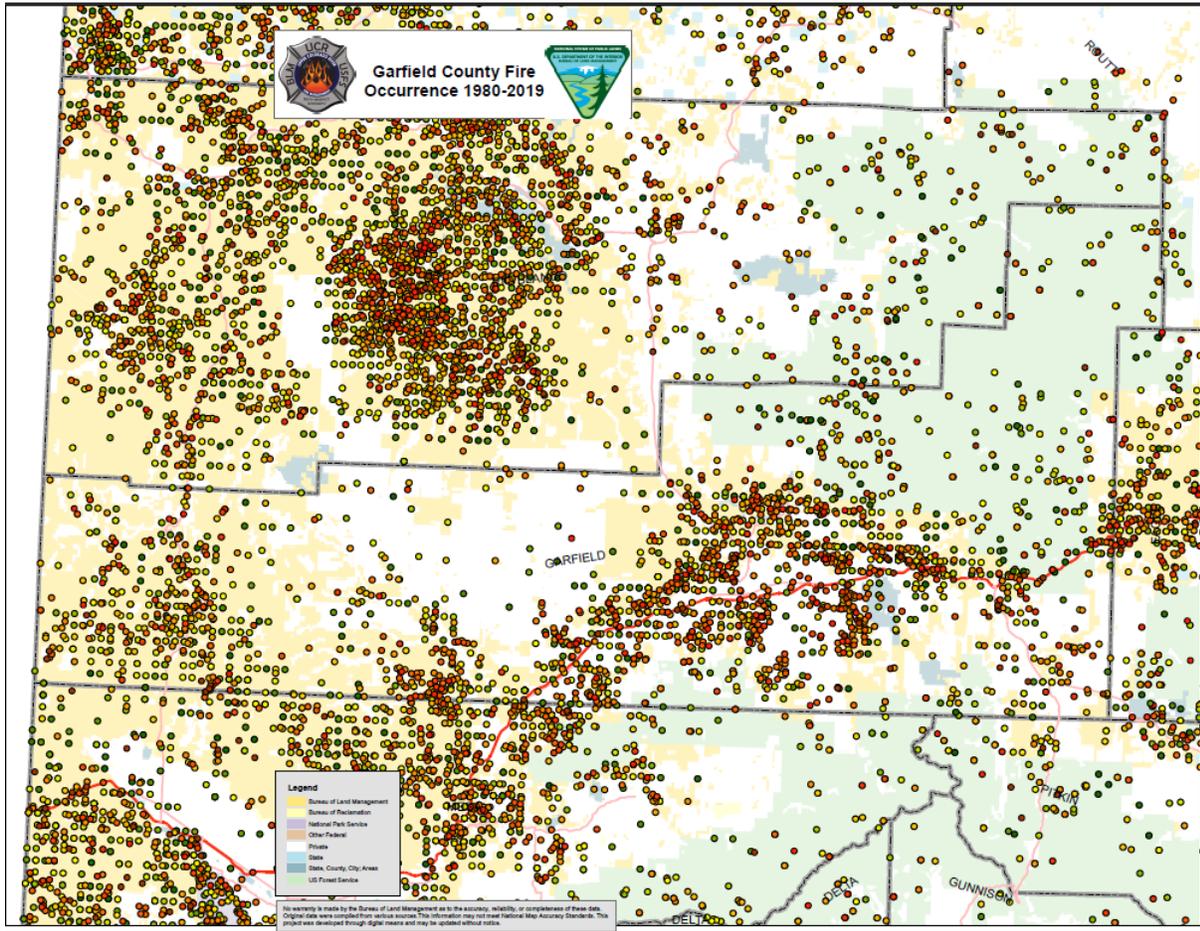
When the air outside is unhealthy, stay indoors if possible and keep indoor air clean. Close windows and doors to keep the smoke outside, but only if this does not cause your home to get too hot inside. Buy a [portable air cleaner](#) or make one yourself with a [box fan and filter](#). Don't add to indoor air pollution with cooking methods that produce smoke or by burning products like scented candles. Learn how to [protect yourself](#) and check if the air quality outdoors is safe at [Garfield County Air Quality](#) or [Air Now](#).

Outdoor worker protection against smoke

Many Garfield County residents have jobs that require [working outdoors](#). When wildfire smoke is in the air, wear a fitted N95 or KN95 mask while outside. Surgical or cloth masks are not enough to protect you from the health impacts of wildfire smoke. Learn how to [protect yourself](#) and check if the air quality outdoors is safe at [Garfield County Air Quality](#) or [Air Now](#)

III. Local history of wildland fire and smoke events

Garfield County has experienced smoke events from local and national wildfires. Fire occurrence tends to be concentrated along major river and travel corridors. Interstate 70 and the Colorado river run through the county.



Garfield County Fire Occurrence, 1980-2019

<p>South Canyon (Storm King) Fire</p>	<p>Start date: July 2, 1994</p>
<p>Information</p>	<ul style="list-style-type: none"> • Cause: lighting • Location: Seven miles West of Glenwood Springs. Difficult to access area • On July 6, 14 firefighters lost their lives fighting the fire • Total acres burned: 2,115
<p>Coal Seam Fire</p>	<p>Start date: June 8, 2002</p>

Information

- Cause: sparked by underground burning coal seam, spread by strong winds
- Location: West Glenwood Springs
- The fire took 29 homes. In August, heavy rain in the burn scar area caused mudslides and debris flows that injured motor vehicle passengers in South Canyon.
- Total acres burned: 12,000 acres

Lake Christine Fire	Start date: July 3, 2018 (Eagle County)
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Information

- Cause: Individuals firing tracer rounds at a Basalt shooting range
- Location: Basalt
- 2,100 individuals had to be evacuated from their homes. 5 homes and a historic cabin were destroyed
- Total acres burned: 12,588 acres
- Cost: \$25 million to extinguish

Pine Gulch Fire	Start date: July 31, 2020
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Information

- Cause: lighting
- Location: 18 miles North of Grand Junction, spreading into Western Garfield County
- Greatly impacted air quality in Garfield County
- Became largest wildfire in Colorado history
- Firefighters experienced minor injuries
- Total acres burned: 139,007

Grizzly Creek Fire	Start date: August 10, 2020
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Information

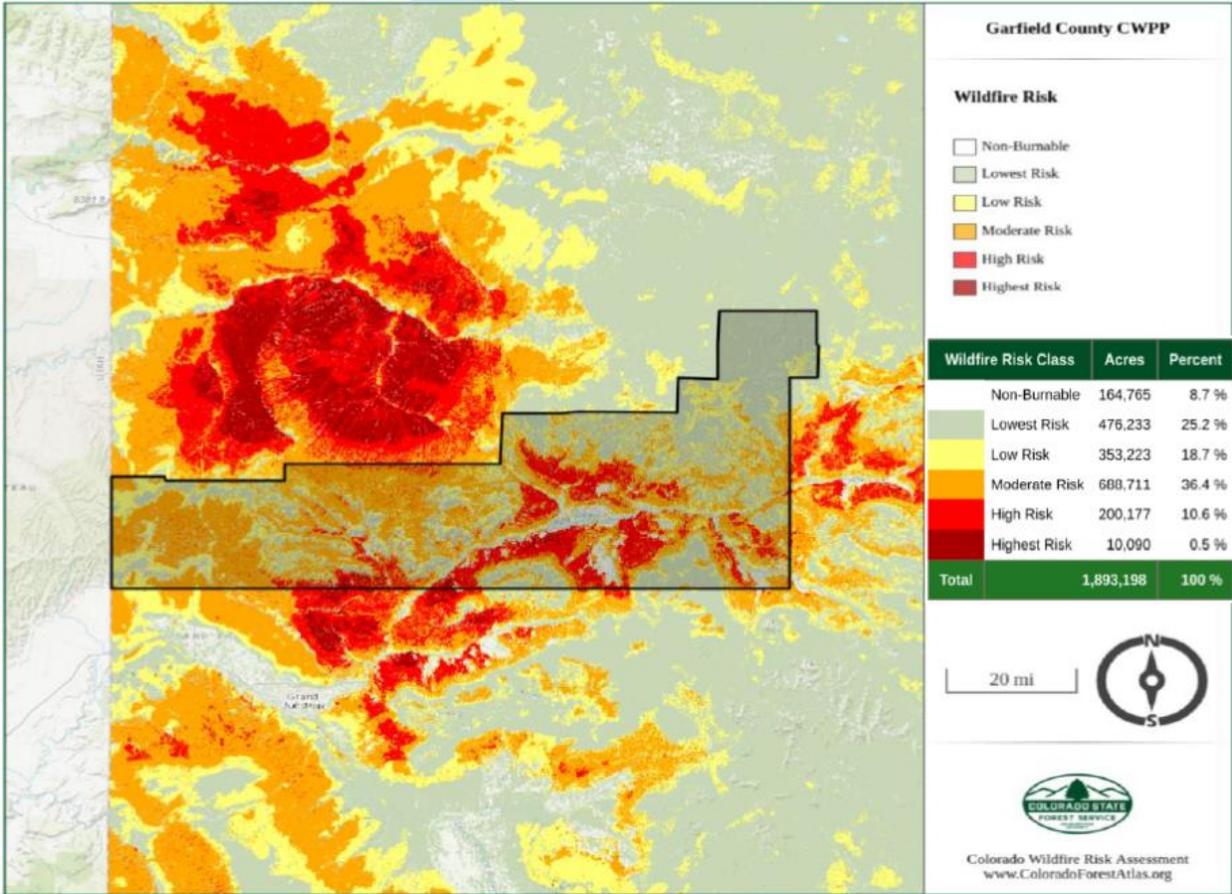
- Cause: human activity (undetermined)
- Location: Glenwood Canyon along I-70 jumping interstate and Colorado River
- Caused a 13-day closure of I-70 with numerous impacts to Coloradoans
- Evacuated communities of No Name, Lookout Mountain, Coulter Creek
- One year later mudslides in burn scar area caused another I-70 closure and significantly damaged the interstate and Colorado River.
- 100 motorists were trapped overnight in their cars on I-70 due to debris
- Total acres burned: 32,631

IV. Future wildland fire and smoke risk

Many vegetation types in Garfield County have evolved over thousands of years to become fire dependent and are fire resilient. Native Americans recognized this and utilized fire as a means to clear and rejuvenate the land. In the early 20th century, a mindset that fire was bad became ingrained and preventing wildfire became a goal of land management agencies. This has led to an unhealthy and unnatural buildup of fuels which has only begun to be addressed in the last few decades.

If current climatological trends continue, it is likely Garfield County will see an increase in both the number of fires and acres burned. As moisture becomes more scarce and temperatures increase, it is likely sagebrush steppe and mixed mountain shrub communities will expand into areas that were once aspen and timber stands. As a result all vegetation types will be susceptible to increased fire activity. Particularly along the river corridors where population densities are higher, fuels dry out more quickly, and fires spread at increasing rates. Besides natural causes of ignition, there is likely to be an increase in human caused fires due to urban sprawl in the wildland urban interface.

Nearly **50% of Garfield County falls in the three highest wildfire risk categories** as identified in the Colorado State Forest Fire Risk Map.



Garfield County Community Wildfire Protection Plan: Wildfire Risk Assessment (Colorado State Forest Service: Colorado State University, 2022)

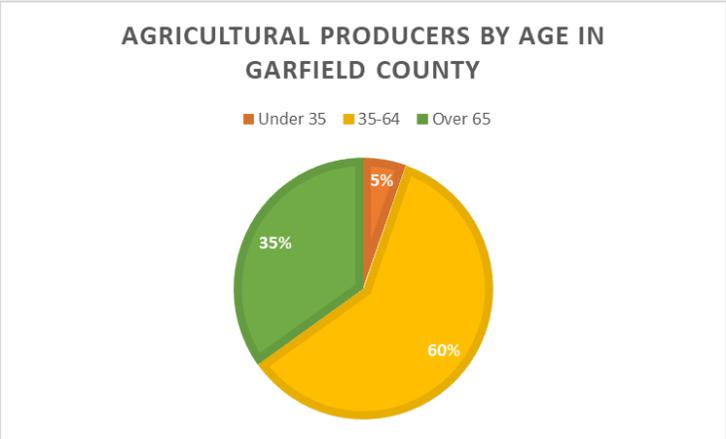
Ongoing efforts are in place with many homeowner’s associations (HOAs), fire protection districts, and state and federal agencies to reduce the risk and intensity of future wildfire events. This includes mechanical vegetation manipulation, application of prescribed fire, and when appropriate, allowing lightning ignited wildfires to play their natural role in the environment. These mitigation efforts are always in close consultation with state and local health departments and the National Weather Service in order to minimize smoke impacts to communities. They will be critical in helping reduce wildfire risk and associated smoke impacts from local fires in the future.

V. Community characteristics: who lives and works here

Workforce

Many of the most prominent industries in Garfield County are fueled by outdoor workers. The county is the largest natural gas producer in the state, has a thriving agriculture community of over 650 farms and is a major tourism destination (much of which is centered around outdoor recreation). This results in a relatively high exposure for workers to smoke events.

Another important factor to the agriculture industry, in particular, is the workforce age. The County is a major cattle producer, with many of these operations being family owned and operated. Of the producers in the county, 35% (424) are over the age of 65 (USDA-National Agricultural Statistics Service, 2017). This demographic is significantly older than the County’s general population, which is only 13% over the age of 65 (U.S. Census, 2020).



In addition to exposure to the outdoor work environment, Garfield County also has an above-average commute time for workers. The county workforce endures over 20% longer daily commute times than the rest of the state. During smoke events, that means a longer time in an environment that has the potential for increased smoke exposure (U.S. Census, 2020). Steps such as closing windows and vents, setting the heating and cooling system to recirculate, and driving slowly if visibility is limited are simple steps to decrease exposure during smoke events (U.S. Environmental Protection Agency, 2021).

Culture

Home to a rich LatinX population, 25.8% of the county’s population learned English as a second language (U.S. Census, 2020). Of languages other than English spoken at home, Spanish makes up over 93% (U.S. Census, 2020). Having materials, notices, and services available in both English and Spanish is an important aspect to serving communities during a smoke event.

Recreation

Outdoor recreation is not only a major draw for people visiting the area, but for residents living in the county. The county has extensive paved and dirt trail systems that bring cyclists, mountain bikers, hikers, backpackers and runners out during the warm months. The Colorado River and Roaring Fork River both provide world-class fishing, rafting, kayaking, surfing, tubing, and paddleboarding. Between the stunning walls of the Glenwood Canyon and overhung cliffs of Rifle Mountain Park, rock climbers are never at a loss for new routes and challenges.

During smoke events, it can be difficult to know when these strenuous activities are advisable. The resources available in this plan look to assist this, and other demographics, safely navigate these events.



VI. Local smoke team members

Local Smoke Team Members

Team Member Name	Organization	Professional Role
Ted White	Garfield County Public Health	Environmental Health Specialist III
Carrie Godes	Garfield County Public Health	Public Information Officer
Orrin Moon	Colorado River Fire Rescue	Fire Marshal
Chad Sewell	Bureau of Land Management	Fire Management Specialist
Drew Walters	CSU Extension Office	Agricultural Specialist
Steve Anthony	Garfield County	Vegetation Manager
Elizabeth Velasco	Garfield County Public Health Department	Interpreter
Jenn Ooton	City of Glenwood Springs	Assistant Manager
Bryana Starbuck	City of Glenwood Springs	Public Information Officer
Jannette Whitcomb	Garfield County/City of Aspen	Environmental Health Director/Senior Environmental Health Specialist
Morgan Hill	Eagle County	Environmental Health Manager

VII. Referenced resources

The following resources were used as references in the completion of this plan.

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